SCIENTIFIC RESEARCH OF THE SCO COUNTRIES: SYNERGY AND INTEGRATION

上合组织国家的科学研究：协同和一体化

Materials of the International Conference

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国际会议

参与者的英文报告

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“Scientific research of the SCO countries: synergy and integration”

Part 2: Participants’ reports in English

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这些会议文集结合了会议的材料 – 研究论文和科学工作者的论文报告。 它考察了职业化人格的技术和社会学问题。一些文章涉及人格职业化研究问题的理论和方法论方法和原则。
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These Conference Proceedings combine materials of the conference – research papers and thesis reports of scientific workers. They examines tecnical and sociological issues of research issues. Some articles deal with theoretical and methodological approaches and principles of research questions of personality professionalization.

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Foreword

We thank all participants of our conference "Scientific research of the SCO countries: synergy and integration" for the interest shown, for your speeches and reports. Such a wide range of participants, representing all the countries that are members of the Shanghai Cooperation Organization, speaks about the necessity and importance of this event. The reports of the participants cover a wide range of topical scientific problems and our joint interaction will contribute to the further development of both theoretical and applied modern scientific research by scientists from different countries. The result of the conference was the participation of 56 authors from 7 countries (China, Russia, Uzbekistan, Kazakhstan, Azerbaijan, Tajikistan, Kyrgyzstan).

This conference was a result of the serious interest of the world academic community, the state authorities of China and the Chinese Communist Party to preserve and strengthen international cooperation in the field of science. We also thank our Russian partner Infinity Publishing House for assistance in organizing the conference, preparing and publishing the conference proceedings in Chinese Part and English Part.

I hope that the collection of this conference will be useful to a wide range of readers. It will help to consider issues, that would interest the public, under a new point of view. It will also allow to find contacts among scientists of common interests.

Fan Fukuan,
Chairman of the organizing committee of the conference
"Scientific research of the SCO countries: synergy and integration"
Full Professor, Doctor of Economic Sciences

前言

我们感谢所有参加本次会议的“上海合作组织国家的科学研究：协同作用和整合”，感谢您的演讲和报告。代表所有上海合作组织成员国的广泛参与者都谈到此次活动的必要性和重要性。参与者的报告涵盖了广泛的主题性科学问题，我们的联合互动将有助于不同国家的科学家进一步发展理论和应用的现代科学研究。会议结果是来自7个国家（中国，俄罗斯，乌兹别克斯坦，哈萨克斯坦，阿塞拜疆，塔吉克斯坦，吉尔吉斯斯坦）的83位作者的参与。

这次会议的召开，是学术界，中国国家权力机关和中国共产党对维护和加强科学领域国际合作的高度重视的结果。我们还要感谢我们的俄罗斯合作伙伴无限出版社协助组织会议，准备和发布中英文会议文集。

我希望会议的收集对广大读者有用，将有助于在新的观点下为读者提供有趣的问题，并且还将允许在共同利益的科学家中寻找联系。

范福宽，
教授，经济科学博士，中国科学院院士，会议组委会主席“上合组织国家科学研究：协同与融合”

国家和跨境关系中电子商务逆向物流的优化
OPTIMIZATION OF REVERSE LOGISTICS IN E-COMMERCE IN NATIONAL AND CROSS-BORDER RELATIONS

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抽象。近年来，电子商务活动不断增加。随着通过互联网销售的增加，从客户退货的数量也在不停增长。希望打入互联网业务的公司应认真考虑逆向物流的计划。通常，由于产品退货政策薄弱的小公司很快就会失去客户的信任和客户自身的信任。

本文的主要目的是在跨境贸易条件下创建逆向物流模型。逆向物流中使用了不同的模型来创建商品的逆向运动，但是它们都不是完美的和通用的，每种模型都有其优缺点。提出的模型应减少从客户退货的成本和时间，从而应提高当前和潜在客户对在线购物的满意度和信心，并增加他们的数量。

关键字：优化，在线购物，电子商务，库存管理，卡车物流，物流网络设计。

Abstract. *E-Commerce activity has been multiplying in recent years. With the increase in sales via the Internet, the number of returned goods from customers is also growing restlessly. Firms that want to break into the Internet business should take planning for reverse logistics seriously. Usually, small companies for weak return policy of products quickly lose both the trust of customers and the customers themselves.*

The main goal of the article is to create a model of reverse logistics in the conditions of trans-border trading. Different models are used in reverse logistics to create a reverse movement of the goods, but none of them is perfect and univer-

sal, and each has its advantages and disadvantages. The proposed model should reduce the cost and time for returning goods from customers, which in turn should increase the satisfaction and confidence of current and potential customers to online purchases and increase their number.

Keywords: *optimization, online shopping, e-commerce, inventory management, truck logistics, logistic network design.*

The introduction

The current rapid development of information and communication systems forces to continually follow new trends, improve services and adapt to market requirements. Information and communication technologies penetrate all areas of not only the economy, but also education, state administration, and the like [1].

The Internet is an indispensable part of our lives. At present, it is difficult to imagine how to obtain information without using search engines. The Internet offers us the opportunity to get as much information as possible with minimal efforts. The current man can no longer imagine his day without the internet. The online industry is developing with high speed, which also has a significant influence on the sphere of trade. Therefore, a new direction appeared in world-online trading. It includes the purchase/sale of goods and services of wholesale and retail through electronic communications networks [2, 3].

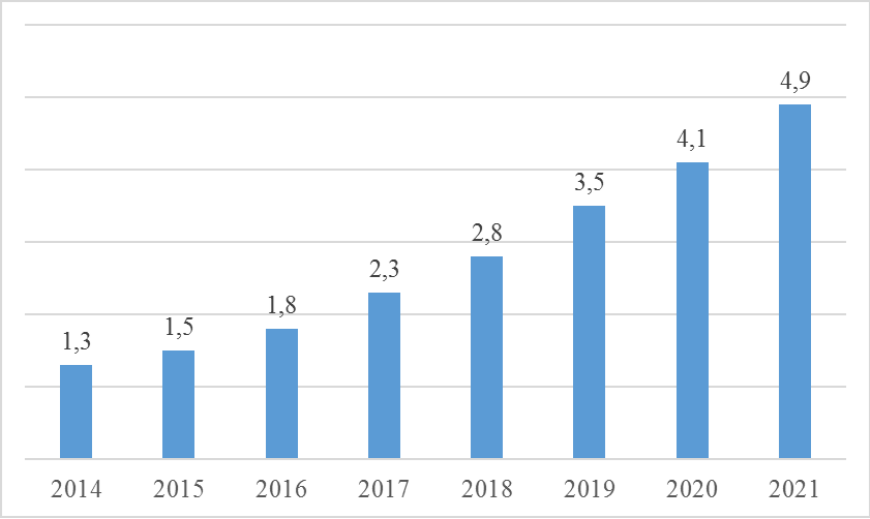


Figure 1. *Estimated number of sales in trillion dollars through EO in 2021 in trillion USD [Source: Autor].*

E-Commerce is a sphere of the economy that operates in the environment of computer networks. In electronic form, it can conclude several contracts (purchase and sale, supply, insurance, banking, transportation, license agreements). The Internet is considered the main driving force for the development of a new economy, in which transactions are carried out by electronic means. Today, absolutely everyone can create their online store and engage in sales. However, in order to maintain a website for online sales, it is often necessary to invest relatively significant resources into its creation, promotion, training for employees, thinking, and optimization of logistics, and others. [4]

The analysis of the current state

Sales in the online store are continually growing. It is assumed that sales will increase from $ 1.3 trillion in 2014 to $ 4.9 trillion in 2021 (Figure 1). It is a considerable value, which means a three-fold increase in turnover in online sales in 7 years [5, 6].

Figure 2 records 3 top countries-leaders in the e-commerce market [2, 7]. As shown in the picture, the top positions within online retailers are occupied by China, the USA and the UK.

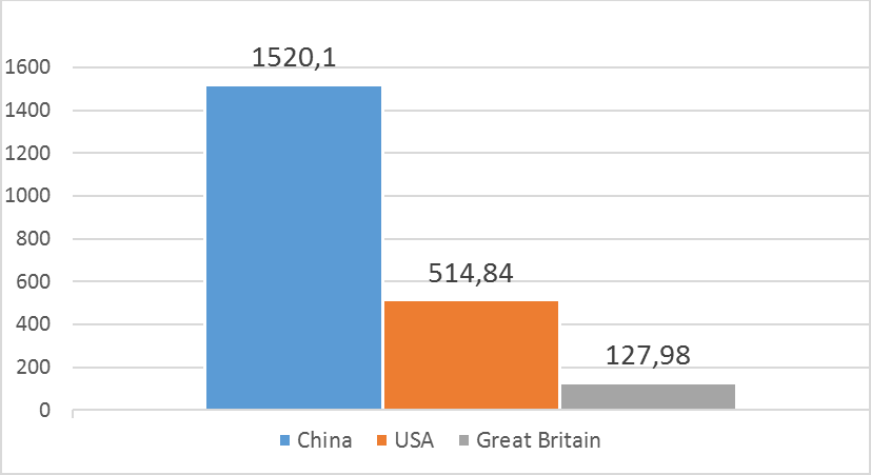


Figure 2. *Top 3 countries-leaders in the market of electronic trading in billions of dollars [Source: Author]*

Despite the enormous popularity and significant revenues from the electronic trading, around a third of all goods purchased online is usually fed back by the manufacturer or distributor where they were purchased. That is a massive amount of goods, which eventually have to be returned, repackaged and restored, which is a waste of time and finance. Companies wishing to increase the number of sales

must sacrifice the means for making a free refund of the goods and thus satisfy and retain the customer. Despite the significant revenues from e-commerce, according to the portal "Statista" accounted for the cost of return shipping in the US in 2018, approximately 381 billion dollars (figure 3). This figure is continuously increasing and is expected to reach $ 550 billion in 2020 [8].

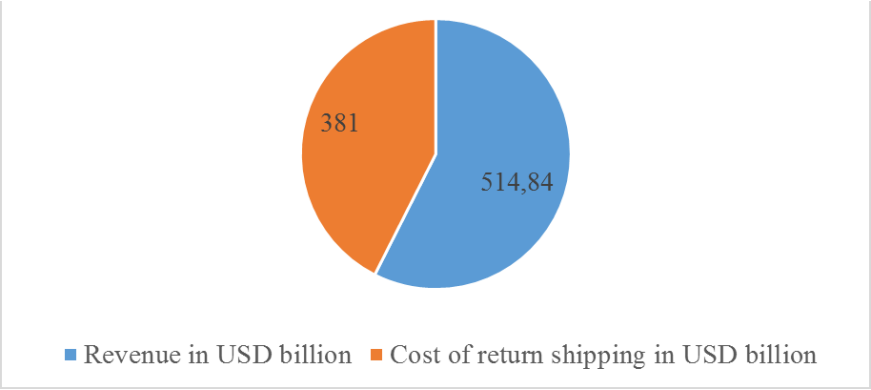


Figure 3. *Comparison of revenue from e-commerce and the cost of return shipping in the US in 2018 [Source: Author].*

As can be seen in the example of the US (Figure 3), the cost of reverse transport catches up with the income from sales in the online store. It is clear that the optimization of the return of goods becomes an essential tool for business and its competitiveness, and in some cases, it is a condition for surviving at the market.

The objective

The main objective of the article is to create a model of reverse logistics in the conditions of trans-border trading. Different models are used in reverse logistics to create a reverse movement of the goods, but none of them is perfect and universal, and each has its advantages and disadvantages. The proposed model should reduce the cost and time for returning goods from customers, which in turn should increase the satisfaction and confidence of current and potential customers to online purchases and increase their number.

The results

To solve the issue of reverse logistics e-commerce we propose a model in which the reverse flow of goods from the customer shall be organised by a trusted third-party provider of services the feedback of the logistics of e-commerce. This model will allow transferring responsibility for the return of goods from retailers that do not want to engage in reverse logistics or for them, and it is too costly. Pro-

cesses associated with returning the goods and the subsequent sale of the goods, for example, all logistics operations, resale or disposal of goods are shown in figure 4. The proposed model will be especially relevant for sellers who sell goods worldwide. A more detailed description of the operation of the proposed model is given below (Scheme 1).

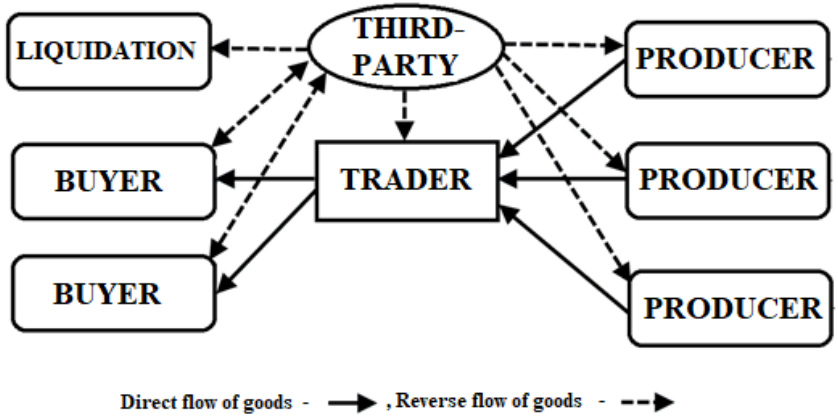


Figure 4. *Proposed reverse logistics model [Source: Author].*

1. **Preparation of the goods for a refund –** the buyer, who decided to send the goods back for personal reasons or the goods are damaged or contains errors. The buyer goes to a dedicated website, where he fills out a unique form to determine the reason for the return. A special algorithm reads the text causes the return of and on its basis gets a unique QR code that will contain this information and the information about the client. The customer attaches this code to the product intended for further identification.

2. **Delivery of goods to the Contact Center** – depending on the organization of the contact centre representing a third party, the buyer may choose the method of delivery of the goods at the place of receipt of the returned goods. The buyer can return the goods himself or ask the courier company to pick up the goods.

3. **Preparation of goods for dispatch to the central warehouse** – depending on the organization of the collection of the returned goods through a third party (the contact centre) or it will be an agreement with a local courier company/post. The goods that come to the contact centre will be separated and ready for shipment to the central warehouse.

4. **Delivery of goods to the central warehouse** – after preparation of the goods for carriage comes in a particular vehicle from a third party and will pick up the goods from all intermediate centres along the selected route.

5. **Separation of good** – warehouse workers, will separate goods delivered to a third-party warehouse after unloading, depending on the QR code that has been glued by customers. Depending on the reason for returning, the goods will be divided into two groups: functional good, which is not suitable for the customer on personal grounds or it is a good which is damaged or contains errors but is not considered malfunctioning.

5.1 **Functional goods** – it represents goods that are functional and stored in stock for a specified number of days. During this time, the goods will be listed in the third-party database for sale and will be available to customers located near the contact centre and interested in the type of goods.

5.1.1. **Sale of goods** – after the buyer chooses the goods for which he is interested, the third-party prepares it for sale. Depending on the wishes of the buyer, the goods can be sent to the contact centre to a third party courier or other postal services.

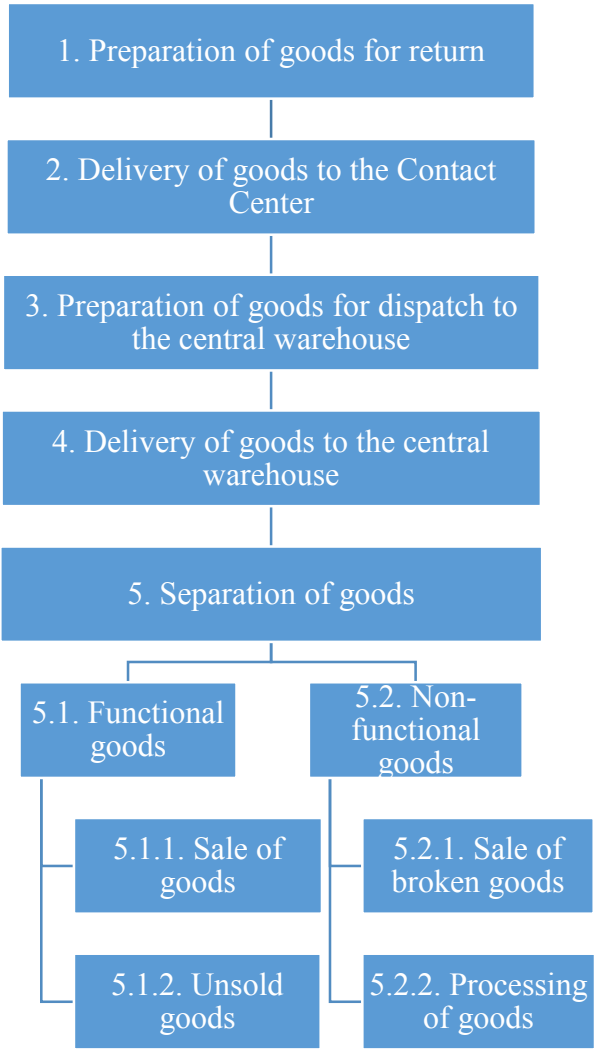
5.1.2. **Unsold goods** – goods that are not sold will subsequently be sent to the seller.

5.2. **Non-functional goods** – represent goods that contain defects and is inoperable. This type of goods will be divided into specific categories and for further implementation:

5.2.1. **Sale of broken goods** – this group includes goods that can be sold at a discount to other customers who are looking for a similar product, for spare parts;

5.2.2. **Processing of goods** – this group includes goods that have not been sold for spare parts and, based on this, will be sent for processing to recycling companies.

For a better understanding of what the essence of this model is, we will show the example of Slovakia (figure 5). To do this, we need to know the approximate purchasing potential of the people of this country. It can be done using a survey of the population on account of purchases on the Internet and their return. From this survey, we will obtain the data that is necessary to calculate the optimal size of the warehouse where we will organize the reception and service of the returned goods. After calculating the size of the warehouse(s), we can start to find their optimal location and number of vehicles needed to transport the goods using the FLP [a] and VRP [b] methods. Figure 5a shows finding the optimal number of warehouses (in this example, we specified two warehouses) from 141 cities in Slovakia and figure 5b the finding the optimal route for the specified number of vehicles (in this example, two vehicles were specified for each of the warehouses).



Scheme 1. *Example of the functioning of a third party on the return of goods [Source: Author]*

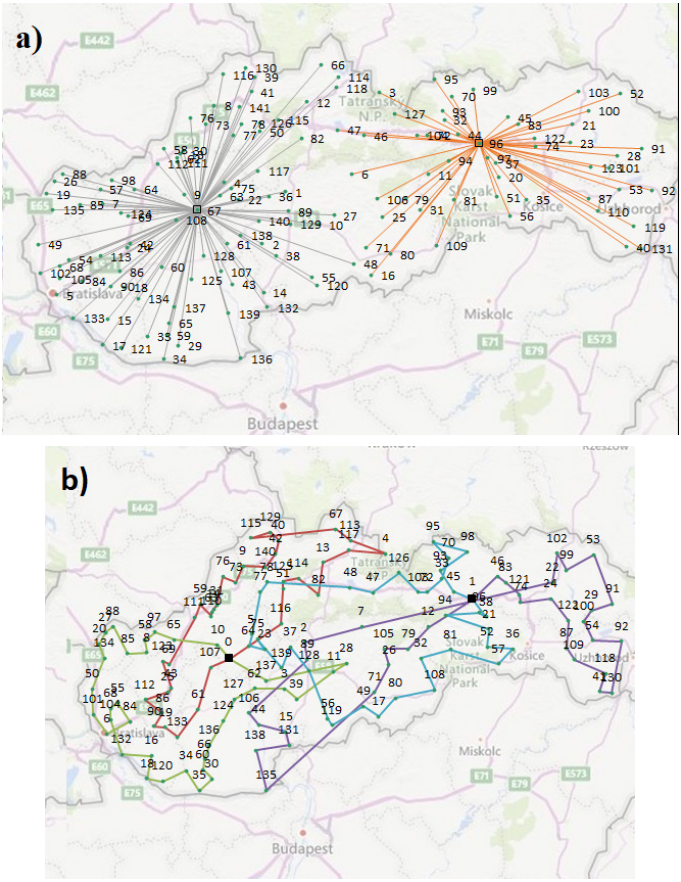


Figure 5. *Finding the optimal location of warehouses (figure 5a) and the number of vehicles (figure 5b) for servicing the returned product [Source: Author].*

The conclusions

Thus, the analysis of the current status of e-Commerce shows that over the past seven years, the number of sales in e-Commerce has increased three times, approximately 4.1 trillion dollars by 2020. Despite the rapid growth in the number of sales, the number of returned goods is quite high, on average about 30% of all sales in this respect are the cost of returning the goods huge. In addition to high financial costs, the return process also uses human and transport resources. Solving this problem, or rather, optimizing this process by introducing a third-party, from the author, will be able to accept a large number of processes related to the return of goods. It should reduce the cost of returning goods, human and transport resources.

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以大型商品公司为例的公司最优资本结构问题

ON THE ISSUE OF THE OPTIMAL CAPITAL STRUCTURE OF A CORPORATION ON THE EXAMPLE OF A LARGE COMMODITY COMPANY

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抽象。 该文章表明，在封闭的借入市场条件下，公司存在最佳的资本结构，可确保投资于运营成本的自有资金的最大获利能力，以及由于股票市值增加而产生的可接受的资本化。 。

关键字：资本结构，资本杠杆，股票价格，借入资本价格，股本收益率，WACC加权平均资本成本模型，油气公司的市场策略。

Abstract. *The article shows that for the conditions of a closed market for borrowed capital, there is an optimal capital structure of the corporation, ensuring maximum profitability of own funds invested in financing operating costs, and acceptable capitalization due to the increase in the market value of shares.*

Keywords: *capital structure, capital leverage, equity price, borrowed capital price, return on equity, WACC weighted average cost of capital model, oil and gas company's market strategy.*

Introduction

The optimality of capital structure for most Russian enterprises is a relevant category that occupies a central place in financial planning and management.

The aim of the work is to test the hypothesis of the existence of an optimal capital structure for a large Russian commodity company (PJSC "Gazprom"), the activity of which is associated with limited access to debt financing markets.

Analysis of components and calculations of indicators of the structure and price of capital of PJSC Gazprom.

According to the official financial statements of PJSC "Gazprom", posted on the official website [9], the company uses both its own and attracted sources of financing to finance its activities.

The company's cash flow at the end of 2018

Cash flow calculation will be carried out on the basis of official reporting data reflected on the website (table 1). By cash flow we mean free cash flow minus income tax:EBIT * (1-n_p).

Table 1

Calculation of free cash flow of PJSC "Gazprom"

№	Name of indicator	Value, million rubles
1	Revenue	8 224 177.00
2	Operating expenses	6 604 098.00
3	Profit before tax and interest payments (EBIT)	1 620 079.00
4	Income tax (20% rate)	149 821.04
5	**Free cash flow EBIT * (1-n_p)**	**1 470 257.96**

Note: Compiled on the basis of information provided on the official websites [9,12].

In the framework of this work, we will make the assumption that the company will generate free cash flow indefinitely, and its level will grow at a rate of g, for which we take the arithmetic average of the estimates offered by different investment companies. At the end of 2018, leading investment analysts predict the company's growth rate at 2% [8.11]. This value of the parameter g will be used in the calculations.

Volumes and profitability of own and borrowed capital.

According to the financial statements of PJSC Gazprom, at the end of 2018, the company's own capital amounted to 13 776 153 million rubles. [9]. Gazprom shares are among the most liquid instruments on the Russian stock market. The largest shares of the company are in the RTS and MICEX indices. On the stock exchanges of PJSC "St. Petersburg Exchange" and "CJSC MICEX" Stock Exchange, the company's shares are included in the first (highest) listing level. The company has more than 470 accounts with 23,673,512,900 shares. At the end of 2018, the price of one share amounted to 372.13 rubles. The company's capitalization as of December 31, 2018 amounted to 3,634 billion rubles [9,11]. The level of borrowed financing of the company following the results of 2018 amounted to 7 510 431 thousand rubles [9]. We calculate the shares of equity and attracted capital (table 2).

Table 2

Indices of own and borrowed financing of PJSC "Gazprom".

№	Name of indicator	Value, million rubles, %
1	Net profit	1 456 000.00
2	Equity	13 776 153.00
3	Borrowed capital	2 930 826.34
4	Percentage to be paid	100 841.51
5	Free cash flow EBIT * (1-np)	1 470 257.96
6	**Share of equity**	82.46
7	**Share of borrowed capital**	17.54
8	**Return on equity**	10.57
9	**Return on borrowed capital**	3.44
10	The value of the assets of the enterprise	15 736 141.60
11	Return on assets	9.25
12	**Financial Leverage (DFL)**	1.32

Note: Compiled on the basis of information provided on the official websites [9,12].

From the data in table 2 it follows that the share of borrowed capital in the structure of sources of financing the company at the end of 2018 amounted to 17.54%, equity - 82.46%. The prevalence of the share of own sources of financing in the total capital of the company indicates the existence of a clear strategy for self-financing of current operational and commercial activities and to increase the efficiency of costs covered from equity.

The calculation results also demonstrate the level of influence of borrowed capital on the company's net profit: not higher than 1.92%. This means that the use of borrowed capital allowed the company in 2018 to increase return on equity and operating profit (by 1.92%) with a value of financial leverage in the range of 25-30%. It is such a capital structure of the oil and gas company that is optimal in accordance with the calculations presented in the work of D. Bezukhov. and Halikova M.A. [4]. However, in fairness, we note that the model calculations of the optimal capital structure of the company were carried out by the authors in 2014 and corresponded to its financial and economic condition for the specified period.

Calculation of the prices of equity and borrowed capital and the weighted average price of capital of the company. The calculation of the price of PJSC "Gazprom" own (stock) capital is possible using the CAPM long-term asset valuation model [5]:

$$r_c = r_d + \beta_e (r_m - r_d), \quad (1)$$

where: r_d - risk-free market rate. As the base value of this indicator, we use the value of the monthly average arithmetic rate of return of Russian Eurobonds "Russia-10" [11]. The value of the indicator at the end of 2018 - 8.73 %;

r_m - market rate of return. To determine the value of the indicator, we use the level of the effective rate of return of the Russian RTSI index of the RTS stock exchange [12]. As a result of the calculations, the market rate value was determined - 11.5 %;

β – beta value of ordinary shares of PJSC "Gazprom". According to the estimates, the coefficient - 1.19.

Calculation of the price of equity of the company according to the formula (1) shows the value of 12.03%.

According to information provided on the official website of PJSC "Gazprom" [9], Fitch Ratings and Moody's agencies upgraded the company to BBB (outlook stable). Also on the company's website there is information about the program developed by the company to attract external borrowing from international capital markets. According to this program, the company attracts bonds in the framework of a multi-currency revolving credit line in the amount of up to $ 40 million. The average rate of one loan is 7.15% per annum [12]. In calculating the price of capital of the company, we will consider this value as the price of borrowed capital.

We calculate the weighted average cost of capital of PJSC "Gazprom" (we use the aggregated formula proposed by Gorsky MA, Kukharenko A. Yu. And Stern A.A [6]) and based on the obtained data we make a forecast of its dynamics (table 3).

Table 3

The weighted average cost of capital of PJSC "Gazprom"

X=D/D+E	**0%**	**10%**	**20%**	**30%**	**40%**	**50%**	**60%**	**70%**
Income tax rate, %	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20
r_d - risk-free market rate, %	8.73	8.73	8.73	8.73	8.73	8.73	8.73	8.73
r_m - market rate of return, %	11.5	11.5	11.5	11.5	11.5	11.5	11.5	11.5
β - coefficient	1.06	1.12	1.19	1.29	1.41	1.61	1.91	2.01
Cost of equity, r_c %	11.67	11.83	12.03	12.30	12.64	13.19	14.02	14.30
The price of attracted financing, r_b %	6.11	6.61	7.15	7.25	7.85	8.65	9.15	9.25
WACC, %	**14,73**	**14,17**	**13,65**	**13,18**	**12,67**	**14,15**	**15,35**	**15,46**

Note: Compiled on the basis of information provided on official sites [9,12,13,14].

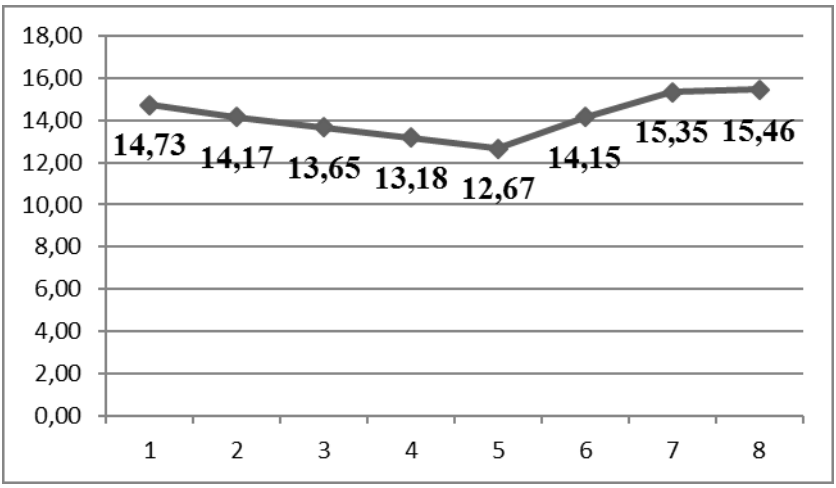

Fig. 1 *Dynamics of the weighted average cost of capital of PJSC "Gazprom" for the period of 2011-2018, %.*

As follows from the above data, an increase in the price of loan financing affects the change in the indicator of the average weighted price of capital, inhibiting its growth. The minimum value of WACC is achieved with a debt level of 40%. The dynamics of the indicator for the period 2011-2018 is presented in Figure 1.

We also note the fact that with the growth of the company's debt, the price of equity remains much higher than the level of the price of borrowed financing, which characterizes the institutional imperfections (structural imbalances) of the Russian financial market (as a rule, with limited access to the markets of borrowed capital, the growth of the profitability of own and borrowed funds approximately the same in connection with the equal risks of capital sources [1,5,7]).

Distribution of company value on capitalization, net debt and present value of taxes.

The legal form of the company PJSC "Gazprom" involves the payment of dividends to shareholders based on the results of the billing period. Consider the distribution of company value between shareholders, creditors and the state. To improve the accuracy of the calculations, we introduce an additional indicator - the present value of taxes, which is calculated by discounting the annual tax payments for each debt obligation of the company at the rate of the price of attracted capital. The calculation results are presented in table 4.

Table 4

Distribution of the cost of PJSC "Gazprom" for capitalization, net debt and present value of taxes (mln. rub., %).

D/(D+E)	0%	10%	20%	30%	40%	50%	60%
Company capitalization	4335362	4011936	3634000	3212456	2745487	2260348	1758856
Net debt	0	1477056	3014400	4566816	6080045	7490919	8754637
Capitalization + net debt	**4335362**	**5488992**	**6648400**	**7779272**	**8825532**	**9751267**	**10513493**
Given value of taxes	292287	265017	234502	201437	166790	131597	97777
Total	**4627649**	**5754009**	**6882902**	**7980709**	**8992322**	**9882865**	**10611270**
Capitalization	93.68%	69.72%	52.80%	40.25%	30.53%	22.87%	16.58%
Net debt	0.00%	25.67%	43.80%	57.22%	67.61%	75.80%	82.50%
Capitalization + net debt	**93.68%**	**95.39%**	**96.59%**	**97.48%**	**98.15%**	**98.67%**	**99.08%**
Given value of taxes	6.32%	4.61%	3.41%	2.52%	1.85%	1.33%	0.92%
Total	**100.00%**	**100.00%**	**100.00%**	**100.00%**	**100.00%**	**100.00%**	**100.00%**

Note: Compiled on the basis of information provided on official websites [9,12,13,14].

An analysis of the results shows that with a decrease in the share of shareholders and the state in the capital structure of the company, the share of value attributable to creditors and other investors grows and, accordingly, the level of debt and the risk of the capital structure of the company. The value of the company reaches its maximum value with a debt level of 60%. Not least of all, this is due to the fact that at the end of 2018, the company's net debt almost coincides with the increase in its capitalization over the same period.

Analysis of changes in the price of an ordinary share in PJSC "Gazprom" in accordance with a change in the capital structure

The purpose of the analysis is to demonstrate the fact that the maximum value of shares of a public company is consistent with the debt optimal structure of its capital, taking into account the prices of equity and borrowed capital and the risk of sources of financing, proven in the works of Professor M. A. Halikov and his students [1,2,3,4,7]).

Based on the data obtained, it can be concluded that the maximum price of a company's share is achieved at a debt level of about 30-35%.

Optimal capital structure of PJSC "Gazprom" (concluding observations).

According to Tables 1-5, it can be argued that at the current stage, the optimal value of PJSC "Gazprom" capital structure corresponds to a level of approximately 30-35% of the debt burden. In this case, the price of one share of the company reaches its maximum value of 155.50 rubles, and the value of the weighted average price of capital - 12.67% (the price of equity - 12.64%, and the borrowed - 11.96%).

Table 5.

Price, number of shares and capital structure of PJSC "Gazprom"

D/(D+E)	**0%**	**10%**	**20%**	**30%**	**40%**	**50%**	**60%**
Capital structure (debt level)							
Company capitalization	4335362	4011936	3634000	3212456	2745487	2260348	1758856
Net debt level	0	1477056	3014400	4566816	6080045	7490919	8754637
Capitalization + Net Debt Level	**4335362**	**5488992**	**6648400**	**7779272**	**8825532**	**9751267**	**10513493**
Number and price of ordinary shares							
The number of ordinary shares	29 691	26 703	23 673	20 661	17 768	14 925	12 239
Share price	145.98	150.28	153.50	155.50	154.80	150.15	143.02
The ratio of stock price to earnings per share.	2.44	2.39	2.32	2.23	2.13	2.00	1.83

Such capital costs are not higher than the global ones and allow the oil and gas company to remain competitive in the main field of activity even in conditions of sanctions and the absence of strategic sources of financing. However, a decrease in investment activity in the real sector of the Russian economy may adversely affect the company's performance in the financial and investment spheres of activity. In this case, the possibility of choosing the optimal capital structure of the company will be called into question due to the lack of sufficient volumes of "cheap" and low-risk financing (if you do not take into account state subsidies and transfers for particularly costly projects).

Self-financing of the operating and investment activities of a large company is inefficient due to the high cost of capital, possibly for a short time interval, and is a forced reaction to an unforeseen reduction in available borrowed funds.

Under the conditions of sanctions, the growth of borrowed capital sources of PJSC "Gazprom" and other large Russian commodity companies is associated with the domestic financial market, and the growing capitalization of companies becomes the stimulus for its activation. Under these conditions, the priority in assessing the optimality of the capital structure of a large company in the real sector of the economy should be transferred from the "classical" effect of financial leverage to the relationship between the capital structure and the level of capitalization.

In this regard, we note that according to the results of 2018, the level of capitalization of PJSC Gazprom is slightly higher than the level of the company's net debt, and the growth of its market value corresponds to the growth of the debt burden.

The above and other features of the institutional development of the Russian economy at the stage of completion of market reforms require further analysis and generalization using data from other companies and industries, which will confirm or refute the above conclusion.

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有效学习作为生产力工具
EFFECTIVE LEARNING AS A PRODUCTIVITY TOOL

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抽象。 本文介绍了作者对公司学习过程的看法，认为这是提高组织生产力的一种工具。 本文反映了相对较高的劳动力成本在俄罗斯劳动生产率低下的问题的相关性，并指出需要提高企业培训过程的有效性。 阐述了企业教育效率低下的主要原因，并提出了一种反映有效培训主要组成部分的算法。

关键词：培训，培训效果，生产率，培训效果评估，教育过程的组成部分

Abstract. *The article presents the authors' view of the corporate learning process as a tool to improve the organization's productivity. The paper reflects the relevance of the problem of low labor productivity in Russia with relatively large labor costs and the need for increasing the effectiveness of the corporate training process is indicated. The main reasons for the inefficiency of corporate education are formulated and an algorithm is presented that reflects the main components of effective training.*

Keywords: *training, training effectiveness, productivity, assessment of the effectiveness of training, components of the educational process*

At the present stage of economic development, the competitiveness of any organization is ensured, first of all, by the presence of competent and motivated personnel. Personnel is the most valuable resource of a post-industrial society, much more significant than natural or accumulated wealth. Studies show that 64% of economic growth is due to human and social capital, and only 16% is due to physical capital and 20% to natural capital. [1] However, it is the human resource that is used the least efficiently.

The current situation in Russia is characterized by a decrease in the level of labor productivity. According to the Ministry of Economic Development of the Russian Federation, the labor productivity indicator in Russia is one of the lowest in the world and amounts to 101.9%, including purchasing power parity. The number of hours worked in Russia per person per year is 15% more than in the USA and 30% more than in Germany [2].

Market Watch, using data from thirty-six countries, estimated per capita GDP as well as productivity levels and found out which countries earn the most in less time. Labor productivity in Russia is less than $ 5.6 per hour. [3] Against the background of the rest, Russians work quite a lot - 1974 hours a year, about the same as in Chile. Above figures are only in Greece (2035 hours), South Korea (2113 hours) and Costa Rica (2212 hours). Mexicans work the most - 2255 hours a year, but their labor costs about $ 3.7 per hour.

One of the most significant reasons for the low productivity of labor is considered by modern managers - the low efficiency of employees in fulfilling their tasks. The reasons for inefficient work are considered to be:

- insufficient professional level of employees and, as a result, the inability to service new technologies;
- unreadiness for changes on the part of staff due to a low organizational culture;
- non-working motivation system.

Thus, the problem of high productivity is not in the use of modern equipment, machines, tools and technologies, but in a well-built personnel management system, in the relationship between managers and workers.

Shortening the life cycle of knowledge, necessitates their constant updating. The knowledge gained in various educational institutions is rapidly becoming obsolete. The knowledge of graduates of the beginning of the century became obsolete after 30 years, modern specialists should be retrained much faster. There is even the concept of "half-life of competence", which defines the period of time for which half of the existing knowledge becomes obsolete. The lack of competencies, not only does not allow the employee to effectively implement the tasks assigned to him, but also reduces his level of motivation. The increasing uncertainty and dynamism of the external environment, a shorter life cycle of knowledge, a change in the nature of work and values, the development of information technology are causing the interest of company leaders in the so-called "soft skills". It is known that in the professional field a person's success is 85% dependent on soft skills and only 15% on hard skills.

Currently, interest in the education system is growing, and the costs associated with staff training are beginning to be considered as priority and necessary. More and more organizations are training personnel at various levels, many organiza-

tions in Russia and abroad are introducing the idea of creating a system of continuing education for employees (the concept of a "learning organization"). According to the results of a statistical study of the “Competence” business portal, 57% of respondents said that the organization has a long-term staff development system.

It is important to note that, despite the fact that many leaders of large domestic organizations are already convinced that staff training and development is synonymous with increased profits, small and medium-sized businesses do not always consider staff training a way to increase efficiency.

According to BusinesStat, in 2018, the market for continuing professional education in Russia grew by 12.4% and reached 103.8 billion rubles. In France, companies spend up to $30 billion a year on training, in the UK - up to $40 billion, in the USA - more than $ 50 billion.

In terms of population education, Russia is one of the top lines in the world ranking, and in terms of labor productivity - one of the most recent. According to the rating of the countries of the world [4], in terms of the educational level index for 2018, Russia takes 32nd place with an indicator of 0.832. The first place in the ranking is occupied by Germany, with an indicator of 0.94 and, last, 189th place, - Niger with an indicator of 0.214. In the ranking of the effectiveness of national education systems covering 50 countries, the United States leads - 100%, Russia - 49.1% takes 34th place immediately after Chile (49.7%) and, last, Indonesia occupies the 50th place - 36.9 %

Despite the good rating, the most acute problem in the practice of developing and conducting training programs is the problem of the effectiveness of training. Moreover, it relates not so much to individual programs as to the effectiveness of training in general. Quite often, after undergoing training, the results of the personnel’s work do not change, and if they do, they change so insignificantly that it becomes a pity for the funds spent on training. Quite often, the main problem in organizing systemic education of personnel is the inability to measure the effectiveness of the educational program.

Assessment of the effectiveness of training is an important stage in the process of staff training and requires a lot of time and high competence of specialists conducting this assessment. Evaluating the effectiveness of training programs implemented by the organization is necessary in the first place to determine the degree to which learning objectives are achieved. Based on MSIEM Research, in Russia, only 25% of managers determine what competencies (knowledge) are missing for its employees before starting training. It is also very important to understand that the improvement in the work of employees occurred precisely as a result of training. Kirkpatrick D. [5] states that the effectiveness of staff training is 50% dependent on post-training work with training participants and only 24% depends on the training process itself and 26% on what knowledge a person came with.

The reasons for the ineffectiveness of corporate training are the lack of connection between the goals of personnel management and the strategic goals of the organization, since this does not allow to determine the real needs for training, the choice of the training format that is inconvenient for employees, the dates and venue, training only hard skills without soft skills, or vice versa. But the most important is the fact that employees who are sent for training are absolutely not motivated [6], because they do not know what and why they should be trained. There is no connection between raising the level of education and raising wages or career growth and, therefore, there is no way to broadcast the employee the goals of his training, and the procedure for evaluating the effectiveness of training becomes impossible.

To ensure the effectiveness of staff training in the organization, it is necessary to adhere to the following algorithm:

1. Identify training needs based on the strategic goals of the organization and the goals of the functional units. As a result, it should be determined which of the organization's employees should be directed to training and what competencies it lacks.

2. To convey to the employee the goals of his training from the position of achieving the organization and the expected personal effect, for example, raising salaries, promoting the career ladder, participating in a new project, etc.

3. Choose the optimal training format, dates, time and place of classes, taking into account the real capabilities of the employee.

4. Develop criteria for assessing learning.

5. Organize feedback and analysis of learning outcomes.

Thus, corporate training is the primary tool to minimize the main causes of low labor productivity, and increasing the effectiveness of staff training is one of the most important tasks of the head of a modern organization.

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项目管理中团队合作的方法论方法

THE METHODOLOGICAL APPROACH TO TEAMWORK ORGANIZING IN PROJECT MANAGEMENT

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抽象。 本文介绍了作者对技术复杂的对象项目管理中的团队合作过程的看法。 该研究检查了不同作者的现有团队建设模型，确定了他们的特征，并在项目管理框架中介绍了作者进行团队建设和团队合作评估的方法。 作者提出的方法包括针对项目经理和项目团队成员的团队建设算法，分为两个语义类别：团队合作诊断和团队互动效率提高。 本文还重点介绍了降低项目管理团队合作效率的主要问题。

关键词

团队，方法论方法，团队建设，团队合作，项目管理，核工业，团队绩效组成部分，团队绩效评估。

Abstract. *The article presents the authors' view on the process of organizing teamwork in technically complex objects project management. The study examines the existing team building models of different authors, identifies their features, and presents the authors' approach to team building and teamwork evaluation in the framework of project management. The approach presented by the authors includes the team building algorithm for project managers and project team members, divided into two semantic categories: teamwork diagnostics and team interaction effectiveness improving. The paper also highlights the main problems that reduce the teamwork effectiveness in project management.*

Keywords: *Team, methodological approach, team building, teamwork, project management, nuclear industry, team performance components, team performance evaluation.*

Project management has been actively implemented in various types of economic activities in recent years. Increased attention to project management issues is due to the business environment increasing dynamics, growing competition, the need to respond quickly to the external environment rapid changes, and the methodological solutions relevance to management problems. Today, project management is becoming one of the key tools for effective management and is a methodology for organizing, planning, accounting and analyzing project resources, aimed at achieving goals in terms of tasks, cost, time, quality composition and scope. Companies are increasingly faced with the need to manage their projects; however, research shows us that about a third of companies do not achieve their goals, do not meet the deadlines and budget. [1]

Every project manager strives to achieve project goals as effectively as possible, optimizing project time, quality, and cost. But he often faces a lack of time to address strategic issues due to the need for regular management and current operational tasks monitoring. There are problems with projects teamwork organizing, delegating functions and tasks, and ensuring employee involvement in project activities. These are typical problems of the manager when managing projects.

It is necessary to develop new approaches to the practice of project management in Russian enterprises. The analysis of typical problems in project management allowed us to formulate the hypothesis of the study: creating a single project team – the possibility of solving these problems in project management. If the Manager will pay attention to the issue of team building, it will allow:

- to get new competencies in the field of team building and teamwork organization;
- to develop team interaction skills of project team members;
- to create an effective self-controlled work environment that does not require constant supervision of the manager.

The team building theory and practice development is considered in the papers and books of such authors as R.M. Belbin, T. Bazarov, I. Adizes, B. Tackman, and others. The “human relations school” founders suggest that top managers timely establish and define relationships in small informal groups, paying special attention to a leader identifying, in order to use the psychological and social characteristics of such groups, regulating interpersonal relations and increasing workers satisfaction level. Bruce Tuckman, one of the famous psychologists, first mentioned the team development stages names in his article “Developmental Sequence in Small Groups” (1965). He used them to describe the stages sequence that teams went through on their way to high performance.

The role-based approach also has several team building models. The main and most common is the model of R.M. Belbin. It is based on the principle of functions or roles complementarity necessary for employees’ joint activities to form an

effective team. Just like the Belbin's model the Bazarov's model provides managerial potential assessment through a role-based approach. I. Adizes also gives his classification. The Adizes model highlights the functions that a complementary team must perform, since no one can handle them alone.

Despite the relevance of these models use and the problem general knowledge, as a rule, the task of creating an approach to team building in the framework of project management was not set. And there is a need for further methodological developments in the fields of team building and teamwork effectiveness improving in project management and interaction within project groups. The development of an appropriate team building theory is a prerequisite for the project management effectiveness improving. It provides methodological integrity, theoretical development and practical significance of the project management methodology.

The purpose of the study is to develop and adapt the author's approach to team building and teamwork organizing in the framework of project management. The theoretically constructed principles and the teamwork level indicator are used for the hypothesis empirical verification. Based on the formulated purpose and hypothesis the main objectives are:

- suggest an author's team building algorithm for project managers and project team members;
- to develop trainings for developing project team members interaction skills;
- to choose an indicator of the teamwork level;
- to determine the methodology for the team performance indicator calculating;
- to test the approach proposed for project team members.

The key principles of the proposed methodological approach to teamwork organizing within project management are:

- getting positive team interaction skills;
- improving relationships within the project team;
- reaching agreement within the team, i.e. developing a common behaviour concept in the team;
- developing discussions and meetings rules to discuss goals, roles, working and interacting ways, and expectations;
- the teamwork importance understanding for efficiency increasing both within the individual professional activity and for the entire company;
- articulating the project team members strengths and weaknesses through feedback, which is necessary for team members self-correction and has a positive impact on the work results.

As a result of this approach, an effective self-controlled work environment should be created that does not require constant monitoring by the project manager.

The authors' approach to team building and teamwork evaluation in the framework of project management includes the six stages team building algorithm for project managers and project team members, divided into two semantic categories: teamwork diagnostics and team interaction effectiveness improving.

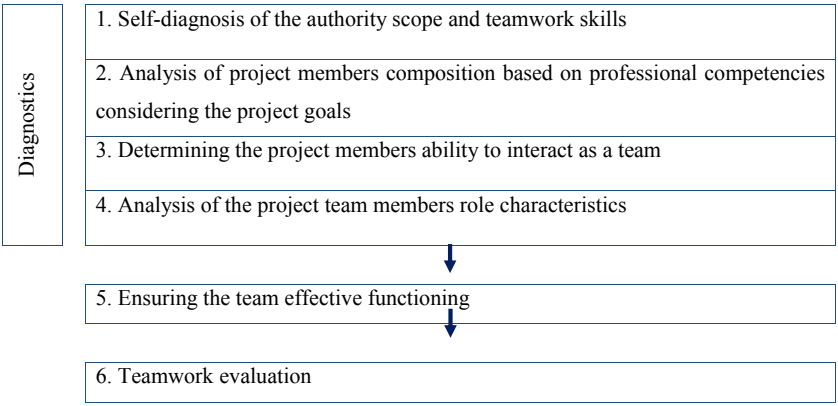

Figure 1. *Team building algorithm for project managers and project team members*

Let's consider each of the team building algorithm stages in more detail.

Stage 1. Self-diagnosis of the manager's authority scope and his teamwork organizing skills. At this stage, the manager independently determines how much of his authority is enough at each project management process stage for all functional areas. In addition, the manager evaluates his teamwork organizing skills during the previous projects implementation. [3]

Stage 2. Analysis of project members composition based on professional competencies considering the project goals. This diagnostics stage is carried out in order to identify opportunities for project implementation based on the professional competencies available to employees. This stage allows to identify whether the project team members professional competencies correspond to the project implementation tasks, and to build a responsibility matrix for each functional area of project management. [4]

Stage 3. Determining the project members ability to interact as a team. At this diagnostics stage, the project members' ability to work as a team is evaluated, "non-team players" are identified, and motivational factors are determined for each project group member. It ensures effective team interaction. [5]

Stage 4. Analysis of the project team members role characteristics. This diagnostics stage is carried out to determine the team role structure and to identify the team members dominant roles in order to ensure organizational responsibilities effective distribution in accordance with the role characteristics.

Stage 5. Ensuring the team effective functioning. During this stage, the selection of approaches and tools for effective team building takes place in accordance with the diagnostics results. Here you can use exercises to increase emotional cohesion and improve communication; trainings to increase interaction and role complementarity; problem-oriented sessions; exercises to develop rules for teamwork.

Stage 6. Teamwork evaluation. Teamwork evaluation is marked by the final stage in the developed algorithm procedure. However, it should be noted that the evaluation process is implemented throughout the project lifecycle and it is appropriate to consider it as a separate procedure.

We can identify the main problems that reduce the teamwork effectiveness in project management:

- unclear objectives of the project;
- the lack of resources for the project implementation;
- insufficient authority of the project manager;
- ineffective interpersonal communication;
- insufficient motivation of the project manager [6].

Considering the logic of the team building algorithm developed by the authors, the following components of team performance were defined as:

1. Necessity and sufficiency of a project manager's authority.

If the project manager does not have enough authority, then he cannot have an effective impact on the team members. If the manager has excessive powers, then there may be biased understanding of the teamwork situation, conflicts caused by excessive ambition and arrogance. Necessity and sufficiency of a project manager's authority can be defined as whether the project manager has authority at every project lifecycle stage and within every project functional area.

2. Compliance of the professional competencies actual composition (set) of project team members with the required composition (set), in terms of achieving project goals (terms, costs, quality).

If there're no competencies or there're not enough people with competencies, then there's a risk of the project implementation period disruption, of the project costs increasing or quality parameters reducing. If there're excessive competencies, there's a situation of team members underemployment and self-realization and, as a result, the project members motivation reducing and the risk of conflicts within the team.

3. The cohesion of a project team.

The degree of group members cohesion and interdependence determines their willingness and ability to interact effectively when performing a task. The criterion for the team cohesion degree can be mutual trust and respect for each other, determined by project team members survey [7].

4. Motivation of project team members.

Any project success depends on the extent to which the project team realizes its professional potential. Unmotivated participants slow down the project speed, which causes other participants and management frustration. The right motivational policy within the project team allows every team to achieve maximum synergy and overall work high efficiency.

5. Involvement of project team members.

Involvement is the group members state in which they strive to do their job as best as possible. Involvement is determined by how a group member speaks about his team, does not look for an opportunity to change it, and strives to do his job and achieve results in the best possible way.

The authors' methodological approach to teamwork organizing in project management is quite universal and can be adapted to various projects (situations, industries).

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EAEU框架中的风险管理系统：理论与实践
THE RISK MANAGEMENT SYSTEM IN THE FRAMEWORK OF THE EAEU: THEORY AND PRACTICE

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抽象。 整个海关系统成功运作的必要条件是及时识别和抑制风险。 如今，风险管理系统（以下简称RMS）已成为在海关中执行此功能的有效工具。 本文讨论了欧亚经济联盟海关风险控制领域中使用的RMS的实践和理论方面，分析了在现代条件下在海关当局工具中实施RMS的问题。

Abstract. *A necessary condition for the successful functioning of the customs system as a whole is the timely identification and suppression of risks. Today, the risk management system (hereinafter referred to as RMS) acts as an effective tool to perform this function in customs. This article discusses the practical and theoretical aspects of the RMS used in the field of customs risk control in the Eurasian Economic Union, analyzes the problems of its implementation in the tools of customs authorities in modern conditions.*

Subject of the study: *risk management system (hereinafter RMS) in the activities of the EAEU customs authorities.*

The purpose of this article *is an analysis of RMS as a mechanism that facilitates the search and timely prevention of customs risks, substantiates the need for its application in the activities of customs authorities of EAEU countries.*

Methodology *of the study compiled comparative, analytical, and systemic methods.*

The authors note that the basis of EAEU is not only many years of experience in joint cooperation in various fields of activity, but also a sufficient number of problem areas, factors that hinder the development of the association. Attention is drawn to the fact that protection against those risk situations faced by the union is difficult, however, the possibility of their timely determination and elimination exists. An effective apparatus performing this function and, as a result, ensuring the interests of participants in foreign economic activity is the risk management system (RMS).

Conclusions *of the study can be used to improve the risk management system taking into account the analysis of its practical application and identification of its problematic aspects in the activities of EAEU customs authorities.*

关键字：EAEU，风险管理系统（RMS），海关，国际贸易，经济安全，《京都公约》，风险水平，外国经济活动的参与者。

Keywords: *EAEU, Risk Management System (RMS), customs, international trade, economic security, Kyoto Convention, risk levels, participants in foreign economic activity.*

Russia's foreign economic policy is aimed at close interaction with other states on the basis of the provisions of the Kyoto Convention, which declares the principles, the adherence to which ensures the process of accelerating the foreign trade exchange of various goods transferred across the territorial borders of the Eurasian Economic Union. Foreign trade activities cannot do without customs risks arising in the process of exchange processes.[1]

It should be borne in mind that customs risks imply the likelihood of non-compliance with customs legislation, such risks are directly controlled by the customs authorities.

Identification of risks and their elimination is an integral element of the work of customs authorities, contributing to the successful functioning of the entire customs system.

Risks are significant for the effective development of any enterprise. In a planned economy in the USSR, risk situations did not occur. This was due to the

[1]Zakharova M.I. The risk management system in the innovation process //// Problems of management theory and practice – P. 11-14 URL: file:///C:/Users/User/Downloads/sistema-upravleniya-riskami-v-innovatsionnom-protsesse.pdf

fact that economic risk could not arise where production was provided by the plan. Consequently, this area of creating a safe financial environment has not been investigated. However, at the moment, given the innovative development of the business, more and more such barriers arise.

The understanding of risk as such is primarily associated with the assessment of a person who considers a particular situation in the process of economic activity as an event that, with a certain degree of probability, may turn out to be risky or unfavorable.

Risk is a consequence of uncertainty, which in turn arises from a lack or distortion of information necessary to overcome a state of uncertainty.

Today, in world practice, a risk management system (RMS) is being implemented, which is an effective mechanism aimed at the fulfillment by the customs authorities of the task of working with risks. Such a system consists of specific elements that are united by a single structure and aimed at achieving a certain common goal as part of the risk management process in customs. This process is the activity of customs authorities in the field of analyzing information about the actions of individuals, as well as the results of customs procedures, assessing risk situations, implementing measures to prevent them, and identifying areas of increased risk. [2]

Considering the risk management system, it should be noted that it requires its inclusion in the general system of identifying and eliminating possible risk situations.

As for the innovative development of the modern economy, it should be noted that the level of profitability in the implementation of innovative projects, as a rule, determines the degree of probability of a risk situation. Therefore, it is impossible to avoid risks to the full extent, because they accompany any innovative project, in particular, to a greater extent the most profitable ones. The success of any innovation activity is divided into two main types. This is a market and technical success. It should be noted that the first is possible with a lesser degree of probability than the second, which is due to the fact that when studying the possibility of market success, it is necessary to take into account not only scientific and technological achievements, but also marketing activities. As a result, in order to solve the problems arising on the way of solving the problems of innovation development in a modern market economy, there is a need to introduce an effective risk management system.

Effective implementation of RMS was carried out in accordance with the Framework Standards, recommendations of the World Customs Organization (WCO), as well as the experience applied in European countries regarding the use of automated risk determination systems. Moreover, the development and im-

[2]Matveev B.A. Risk Management System /// Bulletin of the South Ural State University. Series: Economics and Management-P.12-26. URL: https://cyberleninka.ru/article/n/sistema-upravleniya-riskom

provement of RMS in EAEU countries should be characterized by high autonomy, proof of this is the presence of the only supranational document, the Customs Code of the Customs Union, which regulates the use of RMS.[3]

The national security of the country, which involves reducing the volume of illegal trade, terrorism, and money laundering, is directly correlated with the quality of the fulfillment by the customs authorities of the appropriate powers, in particular in the field of combating risk situations. Moreover, the elimination of risks after their timely identification determines the amount of revenues to the state budget from foreign trade activities.

Today, the development of the global economy is characterized by an accelerated pace, which necessitates the implementation of more stringent requirements for proper customs control, in which customs operations should be accelerated, provided that they remain effective. RMS helps to solve this problem.

Addition to RMS are modern information technology. These are automated software tools, that is, algorithms for processing information about objects transported across the border. The purpose of using such tools is to identify the movement of goods with an increased level of risk. The introduction of information systems will allow you to analyze the information available to including foreign customs authorities; there is no need to check each set of goods transported. It is important to note that the requirements of an administrative nature regarding transit through the customs territory will decrease.

As a source of information about the current level of potential risks, tools to reduce the negative consequences of their activation, a risk profile is an electronic document that reflects the specifics of the application of control measures to certain goods, for example, customs inspection or examination.

The fundamental principle on which RMS is built is the selectivity of customs regulation. Selectivity implies that items that, in accordance with the risk profile do not require strict control by the customs authorities, will be subject to its simplified documentary form. The advantages of this approach are: 1) saving time on extensive control, and 2) increasing the efficiency of the control process by customs services.[4]

The external environment is in constant change, transformation, as a result, there is a need for constant monitoring of risks, which, today, is possible only if the RMS is improved.

[3]Nikolaev A.S. The activities of the customs authorities of the Eurasian Economic Union in the framework of the risk management system //// Society: politics, economics law – P. 5-7 URL: https://cyberleninka.ru/article/n/deyatelnost-tamozhennyh-organov-evraziyskogo-ekonomicheskogo-soyuza-v-ramkah-primeneniya-sistemy-upravleniya-riskami

[4]Lebedeva D.A., Lileeva L.A. The principle of selectivity as the main instrument of the institute of customs control // Young scientist. — 2016. — №10.1. — P. 39-42. — URL https://moluch.ru/archive/114/29407/ (appeal date: 24.05.2019).

Analyzing the problems that impede the use of a single risk management system by EAEU states, it should be noted that these are protective actions that are applied by individual members of the union through RMS. Thus, the policy pursued by the Government of the Russian Federation in relation to import substitution and the Russian embargo on the EU and the USA does not have the support of other countries that are members of the association, which, today, is one of the main reasons why risk zones will remain subject to the introduction of a single RMS in EAEU, because such risks will be regulated exclusively at the national level and on the basis of the legislation of the country that is interested in solving problems that are excluded from the general system. However, at the same time, RMS EAEU can be used to regulate customs value and systematize goods.

Regarding the conditions for the use of RMS in EAEU, it should be noted that there are no all-Union profiles in the field of joint activities by EAEU members, since their creation at this stage is impossible from the technical side. At the same time, the EAEU customs authorities have a joint exchange of information and common operations to combat the movement of goods prohibited for import to the territory of the member countries of the Union, however, the results of such work are formalized in risk profiles in each country individually, independently.

Concretizing the shortcomings of RMS[5], it should be noted that this system slows down the process of trading focused on the foreign market in many respects. The reason for this is the existence of constant verification procedures implemented in order to reduce risks in relation to moving objects, which leads to a shift in the delivery time and acts as a factor in the occurrence of significant costs. The most costly in relation to the time factor is customs inspection, which in turn acts as a more effective regulatory method compared to simplified documentary checks.

The goal of the customs authorities of EAEU states can also be to reduce pressure on participants in economic activity, which is a factor in introducing innovative ways of categorizing persons moving goods across the Union into the system. So there are companies that are classified as controlled according to a simplified scheme, including the implementation of risk reduction measures. Such benefits in relation to individual firms become a motivation for other market participants not to violate customs laws. This categorization system is aimed at reducing the number of customs inspections and other control operations, and therefore, accelerating the production of goods under customs declarations. Of course, enterprises assigned to the "green sector" are checked, but control measures are carried out in relation to their activities much less often. It is possible to reduce the pressure on the business with the help

[5]Suglobov A.E., Repushevskaya O.A. "Assessment of the economic potential of modern consumer cooperation." International scientific conference "Scientific research of the SCO countries: synergy and integration" ("Scientific research of the SCO countries: synergy and integration") - 2019, October 29. Location – Beijing, China (together with participants from Minzu University of China). Organizers - Minzu University of China, Haidian, Beijing, PRC P. 35-41.

of an automated procedure for registering declarations emanating from companies classified as low risk situations. The modern customs system is aimed at improving the selection system for companies to indicate their position in the customs system.[6]

As for other innovations in customs administration, it is necessary to note the activities of customs authorities, focused on the declaration in electronic format and the actual control carried out at the locations of goods. Moreover, prerequisites are being formed for creating an information mechanism intended for tax and customs services.

For the modern customs system, the introduction of an end-to-end control system that tracks goods at all stages of turnover is promising. The specificity of such a mechanism is in the electronic format of document circulation of invoices. Moreover, it is supposed to use a document that ensures the interaction of the executive body of the federal level and the taxpayer proper.

The practice of implementing RMS in Russia demonstrates the low efficiency of regulation of economic entities that are not included in the list of companies with a low level of probability of negative consequences. Risk deliveries are determined directly at the declaration stage, which is why the bulk of the efforts by the customs authorities are directed to this stage of risk analysis. At the same time, a slightly different approach has been taken in international practice: authorized persons conduct a risk analysis, working with information received prior to the importation of goods, that is, all persons who are involved in this process are evaluated. In particular, in the United States there are several programs aimed at collecting and analyzing this kind of information, which ensures quality control. A similar risk analysis mechanism in China is characterized by information processing, which goes through integration stages through information tools (data pipelines). This implies an analysis of risky deliveries at the first stages of their implementation. Such experience in risk assessment in customs procedures can be applied in Russian practice to increase the effectiveness of control.

The most significant difference between management systems in EAEU countries and some other states (USA, China, etc.) is the mandatory assessment of the amount of available resources aimed at eliminating risk situations. So, in the United States, work is being carried out to organize activities related not only to identifying signs of possible negative consequences, but also choosing the most beneficial actions to minimize them[7].

[6]Dudova M.V. The use of risk categorization of participants in foreign economic activity in the organization of customs control after the release of goods // University Bulletin P. 5-7 URL: https://cyberleninka.ru/article/n/ispolzovanie-risk-kategorirovaniya-uchastnikov-vneshneekonomicheskoy-deyatelnosti-pri-organizatsii-tamozhennogo-kontrolya-posle

[7]Shakhova, M.S., Smorodinova, M.V., Repushevskaya, O.A., Tkach, A.V., Balalova, E.I., Saydulaev, D.D. Digital education in the context of the development of the digital economy: Technological opportunities and prospects// International Journal of Innovative Technology and Exploring Engineering. 2019. Vol. 9 (1), P. 3972-3976. https://www.scopus.com/inward/record.uri?eid=2-s2.0-5075125706&doi=10.35940%2fijitee.A5066.119119&partnerID=40&md5=28fec37a2ed18da729c5b0f44602daa6 DOI: 10.35940/ijitee.A5066.119119

Thus, the results of the study showed that the risk management system is an advanced tool for implementing the risk analysis process in the customs system. The risk management system in EAEU's activities allows us to ensure the effective implementation of the regulatory function in the customs system, accelerate the movement of goods for which there are no signs of risky deliveries, focus attention and take appropriate measures to eliminate them in high-risk areas.

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EAEU: 趋势, 问题, 合作前景
EAEU: TRENDS, PROBLEMS, PROSPECTS FOR COOPERATION

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抽象。 海关合作–是建立一个单一的数据库（用于部门之间的即时信息交换，外国经济活动参与者的注册等），货物端到端控制系统的建立， 在过境交通领域，引入导航封条。 因此，与不同国家合作对国家的有效发展和福利至关重要。在该协会本身的框架内分析EAEU成员国的某些活动领域，包括现有问题和趋势，并注意发展前景。

Abstract. *Customs cooperation - is the creation of a single database (for instant exchange of information between departments, for the registration of participants in foreign economic activity, etc.), the creation of an end-to-end control system for goods, cooperation in the field of transit traffic, the introduction of navigation seals. Therefore, it is very important to cooperate with different countries for the effective development and welfare of the country. Analysis of some areas of activity of the EAEU member countries within the framework of the association itself., Including the existing problems and trends, as well as paying attention to development prospects.*

Research methodology *included comparative, formal legal, analytical, systematic methods.*

It is worth noting that the article assesses the economic effect of integration interaction

Conclusions *of the research can be used to optimize the detection and investigation of fraud in receiving payments.*

关键字：EAEU，发展，俄罗斯，吉尔吉斯斯坦，亚美尼亚，首都，白俄罗斯，哈萨克斯坦。

Keywords: EAEU, development, Russia, Kyrgyzstan, Armenia, capital, Belarus, Kazakhstan.

The Eurasian Economic Union (EAEU) - is a young integration association[1]. It has been operating in the customs union regime since 2011. In the regime of the economic union - since 2015. EAEU is created on the basis of a certain understanding of the long-term political and economic goals of the participating countries. EAEU ensures the free movement of goods, services, capital and labor, as well as coherent policies in economic sectors. The goals of the creation of EAEU are:

·comprehensive modernization, cooperation and increasing the competitiveness of national economies;

· creating conditions for the stable development of the economies of member states in the interest of improving the living standards of their population.

In the framework of the EAEU [2]:

· the domestic market for goods is functioning;

·the EAEU Unified Customs Tariff and other uniform measures for regulating the foreign trade of goods with third parties are applied;

· there is a unified mode of trade in goods in relation to third countries;

· unified customs regulation is carried out;

· free movement of goods between the territories of the Member States without the use of customs declaration and state control (transport, sanitary, veterinary, quarantine phytosanitary).

In respect of third EAEU countries, uniform measures of non-tariff regulation are applied, such as:

· a ban on the import and (or) export of goods;

· quantitative restrictions on the import and (or) export of goods;

· exclusive right to export and (or) import goods;

· automatic licensing (monitoring) of export and (or) import of goods;

· permit procedure for the import and (or) export of goods.

[1]Eurasian Economic Union. – St. Petersburg: EDC EDB, 2017 – 11 P.

[2]Economics and Life - Analytical Site [Electronic Resource]: EAEU Customs Union - Access: https://www.eg-online.ru/article/329659

EAEU as an economic community has several structural characteristics, largely determined by its past and determining its present and future.

About 86% of the total GDP is produced in Russia, about 10% in Kazakhstan, the remaining 4% in Belarus, Armenia and Kyrgyzstan. The same goes for population: Russia has 146 8 million people, or 80% of the total population of EAEU. In second place is Kazakhstan with 17.9 million people (10%). The remaining participating countries together account for about 10% of the population of the Union. These figures are simply a fact from among the basic for the logic of integration building.

Therefore, only on their basis should one give positive or negative assessments or forecasts.

Russia and Kazakhstan are focused on the export of oil, gas, ferrous and non-ferrous metals, as well as on the indirect dependence of other EAEU countries on this factor (through economic ties with Russia and Kazakhstan).

A common economic past from which thousands of production chains, language communities, close families, and social relationships between people were inherited.

Long distances and high transportation costs are a serious obstacle to mutual trade. Given the huge size of Russia, the distance between some members of the Eurasian Economic Union (for example, between Belarus and Kazakhstan) is very large. Indeed, EAEU members trade mainly with Russia, but not with each other.

After a sharp decline in the economy of the 1990s, since the beginning of the 2000s, in all five EAEU countries, per capita GDP growth has been observed. On the other hand, the difference between the richest countries (Kazakhstan and Russia) and the poorest Eurasian Economic Union (Kyrgyzstan) is on average about 7 times, since the level of productivity and growth rates always differ significantly.

As for the characteristics of the participating countries, there is also something to talk about.

The nominal GDP of Russia for 2018 amounted to $ 1306 billion[3]. According to this indicator, Russia ranks sixth in the world. In terms of purchasing power parity, the Russian economy climbed to 6th place (according to the International Monetary Fund and the World Bank), while Russia took 55th place in GDP per capita in 2016. The extraction of minerals, especially oil and gas, remains the main driver of the economy. However, in recent years there has been a statistical decrease in the share of oil and gas production in GDP. Before the 2008 crisis, real GDP grew by an average of 7% per year. 5%, the ruble against the US dollar is gradually growing, and by 2007 inflation fell below 10%. However, the global financial crisis hit Russia hard.

[3]Russia in numbers. 2018: Short stat. rep./Rosstat - M., R76 2018 - 501 P.

The high share of foreign capital in the country's banking sector is an important factor contributing to this shock. The main reason for the slowdown in economic activity in the post-crisis period is a decrease in the rate of potential growth. The Russian economy is facing serious structural constraints. Potential growth rates declined from about 4% in 2010 to 1% at the end of 2014. At the end of 2017, Russia's GDP was at about the same level as in the pre-crisis 2008 (according to the latest estimates from Rosstat, GDP in 2017 was only 2% higher than 8% in 2008).

In this sense, we can talk about the loss of a ten-year Russian economy.

Kazakhstan is the largest economy in Central Asia and the second largest in the post-Soviet period after Russia. 20 years ago it was hard to imagine that Kazakhstan's GDP would become even more Ukrainian. Kazakhstan exports raw materials for the mining, fuel, metallurgical and chemical industries. As in Russia, in the structure of Kazakhstan's export, oil and oil products prevail by 35%. Non-ferrous and ferrous metals occupy another 30%. The similar structure of the Kazakhstan and Russian economies reduces the likelihood of asymmetric external shocks in these two countries and thereby increases the stability of integration processes.

The main trading partner of Kazakhstan was Russia, but in the 2000s, the role of China increased dramatically. These statistics indicate that the level of influence of China on the economy of Kazakhstan is growing (the share of China in foreign trade in 2018 was about 16%). After the crisis, fiscal policy led to the fact that the budget deficit and debt increased again, but nevertheless remained very low by international standards (13% of GDP). In recent years, the growth of the economy of Kazakhstan has slowed significantly due to falling oil prices and weak external demand. The authorities, in order to prevent a decrease in the country's competitiveness, weakened almost half the tenge and in 2015 switched to a floating monetary policy. Despite the fact that this step temporarily supports domestic demand, inflation is growing, partially neutralizing the growth of competitiveness of industry and agriculture. By the end of 2016, inflation returned to numbers. In 2017, inflation in Kazakhstan amounted to 7. 22% less than 07 in the previous 2016, 5 more than 00% in the next 2018. In 2017, Kazakhstan took 16th place in terms of world inflation. Kazakhstan is very interested in all areas of cooperation within the Union. We are talking about mutually beneficial projects that contribute to the development of bilateral and multilateral relations within the SCO.

From the point of view of EAEU integration processes, the following main features are characteristic of the Belarusian economy:

1. The transit situation on the way of Russian goods to Europe.

2. Strong dependence on Russia. Russia is the main market for Belarusian goods, as well as the main donor for the Belarusian economy; in Russia, components for Belarusian mechanical engineering products are manufactured.

3. Small trading volumes with other EAEU members.

4. A large share of the public sector in the economy, which impedes growth, primarily Russian investment, is steadily suffering from rather high inflation (usually the highest among the economies of EAEU countries).

Besides, external debt of Belarus grew rapidly at the beginning of the 20th century. The rapid growth of the Belarusian economy in 2003-2008 can be explained by strong external demand, high construction rates at the expense of budget funds, as well as the terms of the contract with Rosneft. However, almost 10% of the period of economic growth ended in other countries of the region with the onset of the global financial crisis. The economy of Belarus showed weak growth (1%) in 2009. Negative trends led to a balance of payments crisis and a sharp devaluation of the Belarusian ruble in the second half of 2011. The subsequent decline is due to several factors: the need to restore savings for households and tightening monetary policy in order to ensure stability in accordance with weak external demand. These factors far outweigh the effects of increased competitiveness as a result of devaluation.

In 2016, the Belarusian economy continued to show negative growth rates, GDP decreased by 2.6% (in 2015 by 3.9%). The decline in output continued in the face of weak domestic and foreign demand amid a conservative monetary and fiscal policy. An additional constraining factor for the restoration of economic growth in the second half of 2016 was the reduction in crude oil supplies from Russia, which affected the dynamics of industrial production volumes. Decrease in output was observed in almost all major sectors of the economy, with the exception of agriculture. For Russia, the Republic of Belarus is also of great importance.

In 2017, the Republic of Belarus occupied the third place in terms of trade, second only to the EU and China - this is more than 5% of all Russian foreign trade. Moreover, not only Russian gas and oil go to Belarus, but also products of the chemical industry, automobile industry, metallurgy, etc. The Union within the EAEU gives Belarus the opportunity to effectively develop its economy. Obtaining cheap resources, the republic simultaneously increases sales of its food and industrial products with a high degree of processing in the Russian markets. It is almost impossible to block such a double benefit from the Eurasian Economic Union: for example, the EU will never provide Belarus with markets or resources at preferential prices.

Analyzing the economy of Armenia from the point of view of integration processes, we note its characteristic features:

1. The exclavity of the rest of the union and the actual economic blockade by Turkey and Azerbaijan.

2. Strong dependence on Russia; Russia is the main market for the sale of Armenian goods, as well as the main source for the Armenian economy (more than 40% of their volume, according to the EDB).

3. Small trading volumes with EAEU members other than Russia.

4. A significant share of remittances of labor migrants and the diaspora (19% of GDP for 2014, according to the World Bank).

The growth rate of the Armenian economy was then measured in double digits. The economic boom in Russia has increased the volume of remittances from the Armenian diaspora, helping to reduce poverty and increasing personal consumption and housing. At the same time, large capital inflows and remittances exerted strong pressure on the dram, which helped contain inflation despite strong growth. The competitiveness of Armenian exports declined amid rising real value of the currency and an increase in the trade deficit from approximately 12% of GDP in 2005 to almost 19% in 2007.

Since the beginning of 2010, low real interest rates and the gradual resumption of remittances have been the main drivers of demand recovery in the private sector. The needs of the government also played a role in economic recovery, as the authorities, with the assistance of international organizations, have successfully continued to pursue counter-cyclical policies. However, economic recovery was relatively moderate. In 2017, the Armenian economy grew slightly. Domestic demand remains weak despite low refinancing rates and fiscal incentives, as well as some support for Russian money transfers at the end of the year. Export remains a key factor in economic growth in Armenia, and government policies to stimulate exports and a positive integration effect within the framework of the Eurasian Economic Union contribute to economic growth.

Indeed, the growth of Armenia's exports (primarily food) is largely due to the influence of joining the Eurasian Economic Commission.

The Kyrgyz economy has the following distinctive features that are important in the context of the Eurasian integration process:

1. In contrast to Belarus and Armenia, in the trade and investment plan, Kyrgyzstan depends not only on Russia, but also on Kazakhstan. Both countries are the main markets for Kyrgyz goods and the main sources of FDI.

2. A long history of political instability, in the context of which Russia and the EAEU now play an important role as a stabilizing anchor.

3. A significant share of the country's GDP is made by remittances of labor migrants (30 3% of GDP for 2016, according to the World Bank). This circumstance significantly influenced the decision of the republic to apply for joining the Eurasian Union.

Like many other developing countries in the region, until 2008, Kyrgyzstan experienced an economic boom caused by a significant influx of capital and remittances. However, political instability had the greatest negative impact on the country's economic development, culminating in the two revolutions of 2004 and 2010.

Under these conditions, investment activity remained very low, and the risks of doing business were exceptionally high. Since the beginning of the 2010s, the situation has returned to normal. The business has the opportunity to plan investments not for weeks, but for years to come. This is reflected both in the numbers of economic growth and in the indicators of inflation. Thus, the country's entry into EAEU in 2015 can become a kind of "anchor" of political and economic stability. Institutional ties with Russia and Kazakhstan should be taken in this vein, and not just in the narrow context of trade and investment.

On April 28, the Council of the Eurasian Economic Commission discussed the issue of removing barriers and restrictions that impede the free movement of goods and services on the domestic market of the Eurasian Economic Union (EAEU).

On March 31, the ECE published the White Paper, a report on the Barriers, Exemptions and Limitations of EAEU. The report contains the terminology of obstacles for the free movement of goods, services, capital, and labor on the Union's domestic market, developed by the Commission together with the Member States.

According to Article 28 of the Treaty on the Eurasian Economic Union, the domestic market covers the economic space in which, according to the provisions of this Treaty, the free movement of goods, persons, services and capital is ensured.

The concept of "four freedoms" includes:

— freedom of movement of goods;

— freedom of movement of services;

— freedom of movement of labor resources;

— freedom of movement of capital.

The barriers of the domestic market refers to barriers, exceptions and limitations of the general name.

Barriers - barriers to the free movement of goods, services, capital, labor to the internal market of the Union, which do not comply with the legislation of the Union.

Exceptions - exceptions (derogations) provided for by the legislation of the Union shall not apply by the Member States to the general rules for the functioning of the internal market of the Union.

Limitations - barriers to the free movement of goods, services, capital, labor to the internal market of the Union, arising from the lack of legal regulation of economic relations, the development of which is regulated by the legislation of the Union.

In general, the "White Book" contains 60 obstacles agreed by the member countries of the existing internal market of the Union. Of these, 17 are exceptions, 34 are restrictions, 9 are obstacles.

The main part of the White Paper is devoted to the flow of goods. This is very important for Kyrgyzstan, whose producers are focused on exporting products to the countries of the Eurasian Economic Union, primarily to Russia and Kazakhstan. Any restrictions negatively affect the activities of the republic and its economy.

Another obstacle in Kazakhstan is non-compliance with the law of the Eurasian Economic Union on the procedure for the purchase of medicines, vaccines and other immunobiological preparations from the budget in the amount of the guaranteed volume of free medical care. With such purchases, preferential conditions for participation in competitive procedures are provided to national suppliers.

Today, Kyrgyz entrepreneurs say that implementing the principle of free movement of goods is virtually impossible for certain types of products.

Deposits on the import of alcoholic beverages, which makes exports not only unprofitable, but in most cases impossible. They expected that after joining the economic union, Kyrgyz alcohol would be actively exported, which did not happen. To solve this problem, it is necessary, first of all, in the field of excise taxes and taxation, to meet the criteria of the EAEU policy, and then make a decision on entering the association's market.

So far, our cooperation with EAEU countries is not profitable. These are not only barriers, but also various non-tariff restrictions, such as,

According to official figures, barriers increased the cost of goods by 15-30%. And their abolition will increase the economic growth of EAEU member countries and their export potential by 15% per year. Thus, according to experts, the restrictions are clearly aimed not only at the interests of entrepreneurs, but also at the integration of the state into a single economic space.

Secure payment applies to all member countries except Armenia. At the same time, in Russia, foreign suppliers are higher than domestic ones in Belarus and Kazakhstan; they charge a fee only from foreign sellers, in Kyrgyzstan, only from suppliers from EAEU countries. This creates discriminatory conditions for exporters.

As for food products and their export to the countries of the economic union, for example, there are many misunderstandings between us, the Rosselkhoznadzor and similar Kazakhstani authorities regarding product labeling. The Customs Code of the Eurasian Economic Union establishes only general requirements. We try to comply with them. However, as a result, the above services return the goods marked with an "incorrect label". Therefore, I would like to receive visual samples of some necessary documents in order to avoid problems in the future. Of course, this cannot be called an obstacle, but the restriction - it is possible.

For small and medium-sized businesses, an obstacle in the full sense of this concept is the supply of products for "industrial" large-scale research.

To fill out a declaration and confirm the quality, that is, bottled water, you need to go through a sample of 52 liters of water! Many businessmen, especially when it comes to expensive goods, will not be able to satisfy such requirements. This is becoming a serious obstacle to export.

Another important obstacle to export from Kyrgyzstan is the presence of veterinary control on the border with Kazakhstan. Indeed, despite the fact that the government has complied with all the requirements of the Eurasian Economic Union, and five other countries have recognized that the republican system can ensure the safety of exporting products abroad, neighboring countries still blocked veterinary control.

And all because there are no business entities under judicial protection of economic associations, said Shamil Boronchiev, executive vice president of the Kyrgyz Union of Industrialists and Entrepreneurs.

In particular, in the Republic of Belarus, in addition to the requirements of the EAEU regulation, sanitary-hygienic inspection procedures have been introduced that are not provided for in the EU treaty. Mandatory for food, baby products, perfumes and cosmetics, oral hygiene products, building materials, household appliances, auto parts, etc.

As for the Russian Federation, the problem of the lack of mutual recognition of national and international driver's licenses in the trade unions of member states for entrepreneurial or labor activities in the territory of another state of the Eurasian Economic Union. The cancellation of such a restriction is of particular importance, since from July 1, 2017, the provisions of the Federal Law "On Road Traffic Safety" limit the possibility of professional or commercial activity of non-residents who do not have a driver's license issued by an authorized body of the Government of the Russian Federation.

A Member State located in the territory of a Member State is not in a position to transit goods for which special economic measures are applied. Currently, an example of the unilateral application of such measures is the application by the Russian Federation of special economic measures against states that have decided to impose economic sanctions against Russian legal entities and (or) individuals or have joined them. These countries include the United States of America, the European Union, Canada, Australia, the Kingdom of Norway, Ukraine, the Republic of Albania, the Republic of Iceland, Liechtenstein and Montenegro. It is forbidden to import into the Russian Federation a number of goods related to agricultural products of these states. In this regard, the question arises of the unhindered transit of such goods through the territory of Russia, which is important for Belarusian transport companies, since they can service their transportation from the EU to Kazakhstan, the Kyrgyz Republic and other countries. Accordingly, in this case, the shortest route passes through Russia.

There are many problems in a competent solution, on which the future viability of EAEU and its further integration largely depend.

In the future, until 2025, within the framework of EAEU, it is planned to implement the "FOUR FREEDOMS" - the complete elimination of barriers to the free movement of goods, services, labor and capital[4]. It is also planned to create a single market for energy resources (it will include a common market for electricity, oil, petroleum products and gas), a single transport space, and a coordinated agro-industrial policy.

EAEU development directions until 2030:

1. Ensuring macroeconomic stability.
2. Creating conditions for the growth of business activity and investment attractiveness.
3. Innovative development and modernization of the economy.
4. Ensuring the availability of financial resources and the formation of an effective union of financial markets.
5. Development of infrastructure and the implementation of transit potential.
6. Development of human resources and the creation of a system of control over the movement of labor.
7. Cooperation in the field of resource conservation and energy efficiency.
8. Interregional and cross-border cooperation.
9. Realization of foreign trade potentials by concluding preferential trade agreements, as well as in the form of dialogue.

Regarding the expectations of EAEU member countries, here are the following:

- expanding sales markets for national products, increasing export opportunities;
- increasing the competitiveness of national business and national goods, attracting more investment;
- development of its own transit potential and transport and logistics infrastructure;
- re-industrialization of the economy, industrial cooperation within the union;
- the creation of a single labor market and the best implementation of existing human capital;
- coordination of economic macroregulation.

We are talking not only about a single energy market and a single oil and gas market, which is of the greatest interest to Belarus, but also to other sectors, primarily engineering. The country's leadership is convinced of the necessity and possibility of developing Belarusian industry within the framework of the Eurasian Economic Union. At the same time, it is planned to use not only the export

[4]Prospects for the development of the EAEU project by 2025 (RIAC). M., 2018.

potential of nuclear power plants, but also the free trade zone (FTA), which will be created with other countries (to date, the FTA agreement has been signed only with Vietnam).

As for the Russian side, the Concept of long-term socio-economic development of the Russian Federation for the period until 2020, which was adopted in 2013, states that the customs union acts as the basis for the development of cooperation both with the CIS countries and with the entire world[5]. Later this concept was reinforced by other programs. This can be seen in the example of the Russian foreign policy strategy adopted in 2016. In addition, at the last St. Petersburg forum V.V. Putin came up with the idea of "Greater Eurasia", the basis of which should be the Eurasian Economic Union. At the same time, experts regret that the Concept 2020, like most countries, does not have a clear study of steps to unlock the trade, transport and other potentials of EAEU.

Since the establishment of the alliance, an important component of its development has been linked to the Chinese “One Belt, One Road” initiative, aimed at connecting China to the EU railway network as an addition and insurance for maritime trade if Putin nominates during the ASEAN Russia summit in Sochi proposal to join EAEU, ASEAN and the Shanghai Cooperation Organization ("integration"). According to experts, it is possible for Russia to join the EAEU or a regional full-scale economic partnership. At the St. Petersburg International Economic Forum-June 2016, Vladimir Putin proposed creating a large partnership on the Eurasian continent that could reach EAEU, China, India, Pakistan, Iran and other countries of the continent, and at the same event, President of Kazakhstan Nursultan Nazarbayev called for the creation of a forum EAEU-EU. Thus, EAEU positions itself as the core of continental integration.

Potential candidates also play an important role in the development of the Eurasian Economic Commission. Tajikistan announced in 2012 its intention to join the Customs Union and the Eurasian Economic Union after Kyrgyzstan. The accession of Kyrgyzstan was postponed, but happened. Negotiations with Tajikistan were also postponed. Mongolia announced its intention to join the Customs Union and the Eurasian Economic Union in 2016. On April 14, 2017, Moldova received the status of an observer country in the Eurasian Economic Union. As in 2017 in Moldova, the president stands for Eurasian integration, the parliament is against, further integration with Moldova depends on the development of the internal situation in this country. Gagauzia supported the entry into the Customs Union at the 2014 referendum. It should be noted that Gagauz autonomy is not an independent state. This is an autonomous republic in the territory of Moldova.

[5]Decree of the Government of the Russian Federation of November 17, 2008 N 1662-r (as amended on September 28, 2018) <On the Concept of Long-Term Socio-Economic Development of the Russian Federation for the Period Until 2020> (together with the "Concept for Long-Term Socio-Economic Development of the Russian Federation for the Period Until 2020 ")

Syria also said it wants to join the Customs Union in 2010. Currently, preparations are underway to sign an agreement on a free trade zone between Syria and the CU. In addition, a number of unrecognized or partially recognized countries would like to join the CU (because of their status, they face obstacles in the implementation of their intentions): Abkhazia on February 16, 2010 unofficially announced its desire to join the Customs Union. South Ossetia-October 15, 2013 announced its intention to join the CU. Donetsk People's Republic in 2014 announced its intention to join the customs union. The Lugansk People's Republic in 2014 announced its intention to join the CU.

Customs cooperation is the creation of a single database (for instant exchange of information between departments, for the registration of participants in foreign economic activity, etc.), the creation of a system of end-to-end control of goods, cooperation in the field of transit traffic, the introduction of navigation seals. Therefore, it is very important to cooperate with different countries for the effective development and welfare of the country.

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改善石油和成品油市场的对外贸易和海关监管的实际问题
ACTUAL ISSUES OF IMPROVING FOREIGN TRADE AND CUSTOMS REGULATION OF THE OIL AND PETROLEUM PRODUCTS MARKET

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抽象。 石油和石油产品市场的直接发展尤其受到各个方面的影响，但是最根本的需求是改善监管框架，即将其从地域层面提升到联盟层面。 这项计划的实施将改善现有的互动体系，并将有助于解决这些关键任务，例如，提高炼油业的竞争力，改善国家对市场的监管机制，并将使 与EAEU组建新企业。

关键字：EAEU，市场海关监管，石油和石油产品市场发展，规则制定

Abstract. *The direct development of oil and petroleum products markets, in particular, is influenced by various aspects, but the fundamental need is to improve the regulatory framework, namely, bringing it from the territorial level to the level of the union. The implementation of such a plan will improve the existing system of interaction, and will contribute to the solution of such key tasks as, for example, increasing the competitiveness of the oil refining industry, improving the mechanisms of state regulation of markets and will allow the formation of new enterprises together with the EAEU.*

Keywords: *EAEU, customs regulation of markets, development of oil and petroleum products markets, rulemaking*

The integration cooperation of Russia, Kazakhstan, Belarus, Armenia and Kyrgyzstan within the framework of EAEU - is an effective way to confront the challenges of the global economy, the basis for modernizing their national economies and improving the quality of life of citizens. At the same time, the process of economic rapprochement cannot occur without productive cooperation in the production, processing and transportation of hydrocarbon resources. The union currently accounts for 14.6% of world oil production[1].

Currently, work is underway to develop new conditions for the supply of oil and petroleum products between the member countries of the union, which affect the revision of quotas, customs duties and fees. These aspects are taken into account when drafting the EAEU Customs Code.

In the direction of the practical implementation of measures to develop a common oil and petroleum products market, which will begin its work in 2025, it is important to analyze its impact on the development of the petroleum products market in EAEU member countries on the prospects for their cooperation in the oil refining sector.

Particular attention should be paid to the unification of the regulatory framework - bringing national legislation in line with the standards adopted at the union level.

The development of uniform rules for trade in goods of categories 2709-2710 EAEU CN FEA will positively affect the regional petroleum products market, since they take into account the interests of all participants in the economic union, both importers and exporters of hydrocarbons.

In this case, the basis for improving customs and foreign trade regulation of the oil and petroleum products market are such recommendations as:

1) simplification of customs procedures and elimination of excessive formalization in matters of the movement of oil and petroleum products within the internal borders of EAEU;

2) achieving saturation of the domestic market of EAEU member countries with hydrocarbons, which will lead to a balance between supply and demand, create a balanced environment and provide conditions for fair pricing;

3) optimization of the rules and procedures for the wounding of oil and petroleum products can become the basis for the development of investment cooperation of the participating countries in the oil refining sector (for example, “Gazprom” subsidiaries in Kazakhstan and Kyrgyzstan have acquired dozens of land plots from the state land fund to build a network of gas stations);

4) the unification and simplification of tax reporting forms and procedures for EAEU member countries in the framework of foreign economic activity will allow

[1]Long-term forecast for the economic development of the Eurasian Economic Union until 2030. M., 2015. P. 11.

to intensify commodity circulation and develop trade and economic cooperation of states within the framework of the Eurasian Economic Union.

The above measures can lead to equalization of oil prices and oil refined products, which is important for the development of national economies in the face of unstable prices in the global oil market.

Particular attention should be paid to unification of the regulatory framework of EAEU member countries: it should follow the path of creating competitive economies, and not business restrictions. At the same time, the formation of a single Customs Code should ensure the elimination of a system of intermediaries in the sale of goods of categories 2709-2710 of the EAEU CN FEA and the formation of a transparent pricing mechanism.

In general, the oil market of the Eurasian Economic Union has favorable prospects in case of implementation of:

a) uniform taxes and tariffs for energy resources;

b) uniform export duty rates.

All tariffs should be agreed at the level of a single commission of the EAEU or other supranational body of this kind. In the future, such decisions should be ratified within the framework of national legislation.

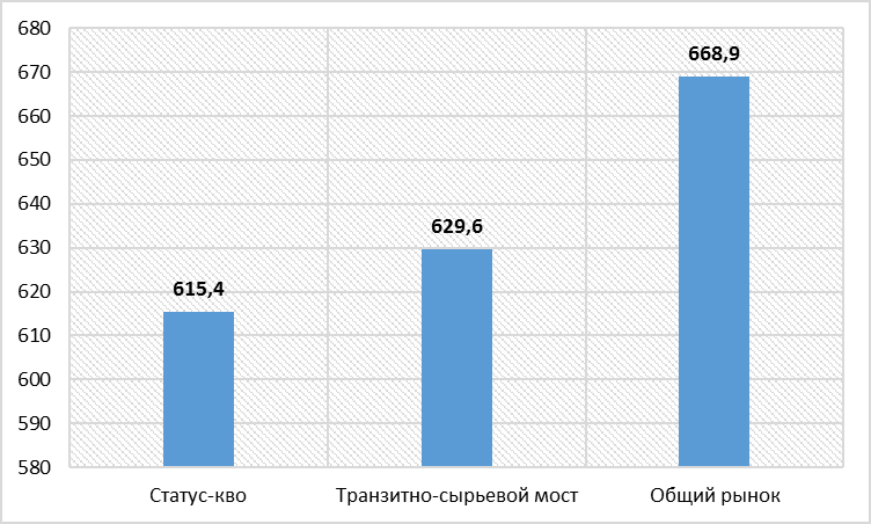

Figure 1. *Oil production at different levels of interaction between EAEU member countries by 2030*[2]

[2]The scheme was compiled by the author based on the information of the Long-Term Forecast of the Economic Development of the Eurasian Economic Union until 2030. M., 2015. P. 93.

It is worth paying attention to the fact that experts are considering three ways for the possible development of EAEU member countries until 2030:

1) 1Preservation of independence in resolving issues of customs and foreign economic regulation (status quo);

2) Independent determination of customs duties and tariffs, subject to the manifestation of mutual concessions (transit and raw materials bridge);

3) Formation of a common market for oil and petroleum products (common market).

Each of the options is characterized by its own indicators of oil production and supply (see Fig. 1.).

The most effective integration cooperation between Russia, Kazakhstan, Belarus, Armenia and Kyrgyzstan within the EAEU guarantees an integration effect of + 11.6%[3].

Achieving this result within the framework of the prospective development of the oil and petroleum products market under EAEU conditions requires the solution of a number of tasks:

1) Improving the competitiveness of the oil refining industry of the participating countries.

2) Formation of joint oil refineries.

3) Improving the mechanism of state regulation of the petroleum products market under the EAEU on the basis of a single Customs Code.

4) Improving the mechanism of movement of goods within the framework of the Eurasian Economic Union by reducing and standardizing customs duties and taxes.

5) Improvement of the tax declaration procedure through its transfer to electronic format.

The unification of tax legislation, as well as legislation in matters of foreign economic activity, is also important.

The above measures can increase the competitiveness of the oil refining industry and strengthen the integration of EAEU member countries in the real sector of the economy.

Summing up, it should be noted that the basis for improving customs and foreign trade regulation of the oil and petroleum products market is the simplification of customs procedures and the elimination of unnecessary formalization in matters of the movement of oil and petroleum products, achieving saturation of the internal market of EAEU member countries, streamlining the rules and procedures for the ranking of oil and petroleum products, harmonization and simplification of tax reporting forms and procedures for EAEU member countries. The most effective integration cooperation between Russia, Kazakhstan, Belarus, Armenia

[3]Long-term forecast for the economic development of the Eurasian Economic Union until 2030. P. 93.

and Kyrgyzstan within the framework of EAEU guarantees a tangible integration effect (11.6%), which can be achieved provided that the oil refining industry of the participating countries is more competitive, joint oil refineries are formed, and the state regulation mechanism is improved petroleum product market, movement of goods and tax declaration procedures.

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对抗经济疾病和控制非法金融资源流通的现代问题

MODERN PROBLEMS OF COMBATING ECONOMIC ILLNESS AND CONTROL OVER THE CIRCULATION OF ILLICIT FINANCIAL RESOURCES

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抽象。该研究的主题是旨在打击经济领域犯罪的国家控制措施的特征（在洗钱收益系统和非法金融资产（资源）流通的框架内），以节省金钱和防止犯罪的可能性。从俄罗斯联邦出口。

Abstract. *The subject of the study is the features of state control measures aimed at combating crimes in the economic sphere (within the framework of the system of laundering proceeds and the circulation of illegal financial assets (resources)) in order to save money and the impossibility of exporting it from the Russian Federation.*

The purpose of this article is to analyze the outflow of capital from Russia from 1994 – 2019 and the degree of its control by the state, money laundering schemes, the impact of offshore zones on capital outflows. Studying and analyzing the opinions of Russian businessmen on doing and investing in business abroad and within the country, searching for the answer to the question: "Is it necessary to return this "dirty money "at all?", And what will happen if the return flow comes back to the state economy.

The study is based on a formal legal, comparative, analytical and systematic method. The study is based on a formal legal, comparative, analytical and systematic method.

The paper notes the lower profitability of Russian business, in contrast to foreign countries, as a consequence of the outflow of investment outside the country. Firms use for years proven schemes of money laundering and obtaining funds (resources) illegally. The authors examine the essence of offshore zones, their impact on capital outflows and state control measures aimed at curbing crimes in the economic sphere.

The findings can be used as measures to increase the effectiveness of the suppression of financial fraud.

关键词：法律方面，资本流出，投资，财富，离岸区，银行体系。

Keywords: *legal aspect, capital outflow, investment, wealth, offshore zones, banking system.*

It is worth noting that today the economy of the Russian Federation is unstable, this can be determined by a number of statistical indicators: the level of GDP, the level of well-being, the level of price changes, the exchange rate and other indices that once again prove the instability of the Russian economy. The main factor influencing this situation is political.

In Russia, there is a large outflow of capital outside the country, and the degree of state control over the circulation of illicit financial resources allows you to determine the level of financial crime by exporting significant amounts of money. The state is actively improving the system of counteraction and legalization (money laundering) of funds at different levels: national, regional and worldwide (global), but many illegal schemes for the export of capital also do not stand still, and business is finding and improving new ways to "circumvent" legislation and state bodies that suppress crimes in the economic sphere.

Economic security and government bodies related to it are aimed at the early detection of unlawful violations, the reduction of dubious operations in bank accounts, the reduction of criminalization in the tax and economic spheres, the elimination of organized crime, the legalization of drug trafficking.

Analyzing the statistics of the Central Bank on the import and export of capital, we can present a graph (Annex 1), which indicates a sharp increase in the export of money from Russia in 2008, which was associated with the crisis, just like in 2014. Then the Central Bank improved the interest rate policy system in order to increase the flexibility of exchange rate formation during inflation, but due to the unfavorable economic situation, this led to an increase in the growth of exported capital. "Capital flight" is due to:

1) The introduction of economic sanctions by developed countries

2) The fall of the ruble

3) A decrease in the investment attractiveness of the Russian economy.

This phenomenon, which is typical for countries with a high level of corruption in various fields, can be applied to Russia, where we observe high inflation expectations; lack of a reliable legislative framework and administrative protection of investor rights; political instability. These problems provoked a deterioration in the financial situation.

But the most "interesting" and ambiguous moment fell in the first quarter of 2019, where the net capital outflow from Russia amounted to $ 25.2 billion, which is almost the same as the annual capital outflow in 2017, equal to $ 25.1.[1]

Compared to the previous quarter (October – December 2018), the surplus, that is, the excess of exports over imports, decreased by 24%, but compared with the first quarter of 2018 ($ 16.1 billion), the net outflow grew 1.6 times.

The Central Bank began to refer to such a difference between the import and export of capital by the private sector as the balance of financial transactions. This is not only the physical export of money from the country: this also includes the acquisition of foreign currencies and assets. The Central Bank determines this increase in capital outflows by an increase in individuals' investments in foreign assets.

The current account surplus (how much the country as a whole earns abroad) amounted to $ 32.8 billion in January - March 2019.[2] According to analysts at Bloomberg, these values are higher than previous figures for the first quarter. The Central Bank explains that this is due to an increase in exports of goods and a decrease in imports.

In 2018, the net outflow of capital from Russia amounted to $ 60.3 billion, which is 2.5 times more than in 2017. This is a huge gap, which shows the instability of economic development and a high level of corruption.

It is very likely that soon the Central Bank will have to once again raise the estimate for the whole year. Indeed, the net outflow also includes the repayment of external debt, when it is not possible to refinance the debt for various reasons and the company repays it. Typically, peak periods for repayment of external loan bonds are in June and December. The outflow in the first quarter is a continuation of December repayments combined with the general withdrawal of capital from emerging markets.

If the external environment becomes more prosperous (the United States will not impose new sanctions, the situation on world markets will improve, investor interest in emerging markets will grow), Russian companies will begin to actively attract foreign loans and the net capital outflow will decrease significantly, and at some stage will turn into inflow. But the chances of favorable changes are not high.

[1]Electronic resource-https://www.rbc.ru/finances/09/04/2019/5cacade39a79476218bc7f54

[2]Electronic resource-https://www.rbc.ru/finances/09/04/2019/5cacade39a79476218bc7f54

Crime prevention in the economic sphere requires a well-formed legislative system, organizational and legal aspects (a special methodology for counteracting and laundering “dirty money”), a scientific and technical base that will timely and possibly independently monitor some dubious actions of citizens. The most important factor in the development of criminal syndicates and terrorist groups is the complex regulation of information technology, which is explained by the following: modern communication networks are actively developing, and regulatory and legal acts regulating relations on the Internet and other technologies remain in the development of the legislation of the Russian Federation in the field of countering money laundering and terrorist financing.

Considering the schemes that organizations use in order to obtain funds (resources) illegally, we can distinguish the following positions:

• The purchase of supposedly expensive high-tech products that actually cost significantly less and do not differ in quality from their counterparts. The main obstacle to using this scheme is the conscientious fulfillment of their duties by employees of the Federal Customs Service, as it is they who can “interfere” with malicious companies. This scheme has gained popularity due to the fact that the import of such goods is not subject to customs duty.

• “Carousel” - based on the multiple export and import of the same product. The point is the sale of goods by a foreign non-resident company to a Russian company, which cedes the right to the goods to another company. It then resells to the original supplier company. And when payments are made for these deliveries, the bank recognizes these dubious financial transactions, blocking transactions.

• The third scheme is also quite common, but implies the presence of "one-day firms"[3]. These firms did not have any economic activity, the company employed one person and a "fake" director. Operations on the current account were transitory in nature: money came in and were cashed on the same day. Firms are created under one specific contract, then they are reorganized or completely closed.

Companies with foreign capital take out a lot, creating offshore. Due to high and unprofitable taxes, there is a desire to evade taxes and choose a territory with a low or preferential level of taxation for companies operating outside the country of registration - offshore. Recently, due to the economic and political situation, the policy of the US president and anti-Russian sanctions will help withdraw Russian money from offshore companies, which helped to reach what Russian businessmen had been calling for for a long time: representatives of big business finally began to return their assets to Russia.[4]

[3][Electronic resource] Access: http://taxpravo.ru/analitika/statya-398339-

[4][Electronic resource] Access: http://nsn.fm/economy/potapenko-dengi-iz-ofshorov-v-rossiyu-pomozhet-vernut-tolko-tramp.html?utm_source=smi2

You should also pay attention to one of the main points - some countries began to exchange information with the Federal Tax Service. When returning capital to Russia, it is not necessary to pay not only tax on profits, but also income tax. The proposal looks attractive on the part of the state, therefore it makes it easy to liquidate controlled foreign companies, but businessmen themselves are in no hurry to return capital to the country, because they see no reason to invest in anything.

Today you can take money from businessmen and abroad, - regardless of the openness of their bank account - the process of repatriation of capital. Vladimir Putin declared an amnesty for capital, implying the impossibility of holding one accountable for violation of tax and currency laws. The capital amnesty declaration does not help - citizens still open deposits for the purpose of earning or accumulating money.

These are just expectations, businessmen return money from foreign accounts to our banks, but are in no hurry to invest in Russian companies. Developed countries that provide favorable economic conditions and legal support (banking secrecy legislation) for successful business look attractive.

According to data for 2015, more than 60 trillion rubles of Russians turned out to be in offshore companies - twice as much as in all banks of the country.[5]

The world community has long been waging a "war" with the "black offshore". This is due to the fact that other offshore companies do no harm, and sometimes even help, stimulating economic growth. But now, when the problem of financing of terrorism has become more acute, the leading powers of the world are obliged to pay attention to offshore, contributing to world criminal financing. The measures that financial structures and warring organizations are taking make it possible to rely on the fact that this type will become a thing of the past and offshore companies aimed at developing business, and not criminal connections, will come in its place.

It turns out that a large amount of money remained outside our country. The federal budget receives money to pay pensions, to finance health care and sends them to other areas. 60 trillion rubles is a colossal amount and a very strong loss for the country's economy.

It turned out that keeping money in a country in which a crisis could start at any moment, increase inflation, and power could be completely unpredictable, is completely unprofitable. This doubt is still remembered from the time of the 90s, so Russian businessmen are in no hurry to return their assets to their homeland.

Every year people talk about the need to return private assets from abroad to the Russian Federation. But what about the consequences of such decisions? And the results of such actions may be unexpected.

[5][Electronic resource] Access: https://versia.ru/v-ofshorax-okazalos-bolee-60-trillionov-rublej-rossiyan-pochti-vdvoe-bolshe-chem-vo-vsex-bankax-strany

Let's imagine a hypothetical situation: all funds withdrawn from it in almost three decades come into the country. According to estimates by Western economists led by Bloomberg, about $ 1 trillion is now located abroad. illegal Russian money, or about 60% of the country's annual GDP.[6] In a recent Forbes article, it was suggested that if we were to return this capital to Russia, everything will be much better and the economy will make a huge leap forward. Unfortunately, everything is not so rosy at all. Returning to Russia, capital may not do much good, but under certain conditions it will have a devastating effect on the economy and financial system.

Given current realities and global trends, it can be predicted that in any case, developed countries will force all offshore zones to adopt laws that would prohibit the registration of offshore companies. All previously provided benefits will disappear, and companies will have to have an office, employees and other capital at the place of registration, which will increase the tax rate. Most likely, bodies will be created that will check the presence of the company at the place of registration. In addition, one would need to find out the reasons for registering a company: if the company pursues economic benefits, then you need to refuse her benefits. Unfortunately, certain zones (the Islamic world and other political systems) will continue to introduce tax incentives to attract foreign investment. But investor countries will block such opportunities - which is obvious.

Paying attention to our neighbors - China, we can say that this country also faced the problem of withdrawing funds to offshore. The following measures were taken to solve the identified problem:

1. Restriction and control of investments in foreign companies;
2. Obtaining investment approval from the State Currency Control and the People's Bank of China;
3. Confirmation of the origin of funds, the validity of the investment in the company and the authenticity of the project;
4. The softening of the rules for the inflow and preservation of funds within China;
5. Removing restrictions for foreign investors who are willing to invest in free trade zones.

Apart from China, it should be noted that there are no problems with protecting capital, and the desire to avoid paying taxes is not the main motive for withdrawing funds. In the United States, tax policy is developing, where the goal is to reduce the tax burden, which is an effective measure that helps to return capital.

Over time, the legislation of several leading countries will be improved. Today in Russia there are no conditions for transparency, successful and productive work in the investment sphere, and there are no financial incentives. Our country should

[6]https://www.forbes.ru/finansy-i-investicii/374777-trillion-s-neba-chem-vozvrat-sredstv-iz-ofshorov-grozit-ekonomike-rossii

adopt the experience of Americans and Chinese, of course, this is the reduction in the key rate.

The Central Bank should help banks get out of adverse situations, and not revoke the license and close the banks, when in principle there is nothing to correct in this situation.

Particular attention should be paid to banking systems used for unlawful purposes. The Bank improved and improves its activities by developing new regulatory acts in the field of foreign exchange regulation and foreign exchange control, there are also measures aimed at improving the system of optimization of foreign exchange control technologies to increase its efficiency. It is also necessary to pay attention to such an important point as the improvement of the interest rate policy system in order to increase the flexibility of exchange rate formation during inflation. To date, the Central Bank indicates the inflation rate in Russia at about 4%.[7]

It is surprising that the flight of capital from Russia is taking place against the background of the constant tightening of economic sanctions of the West against our country. It would seem that in this situation capital needs to be at home, working for the economy of our country. For many years, the Russian Federation unsuccessfully fought with money laundering through foreign offshore companies. And recently, the Bank of Russia reported that net capital outflows amounted to a little more than $ 31 billion.

Today, state authorities pay serious attention to improving the system of state financial control. Since it is obvious that a prerequisite for the effective functioning of the economy and financial system of the country is the presence of a developed control system.

A number of steps have already been taken to reform it. A significant role in improving financial control is called upon to play the Budget Code of the Russian Federation.

Currently, the Ministry of Finance has intensified the preparation of draft federal laws on state control in the Russian Federation.

However, the issue of creating a comprehensive and reliable system of state financial control remains a hot issue for Russia. The efforts of the authorities entrusted with fulfilling the functions of control are not coordinated, and are carried out within the framework of their department, which, as a result, leads to fragmentation of the financial system.

In our opinion, another important issue is the lack of a law defining the possibilities of state financial control in relation to violators of financial legislation. Indeed, without administrative and material and financial measures affecting violators of financial legislation, it is impossible to achieve high results in fulfilling the tasks assigned to control bodies.

[7][Electronic resource] Access: https://www.cbr.ru/Collection/Collection/File/19449/Infl_01032019.pdf

For the effective implementation of state financial control, it is necessary not only to name the state control bodies, which is now implemented by the Budget Code, but also to legislatively consolidate their tasks, law, scope.

It should be noted that the Accounts Chamber of the Russian Federation attaches great importance to solving the problem of creating a comprehensive and reliable system of state financial control in the country, and developing a single concept of state financial control.

According to the Accounts Chamber of the Russian Federation, the control and accounting authorities, given the terms of their authority, their accountability to the legislative authorities, i.e. the whole society, could become a coordinating center, uniting the efforts of all bodies of state financial control at each level of the budget system.

The combination of control and accounting bodies at all levels into a single system, built on the principles of their equal rights and close interaction in the information, methodological, expert analytical and other fields, would make it possible, in full accordance with the principles of budget federalism, to cover external control over the management of all public finances of the Russian Federation.

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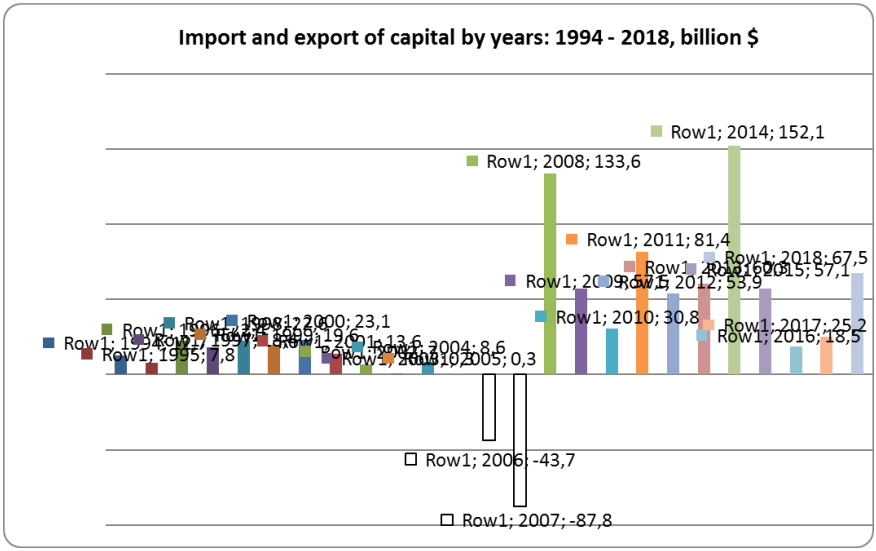
Annex 1



Source: Compiled on the basis of the Central Bank of the Russian Federation. [Electronic resource] – *Access: https://docviewer.yandex.ru/?url=ya-browser%3A%2F%2F4DT1uXEPRrJRXlUFoewruDRyLAVnR1hirFsJTHpOXVBr2emX-wCgYDpe3Zc-vWvDnteFnpY6s2pErohqKD1mHEIoR4lEx8Od-xXOj67HelKzI2Rk2uFBCGijb5go15rB_FO6adqz9qk7nSyyZ-HvQw%3D%3D%3Fsign%3DJwP6D3EWmuvF9N9IiIXNy39ad_kMQBN4zh-shJyypq0%3D&name=outflow.xlsx*

教育氛围是成功交往学生的便利
EDUCATIONAL AMBIENCE AS FACILITY TO SUCCESSFUL SOCIALIZATION STUDENTS

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抽象　本文表明，学生环境的运动负荷不仅定义了成功的教育或科学活动的可能性，还定义了成功的社会活动的可能性。该论文的作者认为，这项运动在高等教育机构中的社会意义是通过将应用的活动与成功的专业媒体相关联来实现的。该论文的相关性在于，在教育机构中进行体育活动不仅被一般职业周期的主体视为教学负担的一部分，而且被视为学生社会化的一种手段。研究的主题是学生为实现个人体育运动的假设做好准备。本文介绍了对学生健康和健康生活方式问题研究结果的分析。在此过程中，已经确定了体育文化和体育部门的作用。概述了大学教育环境资源激起这种问题解决方案的方式。仍然在古代，医生和哲学家认为，没有体育锻炼就不可能健康。许多人试图充分保护自己免受体育锻炼。他们认为体育锻炼越少，他们就会变得越健康。许多学生试图减少体育锻炼，从而破坏健康。他们以任何方式设法获得健康证明，以免参加体育课，实际上，在所有情况下，他们都得到父母的道义上的支持，而最糟糕的是医生。

关键词：学生，健康，社会学，健康的生活方式，体育文化，体育，大学，体育活动。

Abstract. *The present paper shows that sport loads for student environment define the possibility of not only successful educational or scientific activities but also successful social activity. The paper's authors see the sport's social meaning in higher education institution as a function of carrying out of applied activity with correlation into the successful professional medium. The relevance of the paper is that doing sports in education institution is perceived as not only a part of pedagogical load by the subjects of general professional cycle but also as a mean of students' socialization. The subject under study is students' preparedness to realize*

the postulates of individual sports doing. The analysis of the results of students' health and healthy life-style problems study has been presented in the article. The role of physical culture and of the department of physical culture in this process has been determined. The ways of university's educational environments resources stirring up for this problem solution have been outlined. Still in high antiquity doctors and philosophers believed that it couldn't be possible to be healthy without physical exercises. Many people try to fully protect themselves against physical activity. They think that the less physical activity the healthier they become. Many students try to make their physical activity less thereby breaking their health. In any ways they try to obtain health certificates in order not to attend physical culture lessons and practically in all cases they get moral support of parents and what is the worst of doctors.

Key words: *students, health, sociological study, healthy life-style, physical culture, sport, university, physical activity.*

Introduction

It is known that continuous mental stress and overwork without physical relaxation provoke hard functional disorders, degradation and approach of premature old age. Many scientists [1-20] determined that regular physical exercises reduce cholesterol amount in blood which promotes the development of atherosclerosis. Simultaneously activation of anti coagulation system preventing thrombus appearance in blood vessels occurs. At the expense of moderate increase of total number of potassium ions and decrease of sodium ions in blood myocardium contractile function is normalized. Taking this fact into consideration it is no wonder that, for example, in Switzerland in small towns situated in mountains where citizens can only move and run there registered no cases of cardiovascular diseases. Such long uniform physical activity as run strengthen immune system at the expense of activation, renovation and increasing of white corpuscles' composition, stimulate blood formation increasing hemoglobin in blood. Medical observations showed that regular run activity can influence the renovation of digestive cells, inhibit the process of muscular tissue substitution by adipose one and normalization of cholesterol amount in blood protect both atherosclerosis development and canceration. Physical exercises are the important means of carbohydrate metabolism disturbance protection. During physical activity it could open 2500 capillaries on 1 mm of muscle cross section against 30-80 ones in the state of rest. The greatest increase of capillaries amount occurs in the cortex of frontal lobe. Simultaneously the increase of capillaries' length and density of capillary network was registered. The urgency of the given research is becoming greater from year to year as it has tremendous importance in the development of world science and in improvement of peoples' health.

Methods of study

Experimental program of physical culture and technology of its realization was developed on the base of carried out research. The goal of experimental program is the strengthening of educational function and rebuilding of organizational forms of physical training both at lessons and during students' independent activity. Experimental work was organized with the aim to achieve this goal. The control group (45 persons) included the first year students trained according to the traditional form of education. Control group consisted of 45 students who were trained according to the experimental program. The experiment was conducted during the academic year. At the end of the year there were made control tests (sections).

Survey of literature

Analysis of the world social cultural and educational tendencies shows that in the last years the object of great attention of society and the subject of inter disciplinary research in many developed countries became different aspects of human behavior in respect of their health. Different systems of healthy life-style education are being tested [1, 2, 4, 5, 6, 9.]. The commonly accepted opinion of specialists in the field of physical culture consists in the necessity of students' physical culture system reformation on the base of the principles of humanistic pedagogy, ethics and psychology aimed at self-development of the trained individuals. The analysis of students' physical culture system allows stating the number of its main contradictions which are characterized by:

- the presence of physical culture innovative programs and non-developed adequate technologies of their realization;
- the necessity of students' physical culture level of scholarship and the lack of teachers' preparedness to its development;
- the importance of students' manifestation of the subjective position in physical culture educational process and poor utilization of pedagogical technologies developing individuality and providing its manifestation and formation;
- aiming of educational process at physical culture formation and utilitarian-applied orientation of estimation criteria of success in educational material mastering stipulated by the physical culture program.

During the analysis of the organization of physical culture studies at universities in whole as well as students' attitude to these studies the following tendencies should be mentioned:

- low students' interest to physical culture studies, especially those which are conducted in traditional form; poor account of needs, motives and value orientations of students in transformation of their physical nature;
- insufficient readiness of students, especially of the first year students, to turn to the organization of independent forms of physical culture activity, to the strengthening of their health and enlargement of creative longevity;

- lack of correspondence between the competence level of teacher of physical culture and the modern requirements; this discrepancy appears in insufficient professional readiness to master new forms of physical exercises knowledge, modern technologies demanding the mastering of individual systems, means, methods and forms of their organization;

- the lack of teaching and methodological literature on students' individual self-development by means of physical culture.

All these fact induced us to develop sociological analysis of student by means of physical culture.

Results of study

The goal of study: familiarization of students with regular studies of physical culture and sport, motion activity, improvement of functional ability of organism by means of introduction innovative pedagogic system aimed at individual development in students' educational process. In the process of educational work and functioning of pedagogical system at university the solution of the following problems is carried out: improvement of students' physical development, achievement of high training level, functional state and training organism; teaching of moral, esthetic, motion culture, of aspiration for health, beauty, love and harmony; development of need for self-realization, self-development of individual, breeding of self-respect and sense of respect to other people, formation of readiness to self-development, self-developing activity, objective self-appraisal; moral development, correction of value scale; mentality, formation of visions and ideas. It is obvious that oxygen feeding of brain cells promotes improvement both of physical and mental efficiency. In other words physical culture substantially assists mental activity. It coincides with Aristotle's affirmation about the fact that thoughts flow quicker when the body is warmed up by the walk. As it is known he conducted lessons while walking with his pupils. And on the contrary, the lack of muscular movements makes our muscles weak and our brain open to cerebral affection.

In our age of atom and cybernetics intellectual work more and more displaces physical one or become closely intertwined with it. But as many scientists think hard mental work demands very good physical training of a man. Many foreign scientists [1-20] believe that special «mental gymnastics» helps to support high intellectual efficiency. Such gymnastics concerns the so called headstand. This exercise together with legs bending and extension in knee and hip joints not only intensifies brain cells blood supply, reinforces vessels but promotes venous blood outflow from lower extremity and pelvic organs, i.e. they are the important means of varicose, piles and lithonephria prevention. In order to save from illnesses and suffering it is necessary to modify one's own individuality. Such even motion as running strengthens immune system at the expense of activation, renewing

and increasing the number of white blood cells. Running is one of the most efficient means for good health. It is the necessary factor for organism. All organs of our body were formed in conditions of constant motion during millions of years. When the motion is restricted the functions of organs are violated. If it we take into consideration that after this running he took part in the battle we can only be surprised by his stamina. Despite the usefulness of running it should be done under control according to the recommendations developed by specialists. Otherwise the result could be quite sad. For example, James Fix, the initiator of mass passion for running in the USA, died suddenly at the age of 52 during the regular jogging. In the opinion of doctors the cause of his death became the inherited propensity for myocardial infarction, the presence of such risk factors as often smoking and excess weight. According to pathologists his heart and blood vessels were excellent. So, movement is the essence of life. Movement is the base of health. We emphasize: not morning exercises, even not sport lessons several times a week but constant round-the-clock culture of attitude to oneself, optimal physical life-style make human existence of full-value.

Statement of the problem. Qualitative professional training of students at university is impossible without their energetic educational and labour activity. Economic and social reasons which do not allow making the period of education longer enforce to intensify it. This process requires students' will mobilization, their psychophysical, moral and physical power. However, today it is impossible to put question about restriction of increasing tension in the process of education. So, if it is impossible to free students from psycho emotional and physical tension (and it is probably worth seeking to this), then it is necessary to increase resistance of adaptive body mechanisms to emotional stresses and to streamline their educational activity. It is necessary to teach students healthy life-style for which unity and reasonability of self-organization and self-discipline, self-regulation and self-development processes are typical. These processes are oriented to full-fledge realization of one's own essential forces, gifts and abilities.

Formation of citizens' healthy life-style (HLS) as the goal of national importance and security is specially updated in the modern world practice as by 2018 it will have been necessary to provide «mortality reduction» at the expense of «arrangements aimed at healthy life-style formation». Different approaches to the realizing of «healthy life-style» phenomenon allow concluding that it unites all things which promote fulfillment of professional, social and everyday functions in the optimal for men's health conditions and orients individual activity to forming, keeping and strengthening both personal and social health. We carried out sociological research of Students' Healthy Life-style which showed young people's attitude to themselves, to their mode of life and health in whole.

Analysis of HLS study. Recently there has been appeared special attention to the students' HLS. This fact tells about government and society concern of the university graduates' health, of the incidence rate in the process of professional training, of labour activity reduction. So, it is necessary to consider health and HLS as one of the important educational value as society and student's personality [1].

Students' health and university educational environment. Studying at university is a complicated and quite long process having the number of characteristic features and making high demands for psyche and physiological functions flexibility of young people. After admission to university there happens the break of yesterday's schoolchildren vital stereotypes. The initial period of training plays sufficient role in the development of adaptive and compensatory mechanisms. Student's health and ailment depends to a great extent on this period. On the base of neurologic status and cardiovascular system study of 2100 first year students there were selected 4 groups: practically healthy students – 1500 persons (70%), students with raised blood pressure - 250 persons (11%), students with phenomenon of hypotension - 90 persons (4%), students with functional neural disorder - 280 persons (13%). In total the second, third and fourth groups involved 25% of the first year students having problems in the level of health. Analysis of patients' files showed that most students taking the academic holidays (80%) began to ill during the first or second years of studies. The reasons of their illness appeared to overpressure and overload in the process of training [1, p. 52]. Diagnostics of students' level of health carried out at university showed that only 5% of tested students had good locomotive system, 20% of students had functional disorders and 60% of students were in pre- and pathological state. Only 5% of tested students had normal digestive system, 80% of students had functional disorders and 6% of students were in pre- or pathological state. In whole this study showed the presence of subjective complaints and objectively approved pathologies in one or several systems and organs of the most number of tested students. None of the tested students could receive conclusion «absolutely healthy» and only 13% of them could be characterized as «symbolically healthy» (i.e. they had only functional disorders) [2, p. 16]. Study of psyche component of students' health showed considerable cases of asthenia depression and a great number of functional neuropsychic disorders. Only 20% of 312 students of natural sciences and humanities presented stable mentality. Even in the 1980s there were marked the growth of students' nervous system functional disorders – the so called in-between mental state. Disorders of students' nervous system increase from the first to the third year of studies, and boys in technical universities are in poor health more often. Nervous-psyche disorders develop against the background of social nonadaptive syndrome, mental overloading in the period of passing examinations, on the base of inter-personal conflicts [3, p. 23].

Comparing the results of studies made in different regions of the country it is observed stereotyped picture of students' health worsening during their study at university subject to ecological situation and climatic and geographical conditions [2; 3; 4; 5; 6]. Attitude to one's health is provided by objective conditions including education. It becomes apparent in actions, emotional experience and verbally realized opinions and judgments of people concerning factors influencing their mental and physical condition. Empirical criteria of relation to health can serve the degree of conformity between person's actions and requirements for healthy life-style as well as standard requirements of medicine, sanitation and hygiene. In the advanced opinions and judgments the level of individual awareness and competence is presented. Relation to one's health includes self-appraisal of own physical and mental state which is the indicator and regulator of person's behavior.

Analysis of literature [7; 8; 9-20] showed that in hierarchy of values students consider health to be in the leading positions. Thus, according to different sources of information (average indicators were taken) health as universal value was highly assessed by 70% (±5,0) of boys and girls (girls' assessment was higher). Meanwhile health is correlated with the other universal values: happy family life, comprehensive and balanced development, mental ability, etc. At the same time it is mentioned that the value of health as the means of other goals achievement (achievement of material welfare, career, etc.) appears to be more important for students than the value of health as the means of long and valuable life.

Results of research. According to our results (there were tested 360 students of different years of study) the main bulk of young people do not seriously relate to their health. Thus, there were given the following answers to the question if the students watch over their health: regularly watch - 11% of boys, 20% of girls; watch from time to time - 30% of boys, 35% of girls; begin to watch only in case if feel unwell - 45% of boys, 30% of girls. Students do not know their pulse rate in the rest, their blood pressure. Other researchers mark similar students' relation to their health [3; 10]. As it was mentioned above, most students think that their health is the necessary condition for the life of good quality, but only small part of them considerably attend their health. This fact leads to the appearance of one more contradiction between verbal awareness of health value and energetic voluntary activity concerning its keeping and strengthening. For example, E.A.Zhitnitskaya et.al mentioned that many students with chronic pathology of respiratory apparatus smoke and are not going to come off with cigarettes. Those who have chronic illness of gastrointestinal tract break the diet and those who suffer from locomotor apparatus disease neglect exercise therapy [3, p. 40].

The necessary and main precondition for health maintenance is the healthy life-style as the standard model, system of common conditions, arrangements promoting health strengthening and keeping. Numerous researches made possible to

conclude in theory and in practice that life-style influence human health for 45%, environment influence it for 18%, heredity effect health for 13% and medicine – only for 9%. Students highly assess healthy life-style but their real behavior contradicts expressed opinion and judgment of HLS value. There were received the following answers for the question if the students lead a healthy life: in general yes - 20%, rather yes than no -12%, rather no than yes -30%, found difficulty in replying -12%. Analysis of the results show that more than 45% of students do not lead the main elements of life activity regime, they have no formed purpose of rational time planning. They violate the norms of mental activity, of everyday life, of meals, of staying in fresh air and doing physical exercises. It is known that modern system of education demands for considerable students' mental activity, but the results of testing show that only 42% of students learn systematically and independently while all the rest study from time to time. Physiologists determined that the best time for beginning independent preparation for studies is the afternoon, 16 p.m. During our study we revealed that 30% of students fulfill their tasks in definite time, all the rest do this work in any time of a day. Considerable part of tested students - 5% - begin to learn the material from 20 to 22 p.m. and some of students start to do their work even later which leads to the poor preparation.

In order to support mental activity on high level and to maintain health it is necessary to alternate studies with the rest correctly. The best rest is sleeping in definite time not less than 7-8 hours. But 44% of students do not lead sleeping regime, many of them feels shortage of it as they go to bed after midnight or even later which influence negatively their mental efficiency. Numerous studies of physiologists, psychologists, hygienists and specialists of pedagogics show that the regime of motion activity considerably influences the quality of students' education. It has been stated that the most suitable motion regime is equal to 6-8 hours a week. This motion regime is maintained only by 20% of tested students while most young people – 70% - do physical exercise during 2 - 4 hours including physical culture studies at university. Physical culture lessons are attended regularly 40% of students, all the rest – 50% of students attend these lessons from time to time. And only small part of students does physical exercises independently. In order to answer the main question, namely, what we can do to achieve the general goal – the growth of the efficiency of students' HLS formation process – the investigation of already available information on this problem both in theory and in practice is required. Without this knowledge it is impossible to define the mechanism of the given process control, the choice of means and methods of the goal-oriented actions. Theoretical foundation of this problem solution has been given by sociological, medico biological, psychological and pedagogical research. Scientists discuss general problems of students' health and mode of life; study the influence of different factors on students' HLS formation; study the level of students' knowledge in this subject.

The tendency of this problem solution reconsideration, the ways of its solving reflecting the replacement of the accent from the sphere of medicine to pedagogics have been outlined. Such tendency is connected with the fact that the main «risk factors» have behavioral basis, so the mode of persons' life plays an important role in keeping and strengthening of his health. In the rational organization of such life-style sufficient importance has education and physical culture.

In the opinion of many scientists theory and practice of public health will inevitably follow the concept of attack, the concept of physically cultural life-style. According to the forecasts of medical science representatives the most important element of this will be goal-oriented growth of human organism's systems and functions efficiency by means of physical culture [4; 5; 11-15]. Physical culture unites many components: culture of motion activity, conditioning to the cold, breathing, mills, massage, meditation, utilization of natural factors. Just in this respect it is necessary to speak about physical culture. Then it is obvious that physical culture is the basis and driving force of healthy life-style formation. It is necessary to mention that realizing of physical culture role as one of the leading factors of students' HLS formation serves the tendency of insistent search for efficient pedagogical activity, approaches, and technologies of students' HLS formation by means of physical culture. Monographs, teaching aids, methodological materials are published; doctors' and candidates' theses are defended. All these materials contain theoretical and practical prerequisites of successful solution of the given problem [12; 13; 14-20].

In the papers devoted to the different aspects of this problem it is specially mentioned that the attempts to revive at universities physical-cultural, health-improving and sport-mass work by means of the old organizational forms and methods do not give necessary results as a rule. Professionals state that unfortunately physical culture studies at universities are aimed at the problems connected with indicators of physical training, credit standards of educational program. Due to this many publications contain the idea of necessity to develop such programs and technological models of students' HLS formation by means of physical culture which can substantially improve the problem situation, can change the students' attitude to the health and mode of life. The second reason for improving the situation consists in the fact that our country enters the system of competence education and in order to march in step with higher education modernization it is necessary to rebuild the process of teaching of the discipline named as «Physical culture» and its didactic component «Foundations of healthy life-style» on the base of competence approach. And naturally the question arises: what should be done in order the competence approach being in coordination with the existed innovative concepts and models of students' physical training (proved their practical reasonability) will be used in practical work of the departments of physical culture together with the other approaches (personality-oriented, action approach, differentiated one, etc.). But developing this

innovative direction of students HLS formation by means of physical culture it is necessary to realize the resources of university's educational environment: administrative resource (development of corresponding university programs, planning of health supporting arrangements, HLS propaganda, support, financing, control, etc.); resources of educational process (introduction of special HLS course, interdisciplinary relations, organization of physical cultural an health-improving arrangements, cultural-mass and free-time work); utilization of regulated (forms of studies) and non-regulated (different forms of independent work) educational environment potential; the resource of public organizations (trade union, sports club, youth associations, etc.); medical service (regular medical inspection, diagnostics of their level of health, preventive measures, medical support, etc.).

This year at our university there have been formed 60 groups of health for additional studies. Moreover, two times a week students attend physical culture lessons if they wish, they can choose any kind of sport or be trained according to the chosen system of exercises. These studies are conducted under control of teachers and medical staff. We do not only speak about HLS, we provide it in practice.

Conclusion: Results of the research showed that modern students aspire to support their health. Most tested students consider healthy life-style as regular mills, good sleep, going in for sports and denial of unhealthy habits. However, young people do not always follow these simple rules. It is necessary to activate the work of physical culture departments in this direction and to carry out scientific research of this problem.

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教学创新中的系统
SYSTEMS IN PEDAGOGICAL INNOVATION

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摘要。 本文介绍了未来小学教师进行高等教育创新活动的专业教学培训的基础。 结果表明，教育系统中发生的变化预先确定了对教师人格形成要求的变化。教育过程的创新方法与未来小学教师个人经验的参与相结合，将确保更新自我实现的机制以及个人的个人和专业流动性的发展。
关键词：创新，创新活动，教育，小学，研究生院。

Summary. *The article describes the basics of professional pedagogical training of future primary school teachers for innovative activities in higher education. It is shown that the changes that are taking place in the education system predetermine a change in the requirements for the formation of the personality of the teacher. The combination of innovative approaches to the educational process and the involvement of the personal experience of future primary school teachers will ensure the updating of the mechanisms of self-realization and the development of personal and professional mobility of a person.*
Keywords: *innovation, innovation activity, education, primary classes, graduate school.*

The relevance of the dissertation research is determined by the growing demand for primary school teachers who are able to actively respond to new social phenomena, develop, both creatively and professionally, enrich pedagogical theory and practice, introduce innovations and create innovations.

One of the leading qualities of such a teacher is a humanistic orientation, constructive dialogue with participants in education (teaching staff, parents and class), creative activity and reflexivity, the need for constant self-development, readiness for innovative pedagogical activity, etc. Analysis of experience shows that today's teachers are not ready to independently develop new curricula, apply innovative technologies and choose the best of existing pedagogical techniques and methods. The widespread use of innovation requires changes in the teacher training system itself. The main task of higher pedagogical education is to prepare future elemen-

tary school teachers who have developed their personal and professional qualities throughout the entire educational process at the university and can continue to carry out innovative pedagogical activities. The solution to this strategic problem requires the preparation of primary school teachers for innovative pedagogical activities aimed at the formation of personal and professional development, innovative potential and culture in the context of the higher education system.

The modern education system of the Republic of Azerbaijan is going through a difficult period of reform and renewal. Learning content is being updated; new curricula, textbooks and workbooks, manuals for teachers, new teaching and assessment technologies are being developed. More and more new types of schools are being created, and teaching experience is being improved. In the new conditions of the future society, education and intelligence are increasingly becoming part of the national heritage, the spiritual health of a person, the universality of its development, the breadth and flexibility of vocational training, the desire for creativity and the ability to solve non-standard tasks. The role of primary school teachers in modern society, their professional and personal readiness to fulfill their responsibilities in the new socio-economic conditions, as well as specific ways to modernize the country's education are reflected in the Law on Education and the Concept of General Secondary Education. The main organizational actions outlined in these documents determine the strategy for the future development of the education system and allow real changes to be achieved in this important social sector [10]. As planned, the education system of the Republic of Azerbaijan has moved to the continuous development of education, which meets the interests and needs of individuals, society and the state. It is noteworthy that the expected results of government actions include "increasing public prestige and demand for teachers and other educators." [9]

Usually, an elementary school teacher who works in the traditional way rarely has to resort to thinking about his thinking and activities. In the context of the dynamic renewal of society and the school, the position, place and role of the teacher in the classroom are slightly different and require the connection of human existence, personality and activity with awareness that reflects certain ideals, values and goals of society. The current socio-economic situation in the country cannot affect the education system in general and the innovation process in particular. In our country, education is changing, the range of educational services is expanding, and an innovative movement is developing. In this context, within the framework of the new educational paradigm, which is aimed at the optimal development of the school, the task is not only to create the necessary knowledge, skills, but also to develop and use innovative pedagogical ideas in future primary school teachers. This idea of exclusively theoretical and practical significance is reflected in the Law on Education and State Standards of Higher Professional Ed-

ucation. Therefore, the problem of preparing teachers for innovative pedagogical activity is especially relevant. The number of schools operating in an innovative mode is increasing every year. Today, the country's education system has more than 4,500 different educational institutions. They use differentiation technologies, research, as well as personalized, developing and self-developing educational technologies. The network of schools is expanding as part of the internship program and successfully introduces new educational technologies in the educational process. Many schools become original laboratories of teaching practice. Many school teachers are engaged in research and experimental work. In the secondary education system, the number of educational institutions with a high general level of education is growing (School of the 21st century to add).

A network of elite educational institutions is also developing. Many innovative educational institutions have direct contacts with foreign partners. The transition to developing and alternative education in the schools of the republic continues. Creation of innovative enterprises, updating the content of education has a significant impact on the quality of students' knowledge. The number of applicants to higher and secondary specialized educational institutions is also increasing.

Numerous reports indicate that most elementary school teachers have a great desire and interest in innovation. However, this desire does not come true, because they are not prepared for this activity professionally.

In our opinion, the problem of preparing future elementary school teachers for innovative pedagogical activity is not given sufficient attention in the educational system. The nature of the professional development of a young teacher and the development of his potential determine the contribution of tomorrow's school and the development of our society. As a result, the problem arises of attracting young specialists to their professional activities.

Preparing future teachers for innovative pedagogical activity is an important condition for personal and professional potential, self-improvement and self-development. There are a lot of researchers in Azerbaijan dealing with the problems of general training and advanced training of teachers. A. Pashayev, F. Rustamov, A. Mehrakhov [5], A. Agaev [1], F. Ibragimov, A. Abbasov, H. Alizade, L. Gasimova, R. Makhmudova, A. Abbasov, I. Dzhabrailov, H. Akhmedov, M. Ilyasov, I. Aliyev, O. Hasanli can be considered as researchers of the field of innovative pedagogical activity.

The basis of scientific research in the field of theory and practice of primary education is an individual approach to learning. On the basis of this approach, an elementary school teacher builds his professional potential, consciously regulates his educational paradigm and acquires a creative experience of self-realization. At the same time, the problem of preparing a future primary school teacher for innovative pedagogical activity based on personal and professional development

is not given sufficient attention. In the works of A. Pashayev, F. Rustamov, A. Mehrabov, A. Agaev, innovative pedagogical activity is reflected as a creative process aimed at creating innovations and changing reality. The authors note that the basis of innovative activity is the personality of the teacher with the qualities of activity, initiative, the ability to defend their point of view, innovative thinking and developed abilities for reflection. We believe that one of the ways to prepare future teachers for innovative pedagogical activity is to improve intellectual and professional qualities in accordance with the listed characteristics [6].

In our study, the formation of personal and professional qualities of a future teacher is considered as a process of personal and professional development. The problem of personal and professional development has been studied by many leading thinkers, educators, and psychologists. Examples of such studies are M. I. Makhmutov, I. Y. Lerner [4], N. A. Polovnikov, L. K. Vyatkin, A. A. Bodalev, S. B. Elkanov, N. V. Kuzmina, E. A. Maksimov, L.S. Podymova, A.A. Leontyev. However, despite the large scale of research, it is important to note that modern education is at such a level of development that new primary school teachers must develop new methods and technologies in the future of personal and professional development. In recent decades, the teacher's personal and professional development has been studied in the context of the problem of the formation of his professional activity, as a process of the formation of professional and pedagogical competence. In addition, the role of purposefully preparing future elementary school teachers for innovative pedagogical activity, which is a method for personal and professional development, was ignored [7].

A number of psychologists in Azerbaijani pedagogy studied the innovative activity of a teacher in terms of theory and practice, introducing the achievements of pedagogical science and disseminating advanced pedagogical experience. New approaches to the development of the methodological foundations of pedagogical innovations in primary education are justified in the conceptual aspects of the theory of innovative processes in education and management of educational institutions, the introduction of innovations, the development and evaluation of educational systems, the assessment of pedagogical innovations and innovative processes. It was necessary to study its connection with creativity and increase the role of experimental work in innovation.

N.I. Anisimov, I.A. Arkin, V.P. Kovalev, V.G. Maximov, E.P. Morozov and others studied the essence of innovation in the process of preparing primary school teachers. The humanistic approach in the education of primary schools is presented in the work of A. Agayev as a pedagogical process of cultural identity, social adaptation and creative self-awareness. Mastering the humanistic significance of education by teachers, changing their pedagogical positions on its basis requires serious preparation for innovative pedagogical activity. This includes the following aspects:

• formation of theoretical, methodological and technological training of teachers for work in the humanistic system;
• analysis of the goals of educational institutions;
• focus on improving interpersonal relationships and personal qualities
• the formation of motivation for innovation;
• ejection of stereotypes associated with technocratic thinking in professional activities.

The works devoted to the development of pedagogical skills and improving the quality of education are directly related to the professionalism of teachers and are of great importance for our research. The development of the psychological and pedagogical aspects of innovative pedagogical activity of primary school teachers was highlighted in the works of V.Davidov, L.V. Zankova, A.N. Leontiev, Yu.A. Ponomareva, A.P. Ponamareva, D.B. Elkonin, I.S. Yakimanskaya [11]. The study of F. N. Gonobolin, S. V. Kondratieva, N. V. Kuzmina, V. A. Slasten, outstanding teachers and psychologists is devoted to studying the characteristics of activity, communicative and pedagogical skills [3]. The results of the study open up new perspectives in the study of professional skills of primary school teachers [8] .

As popular pedagogy says: "To raise a child, you need a whole village." This word has a deep meaning. Neither the family nor the educational institution determines the effectiveness of education. It is determined by “every square meter of the place” where the student’s independent activity develops, as well as the social environment in which he develops (A. S. Makarenko).

Studying and analyzing theories and practices of primary school teachers, we identified the following contradictions:
• the lack of special studies aimed at identifying the needs of society and the necessary pedagogical conditions for the training of future primary school teachers who know and apply modern pedagogical innovative technologies;
• the desire of high school students to prepare future primary school teachers for innovation and the lack of scientifically based technologies for its organization.

The need to eliminate these contradictions led to the writing of a dissertation (candidate) on the topic "The system of work on the use of pedagogical innovations in the preparation of primary school teachers."

Analysis of the theory and practice of training primary school teachers revealed the following discrepancies:
• the need for a modern education system for teachers who can independently develop and apply innovative teaching technologies;
• teaching school practice;
• sufficient attention to higher education in preparing future teachers for innovation;

• prepare future teachers for innovative activities and not use all the opportunities for personal and professional development in preparing future teachers for innovative pedagogical activities;

• training of highly qualified primary teachers with personal and professional qualities;

The contradictions of the research were formulated as an urgent problem of training primary school teachers. In what pedagogical conditions can preparing a future teacher for innovative pedagogical activity be a means of personal and professional development? It is clear that along with the formation of a future teacher's innovative approaches to teaching and learning, the development of motivational-value relationships to pedagogical innovative and creative activities, self-development and demonstration skills, as well as innovation as a result of everything. In this case, the formation of a pedagogical culture is very important. The search for ways to improve the educational process necessitated the consideration and solution of the problem of preparing the future primary school teacher for innovative pedagogical activity at the university. Today we are talking about innovation and technological training of a teacher who is actively working to improve the personality of students and improve the educational process. Activating and equipping teachers with modern pedagogical technologies is the path to personal development and creative activity, because “the development of a number of professional skills means professionalism” (V. A. Slastenin). A modern teacher should be aware of innovative trends in the organization of educational activities of students. All this explains the growing interest of psychologists, philosophers, sociologists and educators in the study of problems associated with the innovative formation of the personality of teachers. The innovative activity of primary school teachers in the field of education is one of the strategic directions. Today, the solution to this problem is very important, because "any innovations in education can be made at this time ... if they are adopted and supported by practical teachers."

All of the above justifies the relevance of the study "The system of work on the use of pedagogical innovations in the preparation of primary school teachers."

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远程支持能力育儿-现代教学社区的共同关怀
DISTANCE SUPPORT OF COMPETENCE PARENTING - COMMON CARE FOR THE MODERN PEDAGOGICAL COMMUNITIES

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注解。 上合组织国家在家庭，童年和教育领域的国家战略使教育界团结起来并指导其方向，以扩大在数字教育环境中支持现代家庭的方式。 在“学校-家庭”的背景下，有助于发展父母能力的教育潜力和数字工具的有效性问题变得越来越重要。 在本文中，作者将远程支持定性为家庭支持的一种实际方式，这形成了能力育儿发展的教育环境的区域数字景观。

关键字：父母身份，父母能力，能力育儿，家庭支持，数字工具，教育环境。

Annotation. *The State strategies in the field of family, childhood and education in the SCO countries unite and orient the pedagogical community towards expanding ways to support modern families in a digital educational environment. In the context of "school - family", the issues of educational potential and the effectiveness of digital tools that contribute to the development of parental competencies are becoming increasingly relevant. In the article, the author characterizes distance support as an actual way of family supporting, which forms a regional digital landscape of the educational environment for competence parenting development.*

Keywords: *parenthood, parental competencies, competence parenting, family support, digital tools, educational environment.*

The current key strategies in the field of family, childhood and education determine the modern identity of parenting support, which adapts and responds to socio-economic and cultural changes in the country. It determines the reciprocal nature of the relations between the family and society, among which the school is the most important and closest social institution for the family.

In the SCO countries, the state family policy in parenthood support is implemented, firstly, in a protection mission. The State acts as the guarantor of individual rights and freedoms of citizens and, in particular, the rights of the child. It intervenes in situations (not just family ones), the context of which threatens human integrity. Secondly, this parenting support is manifested in the mission of solidarity. The social mechanisms of state support play the role of regulators of inequality due to the country's economic system. They are also important measures to counter the social risks that many modern families cover.

The States at different levels are focusing on the involvement of each actor in the modern educational environment, on expanding the access, equality and socio-educational integration of parents through parenting supporting as a social component of the development of modern education, which is moving towards the goals 2030 [4]. This timely request of modern education focuses on the target audience - adults in their social role of parents. Acting as actors of education, the parents determine the direction of the child's socialization paradigm. They either form and open, or create obstacles and close the path of life for children's development and personal growth. Modern parenting supporting is an important social and educational task for all countries.

In the educational environment, the digital transformations affect all aspects of family life; they actualize the development of parental competencies and / or the acquisition of new ones. It determines the search for new opportunities and ways to involve and unite all actors interacting with parents and children in different contexts, including distance support. In the SCO countries at the national and regional levels in this new information and educational environment, the efforts of pedagogical communities are aimed at creating and expanding digital tools, including digital technologies, services and resources for parents (legal representatives) as subjects of education, as well as improving their quality and availability.

An analysis of cross-country studies shows that the involvement of parents in the process of digital change and innovation in a modern school depends on the specific regional context and the distance support of parenting provided by the educational community [1: 2; 5; 7; 8]. This directly or indirectly contributes to the competence parenting.

Today, modern parents are procedurally oriented therefore it is important for them to understand what is happening with his child in the educational environment of the school. They want to be included in the process of education and upbringing of their children "here and now", which corresponds to the context of competence parenting. Parents want to influence this process, even through interaction in the network, they strive to realize their parental competencies and become really important actors in the co-scolarization and co-education of their children in partnership with the school.

Our analysis of regional foreign and Russian distance support for families suggests that the educational institutions (schools) are ready to provide parents with digital tools aimed at developing parental competencies and / or acquiring new ones. Thus, they provide distance support to families in the field of education and upbringing. We highlight the digital tools of the modern educational environment, which is productive in the foreign and Russian support for families.

The school's website is the digital toolkit that forms the school's information environment and ensures the openness and accessibility of the regional education system. In the development of parental competencies, it plays the main role - to inform and educate parents as users in a distance format. It is convenient, accessible for modern parents, corresponds to the technosocial nature of competence parenting. In the regional educational environment, the school web page provides parents with information about the safety of the child at school (this topic is of parental interest and concern, occupies position 1 in parental questionnaires among the top 5), about the existing material and technical base of the school, and about the conditions for teaching children each stage of education, etc [6; 7; 8].

Today, we can confidently say that the school's web page as a digital tool in distance support of parenting connects the families and schools; it is a truly connecting channel of their communication and interaction. Parent chats and bulletin boards on the school websites are the most popular. In many schools, e-mail remains the parent feedback channel. In addition, the schools have mailing lists of school events, parent-teacher meetings, seminars, and conferences for parent groups that provide parents with the opportunity to receive e-mail and video streaming related to the educational process in a particular class. A high-quality school website should contain an interesting form of "feedback" to encourage parents to interact with the educational institution and with each teacher.

In the field of child health, the school's virtual café provides an informed understanding. This digital toolkit allows parents to browse products and menus every day in school canteens to help children choose healthy meals and diets. Today, the school's virtual cafes are in demand. They receive approving comments from their target audience - parents and children.

As a tool in distance support of parenting, the school's virtual café is designed for parents. It allows to informing about school feeding options, prices and a daily menu, to keep track of the types of dishes that children choose. There are functions: "choice" - to choose the healthy food for children with special dietary needs; "payment" - parents can pre-pay online meals for their children. We believe that such a digital tool should be available in regional education in each country, as it is necessary and useful, contributes to improving the quality of life of families as a whole.

The diversity of digital tools significantly expands the opportunities for each family to participate in digital and regional educational environment. It contributes to induce parents to real mutual actions with the school, to unite them in a real educational community of parents and teachers in every corner of the region, because interaction (interactivity) is a specificity of digital tools for parenting support.

The digital tools such as online family clubs, parent online forums, groups and chats deserve attention in this area. It is enough to read the information of these resources to understand, what is the parenthood of modern parents? What are the important and interesting problems for them? So, the most common are the topics of child health and school education. And this is understandable: the child's health care and his socialization, success in learning largely depend on the parents and their parental competencies.

In the multifaceted palette of modern parenting, we observe interactivity, which allows not only to accept, to perceive information, but also to share it, create our own with one goal - improving the quality of life of the child and the family as a whole. Through communication and experience exchange, the parents organize themselves, invite other families and interested educational and leisure institutions to interact. The focus of their actions is to unite together to realize their own parenting in the best interests of the child, namely: "here and now." We believe that such an orientation of modern parents to the process of mutual actions characterizes competence parenting allowing the parent to demonstrate their parental competencies and / or acquire new ones. The phenomenon of competence parenting is becoming a reality in the modern educational environment, including virtual. Modern parents perceive and recognize him because they really want to be competent in the upbringing and education of their own children [3].

In the international educational environment, competence parenting is already a trend. It really means modern parenthood, in which parents are process-oriented, ready to be involved, along with the educational institution in co-scolarization and co-education of children. Therefore, the main and common care for the pedagogical community, regardless of the socio-linguistic community, is to stimulate and encourage support for such competence parenting, to make it more "visible" and targeted, promoting the necessary digital tools among all actors in the educational environment.

In this aspect, one of the key ideas is a new understanding of the quality of parenting, the prospects for its improvement to stimulate competent relations between parents and children, parents and teachers, which will allow them to fully reveal their potential in modern society. It is the "lifelong learning" context in the digital educational environment that allows to determining the role and place of each of the actor of education (family and school) in the development of competence par-

enting. It directs the development of these actors in a new dimension of education, stimulates the efforts of parents and teachers to learn and be ready to live and work in a rapidly changing and information-oriented world in which everyone's competencies are manifested in real actions.

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6-7岁体操运动员柔韧性的发展

THE DEVELOPMENT OF FLEXIBILITY IN GYMNASTS 6-7 YEARS OLD

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抽象。 本文专门介绍了初级训练组中年轻体操运动员关节的柔韧性形成和活动性。 众所周知，为了发展灵活性，使用最有效的练习非常重要。 为了提高柔韧性，使用了重量，高度，松紧带等。 应当注意，本文使用松紧带进行练习。

关键词：艺术体操，柔韧性，松紧带操，初步训练，静态拉伸方法。

Abstract. *The article is devoted to the flexibility formation and mobility in joints of young gymnasts in primary training groups. It is known that for the development of flexibility it is important to use the most effective and efficient exercises. To develop flexibility, weights, heights, elastic bands and so on are used. It should be noted that this article performs exercises using elastic tape.*

Keywords: *artistic gymnastics, flexibility, exercises with elastic tape, initial training, static stretching method.*

Introduction

Artistic gymnastics in the 21st century is a combination of the highest technical complexity of competitive programs, their almost perfect quality, dynamism, compositional and aesthetic harmony performed by leading gymnasts.

An extremely high level of complexity of movements, their ligaments and combinations, the requirements for the artistry of their performance in competitive compositions of gymnasts originates at the stage of initial training of athletes [3].

The flexibility formation and stretching take a leading place in almost all types of physical activity. Flexibility is one of the five basic physical qualities of a person [5].

The level of sportsmanship in gymnastics largely determines flexibility. Lack of flexibility complicates and slows down the process of mastering motor skills, limiting the manifestations of strength, speed and coordination abilities, reduces the efficiency of work, increasing the likelihood of injuries of the musculoskeletal system of athletes. Therefore, flexibility is a fundamental physical quality [3].

The selection of the most effective exercises for the flexibility formation remains one of the urgent problems of sports training, since the development of flexibility ensures the successful mastery of specific exercises in all types of gymnastics all-around.

Mastering many exercises in gymnastics is impossible if the athlete does not have high mobility in the joints [1,2,3].

Purpose of our study is increase the flexibility level of gymnasts 6-7 years old.

Object of study is the development of flexibility in gymnasts 6-7 years old.

Subjects of research: exercises with elastic tape for the development of flexibility in gymnasts 6-7 years old.

To achieve the goal of the study, we solvad the following tasks:

1. To identify the initial level of development of flexibility in gymnasts 6-7 years old.

2. Choose exercises with elastic band and without elastic band for the development of flexibility in young gymnasts.

3. To identify the effectiveness of using exercises with elastic tape to develop flexibility in gymnasts 6-7 years old.

The following traditional research methods have been applied: analysis of scientific literature, control tests, pedagogical observation, pedagogical experiment, methods of mathematical statistics.

Discussion and results

Before starting the experiment, the lev- el of flexibility development was assessed using control exercises in two groups of gymnasts of 10 people each. Subsequently, all gymnasts took part in a pedagogical experiment. The following control exercises were used as criteria characterizing the flexibility formation: twine left, twine right, longitudinal twine, tilt ("fold"), bridge, hold the right (left), hold the right (left) to the side, hold the left (right) back.

The results of the initial level of flexibility formation (before the experiment) in the control and experimental groups are presented in table 1.

Table 1 - *the Initial level of flexibility formation in the control and experimental groups*

Control exercises	**Groups**	**Statistical values**			
		X	**σ**	**t**	**p**
Twine left (centimeters)	Control	16,2	2,1	0,9	>0,05
	Experimental	17	1,7		
Twine right (centimeters)	Control	14,3	2,4	0,5	>0,05
	Experimental	13,8	2,1		

Control exercises	Groups	Statistical values			
		X	σ	t	p
Longitudinal twine (centimeters)	Control	14,6	3,5	0,4	>0,05
	Experimental	14,1	2,5		
Tilt ("crease") (centimeters)	Control	-6,5	2,3	0,2	>0,05
	Experimental	-6,3	2,3		
Bridge (centimeters)	Control	59,4	2,1	0,1	>0,05
	Experimental	59,5	1,9		
Hold right (left) (angular degrees)	Control	85,5	7,6	0,1	>0,05
	Experimental	85	8,2		
Holding right (left) to the side (angular degrees)	Control	88,5	3,4	0,2	>0,05
	Experimental	88	6,3		
Holding left (right) back (angular degrees)	Control	72,5	7,5	0,3	>0,05
	Experimental	73,5	8,2		

When comparing the indicators of the level of flexibility formation of gymnasts (6–7 years old) by the beginning of the experiment, it turned out that no statistically significant differences were found between the control and experimental groups ($p > 0.05$). It follows that these groups are homogeneous.

In our study, an experiment was conducted in which gymnasts (twenty people) of the initial training groups of the first and second years of study (6-7 years old), who were involved at the Department of Theory and Methods of Gymnastics at the MSAPE and having the same initial level of flexibility development, took part. For the experiment, we selected 29 exercises using elastic band with strong resistance (elastic bands have several levels of elasticity; usually there are three levels of resistance: strong, medium and weak): tilts to the right and left, “fold”, twine left, twine right, longitudinal twine, "puffs", retention and other exercises. The control group performed the exercises with their own efforts and under the weight of their own body. In the experimental group, exercises were performed with an elastic band with strong resistance and under the weight of their body.

For the control and experimental groups, we developed complexes from selected exercises. The complexes were included at the end of the main part of the training session (classes were held three times a week for an hour and a half). The duration of each complex is 10-15 minutes. As a rule, 5-7 exercises were included in the developed complexes. When performing the exercises, the method of static stretching was used. Each exercise was performed for 30-40 seconds.

After five months, we re-evaluated the level of flexibility formation of gymnasts using the same control exercises.

The results of the level of flexibility formation after the experiment in the control and experimental groups are presented in table 2.

Table 2 - *The level of flexibility formation in the control and experimental groups after the experiment*

Control exercises	Groups	Statistical values			
		X	σ	t	p
Twine left (centimeters)	Control	9,8	1,3	3,6	<0,05
	Experimental	6,7	1,4		
Twine right (centimeters)	Control	7,8	1,3	2,3	<0,05
	Experimental	6,2	1,1		
Longitudinal twine (centimeters)	Control	8,4	1,4	2,3	<0,05
	Experimental	6,4	1,4		
Tilt ("crease") (centimeters)	Control	2,9	1,8	2,3	<0,05
	Experimental	6	1,7		
Bridge (centimeters)	Control	52,6	1,4	2,2	<0,05
	Experimental	50,4	1,5		
Hold right (left) (angular degrees)	Control	96,5	2,6	2,1	<0,05
	Experimental	103	2,4		
Holding right (left) to the side (angular degrees)	Control	100	2,3	2,5	<0,05
	Experimental	108	2,8		
Holding left (right) back (angular degrees)	Control	85,5	2,9	2,2	<0,05
	Experimental	94,5	3,1		

When comparing the results, we found that the two groups significantly increased the level of flexibility formation, but the gymnasts who performed the exercises with the elastic band had a higher level of flexibility formation after the experiment than the group of gymnasts which included exercises without elastic band. The experimental group exceeded the indicators of the control group and in each control exercise showed statistically significant increase in indicators ($p < 0.05$).

Conclusion

An analysis of the scientific and methodological literature showed that the issue of flexibility formation of young gymnasts has not been adequately studied, so an attempt was made to choose complexes of special exercises aimed at developing flexibility in the hip, shoulder joints and spine of gymnasts of 6-7 years old of initial training groups. When comparing the indicators of the level of flexibility formation of gymnasts of initial training groups before the experiment, it turned

out that in the experimental and control groups these indicators are approximately homogenous and have no statistically significant deviations.

The experimental results confirm the assumption the assumption that performing exercises with elastic tape to develop flexibility in gymnasts of initial training groups of 6-7 years old is more effective than using exercises without elastic band.

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现代信息技术在外语教学中

MODERN INFORMATION TECHNOLOGIES IN TEACHING FOREIGN LANGUAGES

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抽象。 在本文中，考虑了在非语言机构中教授外语的实践中使用现代信息技术的相关性。 作者认为，在非语言能力条件下，信息技术的使用是学习过程的重要组成部分。 作者认为，使用信息技术是教育过程的重要组成部分。

关键词：外语，信息技术，多媒体资源，非语言高等学校，交际能力，独立工作。

Abstract. *In this article, the relevance of the use of modern information technologies in the practice of teaching a foreign language in a non-linguistic institution is considered. According to the author, the use of information technology is an important component of the learning process in conditions of non-language faculties. According to the authors using informative technologies is an important component of educational process.*

Keywords: *foreign language, information technologies, multimedia resource, non-linguistic Higher school, communicative competencies, independent work.*

Introduction. XXI century is the age of informatization, undoubtedly, makes its own adjustments to the traditional teaching of foreign languages.

The goal is to study others' experience of using informational technologies in the process of teaching students a foreign language of non-linguistic higher school. The newest achievement in the sphere of information technologies give unique opportunity to get a lager informative base for teaching and learning English and enables to discover students' creative potential that makes the teaching process interactive, exiting and productive.

And our **aim** is to learn how to use modern information technologies correctly and effectively in the educational process within the framework of the university. In recent years, the issue of using new modern technologies for teaching foreign languages in the Institution of Higher Education has been increasingly raised. This is not only new technical means, but also new forms and methods of teaching, and a new approach to the learning process.

In modern pedagogical practice, various teaching technologies are used, with the help of which the interest of students to the subject increases stridently; the academic performance and the level of intellectual culture are also increased. One of the main tasks of the research is to create conditions for practical language gaining for each student, to choose such teaching methods that would allow each student to show his activity, his creativity, and also to activate the cognitive activity of the student in the process of teaching foreign languages.

Modern pedagogical technologies such as training in cooperation, project methodology, the use of new information and communication technologies, and the Internet resources help to realize a person-oriented approach to teaching, provide individualization and differentiation of education, taking into account the abilities of children, their level of education, and inclinations.

In the framework of achieving the aim of the research, it was found out that in the process of application of information technologies by the teacher of the foreign language, students realize creative activities that include the ability to question, explain, study, describe, compare, analyze, evaluate, express their opinions and judgments, argue them, conduct independent searches for necessary information, navigate the text in English, and to make brief messages on a given topic. All of the above will allow students to use the acquired knowledge and skills in practical activities and daily life to communicate with representatives of other countries; receive information from foreign sources of the information needed for educational purposes; expand opportunities in choosing future professional activities; study the values of the world culture, cultural heritage and achievements of other countries; familiarize representatives of foreign countries with the culture and achievements of Russia [4].

The use of information technology elements in classes helps to form the ability of schoolchildren to work with various information, critical attitude towards it, develops logical thinking, provides information and emotional saturation of lessons, promotes interest of students to the subject, and activates their creative potential with the surrounding life. The use of computer and information technologies in the second and third levels of training allows students to prepare better for the final certification in English in accordance with the requirements of the state standard. In the process of training: students not only improve the knowledge they acquired during the previous period of training, but also expand their vocabulary taking into

account the practical knowledge of a foreign language in the standard situations (within the framework of monologue utterances with elements of reasoning and dialogical conversations in the form of an exchange of views) [7].

At present, various forms of organization of the educational process are used. Since information technologies are both a means of supplying material and a controlling agent – such technologies provide high quality of the material supply and use various communication channels (text, sound, graphic, and touch). All this allows increasing students' motivation and forming their communicative competence. The computer at the lessons of a foreign language makes it possible to implement a personality-oriented approach to learning, provides for individualization and differentiation of instruction, increases activity, motivates students, provide them with the intensive learning process, fosters adequate self-esteem for students, and provides them with a comfortable learning environment. For use in foreign language lessons, a wide range of computer programs are currently offered:

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Issues of methodology and technology since computers started to be introduced in language learning (and in education in general) people have rightly asked whether the investment we are making can have a visible result. As digital expanded in society in general, this particular question is not asked quite so often, but it is still significant to make sure that the technologies that we have available are used effectively.

People are always tempted to try to make an argument for technology having an impact on the development of pedagogy along with we can see that to create usage of technology has enabled teachers to analyze what they are doing.

We also see people trying to populate this domain by talking about notions like the 'flipped classroom', apparently a methodology that sees an effort as occurring at 'home' and physical classrooms being used as spaces to explore what has been presented in the input. This is far from being a new idea, but these agendas are pushed for a while and then disappear again.

What is a challenger for a methodology that is central to the world of technology and language learning is that of blended learning [4, p. 222]

We see this methodology still being developed, but when handled best it is the most likely candidate for a starting a point for getting teachers to work with technology in their practice. It is still the case that most teachers work in physical

classrooms and looking at ways that these spaces can be augmented with digital technologies is a very good starting point. In our recent project we added the idea of the extended classroom to the notion of blended learning.

An extended classroom is one that allows learners to engage in material beyond the regular class period, so while a blended classroom is looking at ways that an activity might be enhanced by a technology, we also see technologies being used to make it possible to cover areas of the curriculum that there is just not enough time for in the busy world of formal education [5].

Thorne and Reinhardt (2008) have also proposed the notion of 'bridging activities', which simplistically is about getting learners to talk about how learners are using technology in their 'out of class lives' in the classroom [5].

Thorne and Reinhardt (2008) are interested in fan fiction, the sort of narrative material that is created around digital gaming. What they propose is that teachers encourage learners to bring this activity into the classroom with them and they use it as the foundations of lessons. What drove teachers' choices were the needs of the lesson and the perceived needs of the learners [2].

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Here we present some English language teaching is evolving all the time, particularly alongside advances in technology, working out by **Chia Suan Chong.** Here are what appear to be the top ten innovations for teachers, in no particular order.

Table 1

The top ten innovations for teachers [1]

1.	**Blended learning**	As teachers combine digital media with more traditional forms of teaching, their course materials and resources reflect the trend.	The **Combined Pre-Sessional Course** offered by King's English Language Centre (King's College London) combines face-to-face teaching and online lessons. For teachers who want to pepper their everyday teaching with practical online activities, Lindsay Clandfield and Jill Hadfield's **Interaction Online - creative activities for blended learning** emphasises the interaction between teachers and learners - .
2.	**Mobile learning**	Online resources are more accessible with a mobile app or a mobile-friendly version.	**Wordable** (Playlingo Ltd. with Cambridge University Press) turns vocabulary-learning into a fun, competitive game you could play with your friends. It has built-in, spaced repetition and active-recall learning to make new words stick **Essential English** (Oxford University Press) uses mobile technology to provide free resources for teachers and students, including flashcards, phrasebooks, lesson plans and activities. **Tri Pro English Website and Mobile Apps** helps learners to practise their listening through free, high-quality recordings divided into levels and coupled with comprehension questions.

3.	**Gamification**	Digital games for expanding vocabulary	Appealing to football-lovers, **LearnMatch** (VE Vision Education GmbH) uses training sessions, friendly matches, leagues and cup games to make vocabulary learning fun for young **learners**. **Get Set, Go! Phonics** (Oxford University Press) uses chants, songs and games to help develop pre-school children's phonological awareness. On an even more immersive scale, **Learn Languages with Ruby Rei** (Wibbu) plunges the learners into an interactive adventure game. They have to use their language skills to negotiate, collaborate and build friendships in order to escape from a forgotten planet at the edge of the universe. Any learning that takes place is incidental.
4.	**Embodied learning**	Embodied learning is based on the idea that learning is not just about remembering. It involves using the mind and the body, collaborating, discussing and exploring. Learners need to be emotionally, intellectually, physically and socially engaged.	**Courses such as Doodle Town** (Macmillan Education) use visual, audio and hands-on activities to stimulate and inspire learning, getting young learners to draw, create, and be inquisitive. Orbit (Richmond) develops the young learners' socio-emotional and cognitive skills through a language course that follows the story of a ferret and children who go on adventures in multicultural environments
5.	**Inquiry-based learning (or: 'learning in a complex world')**	The scenarios that teachers come across in some course materials can seem simplified and unrealistic, leading us to wonder if we are adequately training our learners for real life in the 21st century.	Courses like **Fast Track 5** (EF Education First Ltd) and **Wider World** (Pearson with the BBC) use authentic video and audio content to bring the real world to teenage learners. They encourage teenagers to practise the soft skills and communication skills needed to take part in the global communities of the 21st century. Aimed at the adult learner, **Perspectives** (National Geographic) uses real-life stories and TED talks to motivate learners to think critically and creatively. Danny Norrington-Davies's **Teaching Grammar: From Rules to Reasons** (Pavilion Publishing) is an alternative approach to teaching grammar. Teachers and learners discover how writers and speakers use grammar to express themselves in real life. Hugh Dellar and Andrew Walkley's Teaching Lexically (Delta Publishing) combines the teaching of grammar and lexis for more effective classroom practice, rather than over-simplifying language into a more traditional 'grammar + words' view.

6.	**Digital platforms**	When we discuss innovation, we often immediately think of the internet and what we can now do online.	Facebook and especially **Edmodo**, which creates a safe online environment for teachers, students and parents to connect, are popular with teachers. Cloud-based tools like **Google Docs** have also become indispensable. For teacher Tyson Seburn, it's 'where I've moved so much of individual and (because of its functionality) collaborative writing with students...' The list of digital platforms is extensive and growing all the time. A multimedia manual like **Digital Video** by Nik Peachey (nominated for a ELTons award for innovations in teacher resources) can help teachers navigate the complicated, and sometimes overwhelming, world of digital resources, enabling teachers to create activities, lessons and courses from a range of digital tools.
7.	**Communicating with people online**	The ability to communicate online with people outside the classroom In monolingual classes (i.e., most English classrooms around the world), this could give much-needed motivation to students who otherwise might not have the opportunity to interact with anyone in English.	via Skype and similar tools has enabled students to meet and interact with others in English And as for teachers, the ability to converse with students face-to-face online has opened up a whole new market for Skype lessons and online classes.
8.	**Online authentic materials**	One of the biggest benefits of the internet for language learners is the sudden widespread availability of authentic resources. As David Deubelbeiss points out, this enables teachers to use 'content with messages students want to hear'.We can now access the daily news, watch trending videos on YouTube, read the latest tips on TripAdvisor… the possibilities are endless.	But with so much content available to us, choosing the right online materials is crucial for efficient and effective learning.Keynote by National Geographic Learning, makes use of TED talks to develop a pedagogically sound approach to language learning, while ***Language Learning with Digital Video*** (Cambridge University Press) looks at how teachers can use online documentaries and YouTube videos to create effective lessons. Both resources are nominated for this year's ELTons awards.

9.	**Teaching soft skills and critical thinking skills**	As English cements its position as **the world's lingua franca**, many of our students are now learning English to oil the wheels of communication in the worlds of business, trade, education, and tourism. To enable our students to become better communicators, we should perhaps go beyond grammar, vocabulary and pronunciation, and look at helping them **communicate effectively in international settings**.	Learner resources nominated for an ELTons award this year include ***Richmond Business Theories*** (Richmond ELT), which features online resources that help teachers and students with soft skills like problem-solving, presentation skills, time management and decision-making. ***Academic Presenting and Presentations*** (Levrai and Bolster) looks specifically at the communication skills needed when making a presentation at college or university. Another ELTons nominee is ***The Thinking Train*** (Helbling Languages), which believes in starting young. It helps children develop critical thinking skills that could support them not just in their English learning but in the learning of other subjects and life skills. And perhaps it is this ability to think and reflect that will enable us as teachers and learners to take any innovation out there and make it work in our context for our students. After all, as a wise teacher of mine used to say, 'It's never the tool, but the user that makes the difference.'
10.	**Online authentic materials**	One of the biggest benefits of the internet for language learners is the sudden widespread availability of **authentic resources**. As David Deubelbeiss points out, this enables teachers to use 'content with messages students want to hear'. We can now access the daily news, watch trending videos on YouTube, read the latest tips on TripAdvisor: the possibilities are endless.	But with so much content available to us, choosing the right online materials is crucial for efficient and effective learning. **Keynote** by National Geographic Learning, makes use of TED talks to develop a pedagogically sound approach to language learning, while ***Language Learning with Digital Video*** (Cambridge University Press) looks at how teachers can use online documentaries and YouTube videos to create effective lessons. Both resources are nominated for this year's ELTons awards.

Results. The advantages and disadvantages of modern computer technologies are characterized. The experience of using computer technologies in the process of teaching a foreign language to students in a nonlinguistic institution is described. It is pointed out that the experience of using modern technologies in the process of studying a foreign language makes it easier for students and creates a familiar environment for them. They help to overcome the language barrier and psycho-

logical complexes of students. Thanks to multimedia resources, the study of a foreign language can be carried out beyond the limits of a practical lesson and make it continuous. The latest achievements in the field of information technologies provide a unique opportunity to obtain a more extensive informative base on the subject "Foreign Language", and also provide an opportunity to reveal the creative potential of students, which makes the learning process of foreign languages interactive, entertaining and productive information technology, multimedia resource, non-linguistic institution of higher education, communicative competence, independent work.

In conclusion we would like to underline that educational technology is an ever-growing academic field which recognizes the centrality of technology of education. In contemporary life it is especially important. Digital technologies have revolutionized the ways of teaching and learning languages. These technologies give participants of educational process an opportunity with each other, with people and resources in the target language. The use of modern technologies provides educational process with authentic material and tasks, supplies teachers with great number of published books, articles tests, exercises that helps to vary teaching methods, facilitate educational process. Digital technologies help students to enhance their communicative skills, increase motivation to language learning, and reduce anxiety [8].

It can't but mention that using digital technologies in educational process require thorough adaptation of digital material to the needs of didactic purposes. This process can be complicated and time consuming.

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从直观的见识到科学创造力的话语推理
FROM INTUITIVE INSIGHT TO DISCURSIVE INFERENCE IN SCIENTIFIC CREATIVITY

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抽象。本文阐明了一般科学创造力的过程。研究表明，一般的科学创造力是一个建设性的过程，可以创造关于世界的新的客观，系统地组织和证实的知识。通过开发用于创建与所选科学方向相对应的对象的算法，可以确认在洞察力（科学发现）期间获得的问题的直观解决方案。用于创建所需对象的已开发算法是一个结论结论，阐明了直观洞察的结果。在一般的科学创造力中，建构过程本身类似于数学创造力定理的证明。组织一般科学创造力的规则是：通过关注发展，关注对象和行为来扩大超意识领域；以递归方式进行思维的自组织-对问题的全面理解，同时保持问题的存在，并将其转移给超意识者进行解决；使用包含用于创建感兴趣对象的算法的指示的概念。

关键词：一般的科学创造力，话语和直觉思维，建设性过程。

Abstract. *The article clarifies the process of general scientific creativity. It is shown that general scientific creativity is a constructive process that creates new objective, systemically organized and substantiated knowledge about the world. The intuitive solution of the problem obtained during the insight (scientific discovery) is confirmed by the development of an algorithm for creating an object that corresponds to the chosen scientific direction. The developed algorithm for creating the desired object is a discursive conclusion clarifying the result of intuitive insight. In general scientific creativity, the constructive process itself is an analogue of the proof of a theorem in mathematical creativity. The rules for organizing general scientific creativity are: expanding the sphere of superconsciousness by focusing on development and focusing on the object and action; self-organization of thinking in a recursive way - a comprehensive understanding of the problem, while maintaining the problem, transferring it to the superconscious for solving; the use of concepts containing indications of an algorithm for creating an object of interest.*

Keywords: *general scientific creativity, discursive and intuitive thinking, constructive process.*

Introduction

Science is a special type of cognitive activity aimed at developing objective, systematically organized and substantiated knowledge about the world [10].

Creativity is a category of philosophy, psychology and culture, expressing the most important meaning of human activity, consisting in increasing the diversity of the human world in the process of cultural migration [11].

The concepts of science and creativity are consonant, their combination allows us to determine scientific creativity. Scientific creativity is the process of creating new objective, systemically organized and substantiated knowledge of the world.

The father of the theory of scientific creativity in mathematics is A. Poincare [1]. G. Wallace (1926) identified 4 stages of the creative process: a) the preparatory stage - the formulation of the problem and the initial attempts to solve it; b) incubation of the idea - a temporary refusal to try to solve and switching to other issues; c) inspiration - instant intuitive penetration into the essence of the problem; d) verification - testing and (or) implementation of the solution [11]. The first and fourth stages are organized by consciousness, the second and third - are performed by unconscious actions. J. Hadamard notes the necessity and importance of the fourth stage. This new manifestation of consciousness is necessary to perform two interrelated actions:

1. Checking the results with our mind is a task whose solution is a conscious process.

2. Their "completion" - an accurate expression of the results. The unconscious never gives completely and in coherent form the results of a long calculation. These calculations, requiring discipline, attention and will (the work of consciousness), depend on the second stage of conscious work, which follows the insight.

The second operation is inseparable from the first, from verification. Consciousness fulfills them simultaneously [1]. The statement of the theorem is the result of incubation, it is brought to consciousness through insight, the proof of the theorem is the result of verification and the exact expression of the results.

The works of A. Poincare and J. Hadamard dealt with mathematical creativity and are confirmed by their outstanding results.

The process of general scientific creativity to this day remains uncertain. This is evidenced by the paradox of existing science: an experimental verification of scientific discoveries lowers fundamental science to an empirical level. This primarily concerns the science of the most complex topics - living and human.

J. von Neumann noted [6]:

1. The description of the functions of a simple automaton is simpler than the automaton itself, but when the complexity level becomes high, the real object is simpler than its description.

2. It is possible to build an organ capable of doing everything that can be done at all, but it is impossible to build an organ that gives an answer to the question whether this can be done.

3. You can work inside a logical type that includes everything that is realizable, but the question is realizable by something in some type, itself belongs to a higher logical type.

Hence the failure of the analytical approach to the study of complex objects and the possibility of a new approach of a constructive orientation. The purpose of the constructive approach is the algorithm for creating a complex object. The basis of the constructive approach is the use of concepts containing indications of this algorithm [2, 3].

The constructive approach allowed us to obtain results that reduce the uncertainty of general scientific creativity.

Purpose of the study – clarify the process of general scientific creativity.

The results of the study

Thinking – is an active process of forming and satisfying needs. It includes the perception of information from the outside world and the internal environment, its processing taking into account past experience and future prospects, setting goals, developing a program for achieving it, implementing this program, checking effectiveness and restructuring behavior [2, 3, 4, 5].

In philosophy, two types of human thinking are distinguished [8]:

1. Discursive thinking consists in a developing sequence of concepts or judgments, its result is aware, therefore it is a common property and unequivocal.

2. Intuitive thinking captures the whole independently and outside of any sequential development, its result is not formally substantiated, it is the achievement of an advanced individuality, accepted by others "for granted" and arbitrarily interpreted.

Human thinking includes three areas: subconscious - management of known programs, connected with the past, serves the needs of conservation; superconsciousness - the development of new programs, connected with the future, serves the needs of development; consciousness - control and organization of thinking, connected with the current moment, serves social needs [2, 4, 5, 7]. Discursive thinking is a function of consciousness, intuitive - superconsciousness. The neural resource of thinking is redistributed in favor of the dominant need. The basis of successful thinking is the expansion of the sphere of superconsciousness by focusing on development and focusing on the object and action [4].

Knowing the features of human thinking, we can imagine an algorithm for its organization:

1. Comprehensive understanding of the problem - the formulation of the problem and verification of the feasibility of its solution, goal setting and as-

sessment of the conditions for its achievement. The inadmissibility of solving the problem and the lack of conditions for achieving the goal require temporary removal from the original problem - the problem is finding the necessary admissibility and conditions. This stage of thinking corresponds to the preparatory stage of the creative process. If the problem persists, then proceed to the next step.

2. The transfer of the problem to the superconscious - is a temporary refusal to attempt to solve the problem, attention is directed to the circumstances that gave rise to the problem and current events (in scientific work - to the study of special literature; communication with colleagues; participation in scientific conferences, symposia and similar events), additionally use tools that improve thinking [4]. This stage of thinking corresponds to the incubation of ideas. If there is no insight - the problem persists, then go to the next stage.

3. Comprehensive understanding of the problem taking into account new circumstances.

The intuitive solution of the problem obtained during the insight (scientific discovery) is confirmed by the development of an algorithm for creating an object that corresponds to the chosen scientific direction. We are dealing with a constructive process, the rule of organization of which is the use of concepts containing indications of the corresponding algorithm [9]. Thus, the developed algorithm for the creation of the desired object is a discursive conclusion clarifying the result of intuitive insight. In general scientific creativity, the constructive process itself is an analogue of the proof of a theorem in mathematical creativity. It should be emphasized that the intellectual bridge between mathematics and general science was laid by J. Von Neumann [6].

Using a constructive approach, the author of the article, together with colleagues, was able to formulate a constructive theory of adaptation and the theory of organization of the human evolutionary cycle.

The constructive theory of adaptation (V.K. Volkov, V.I. Kozlov, I.V. Molchanov, Yu.V. Struk) contains: constructive concepts - vitality and its components, vitality resources, current, pathological and physiological adaptation; signs of pathological adaptation and threats to the ability to reproduce themselves (terminal states of the second kind), the conditions for developing a new adaptive program that eliminates adaptation disorders [3].

The theory of the organization of the human evolutionary cycle (V.K. Volkov, A.V. Karasev, V.I. Kozlov, S.I. Kramskoy) contains: constructive concepts - absolute human values (constructive freedom, health and happiness), the human evolutionary cycle ; methodological principles of the organization of the human evolutionary cycle [5].

Conclusion. The constructive process consists in the implementation of a finite number of steps regulated by these rules. The result of the constructive process is

the abstract configuration of elementary signs - a constructive object generated by this process. The constructive process itself is the creation of the corresponding object [9]. It follows from the above that **general scientific creativity is a constructive process that creates new objective, systemically organized and substantiated knowledge of the world.**

The rules for organizing general scientific creativity are:

1. Expanding the sphere of superconsciousness by concentrating on development and focusing on the object and action.

2. Self-organization of thinking in a recursive way - a comprehensive understanding of the problem, while maintaining the problem, transferring it to the superconscious for solving.

3. The use of concepts containing guidance on the algorithm for creating the object of interest.

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在现代学校中创造适应性教育环境的社会心理机制和方法
SOCIO-PSYCHOLOGICAL MECHANISMS AND METHODS FOR CREATING AN ADAPTIVE EDUCATIONAL ENVIRONMENT IN A MODERN SCHOOL

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抽象。 本文介绍了教育学院教师与学校教职工互动的经验。 合作的内容是教育过程主体社会互动技术的发展。 文章揭示了在建立适应性教育环境的过程中，共同寻找特定社会心理机制和方法以提高教师的教学效率的内容。

关键词：适应，适应性教育环境，教育过程人性化，互动，教师教学效率，社会互动技术

Abstract. *The article presents the experience of interaction of teachers of the pedagogical Institute with the teaching staff of the school. The content of cooperation is the development of technology of social interaction of subjects of the educational process. The article reveals the content of the joint search for specific socio-psychological mechanisms and ways to improve the teacher's pedagogical productivity in the process of creating an adaptive educational environment.*

Keywords: *adaptation, adaptive educational environment, humanization of educational process, interaction, teacher's pedagogical productivity, technology of social interaction*

The current stage of development of socio-economic and political processes in Russia is characterized by sharp contradictions, the further development of market relations, which inevitably affect education. In the last decade, radical changes have been taking place in education related to the formation of a new paradigm based on the integration of educational, production and research activities focused on the individual, on the humanization of the educational process, on the principle of continuity, the use of modern information technologies. In the field of education, the market for educational services and products is developing.

Dynamic changes are largely determined by the influence of external and internal factors. External factors - changes in the current socio-economic situation, determine changes in the structure of state and public demand for the education system - from ensuring the diverse development of children and adolescents capable of self-determination in the current socio-cultural situation, to training a professional and social functionary, taking into account both relevant requirements of the conjuncture on the labor market, as well as the requirements of the prospect of scientific, technical, economic, spiritual and political revival of the country.

The internal development potential has formed and continues to accumulate in the educational system itself: the number of new concepts is growing, new textbooks have been developed and published, new models of educational institutions are being formed and developed, and the process of revising value orientations in education is underway.

The simultaneous influence of external and internal factors necessitates a transition from "survival" to the sustainable development of the educational system, a review of the social status of education: it is increasingly starting to act as a factor in changing social life and the sustainable development of the whole society. For education, it is becoming increasingly important to form our own development strategy, which allows us not only to take into account the diversity of the current socio-cultural situation, but also to take an active position aimed at changing it. Moreover, the main function of education, which radically changes its quality, is the function of transforming education into a real mechanism for the development of an individual, society as a whole.

In 2008, an agreement was signed between the Department of Psychology of the D.I. Mendeleev TPI with the secondary school № 18 of the city of Tobolsk on scientific support of the school development program on the topic: “Creating an adaptive educational system in a socially oriented school” (2).

The most important factor ensuring a person’s state of health, i.e. a certain set of physical and spiritual qualities that a person possesses is adapted mental activity. Adaptation is considered in two directions: adaptation of a person to a new external environment and adaptation as the formation of its new qualities on this basis. Socio-psychological adaptation is the interaction of the individual and the social environment, which leads to the optimal ratio of goals and values of an individual and a group.

Studies have shown that the process of adaptation of students has age-related dynamics (Table. 1)

The manifestation of school adaptation of students

Table 1

Grade	Student adaptation level		
	high	medium	low
1	46,6%	36,6%	16,7%
5	44%	25,9%	29,6%
10	0%	57%	63%

As can be seen from the results of the study, the number of maladaptive students increases in the age aspect, namely in high school there is an increase in the number of students with signs of impaired adaptation processes. This conclusion determines the relevance and need for scientific support of the research topic.

In the process of scientific support of the school development program in 2015-2018. The technology of social interaction was tested. The study examined the issues of psychological safety of the educational environment (EE) of the school: the sociometric and reference significance of the environment (attitude to the EE of the school), satisfaction in personal-confidential communication, i.e. satisfaction with the characteristics of EE of the school (relationships with students, relationships with teachers, the opportunity to express one's point of view, respectful attitude, personal dignity, the ability to seek help, the opportunity to take the initiative, taking into account personal problems and difficulties), protection from psychological violence (from humiliation, insults, threats, coercion to do something against desire, ignoring, hostile attitude), self-esteem of students.

Psychological safety was understood as the state of the educational environment, free from manifestations of psychological violence in interaction, contributing to meeting the needs for personal and trustful communication, creating the reference value of the environment and ensuring the mental health of the participants included in it. That is, a psychologically safe educational environment can be considered one in which most participants have a positive attitude towards it, a high level of satisfaction with the characteristics of the school environment and protection from psychological violence in interactions.

The results of the assessment by students of grade 8 of the characteristics of the educational environment

Table 2

Satisfaction with EE characteristic	Level of satisfaction		
	Low/ below average (%)	Medium / below average (%)	High / very high
Relations with teachers	4/-	19/25	77/75
Relations with students	4/-	-/4	96/96

Satisfaction with EE characteristic	Level of satisfaction		
	Low/ below average (%)	Medium / below average (%)	High / very high
The possibility of expressing one's point of view	8/4	34,5/26	57,5/70
Respect for oneself	-	26,9/10	72,9/90
Preservation of personal dignity	-	15/4,5	85/95,5
Ability to seek help	-/4	31/8	69/88
Ability to take initiative, activity	-	42/-	58/100
Taking into account personal problems and difficulties	4/20	69/25	23/55

The results of a study of the attitude to the educational environment of students in grade 8, subject teachers and their parents indicate that the majority of students (77%), their parents and teachers (87%) are positive about the school. Parents and teachers consider the educational environment as a reference, as a carrier of norms, standards of behavior, establishing and reinforcing norms and standards of behavior of a child's personality.

The level of satisfaction with the characteristics of the educational environment is assessed by students, their parents and teachers at medium, high and very high levels. At the same time, parental satisfaction at the average level is higher compared to students and teachers.

Eighth-graders in the survey did not reveal a low level of satisfaction with the characteristics of the educational environment of the school: it is considered by them as a reference. Three students are below average satisfaction for various characteristics: relationships with students and teachers (1 student), relationships with classmates and the opportunity to express their point of view (1 student), taking into account personal problems and difficulties (1 student). The neutral (contradictory) attitude of eighth-graders is found by the characteristics of EE:

- "taking into account personal problems and difficulties" - 69%,
- "opportunity to show initiative, activity" - 42 %,
- "opportunity to express one's point of view" - 34,5 %.

Reduced cognitive motivation, the prevalence of inadequate self-esteem of students in various fields of interaction are risk factors for the psychological safety of the educational environment. Inadequate self-esteem is the cause of conflict situations and processes of disunity in the classroom. The monitoring results showed the need to use technology of social interaction to overcome the risks of psychological safety of the educational environment.

Based on our studies, we identified the main areas of psychoprophylactic activity:

1. The formation of a positive attitude of students to learning in the process of updating the professional skills of teachers.

2. Intensification of interpersonal interaction of students in the business and personal spheres.

3. The development of adequate self-esteem of students in the course of socio-psychological training, communication and joint activities in the lessons and in extracurricular activities.

Creating an adaptive educational environment involves adapting, getting used to the requirements of an educational institution, mastering social norms of behavior at school, which are necessary for inclusion in educational and cognitive activities.

The adaptive educational environment is, first of all, the adoption by the student of the value orientations of education, awareness of the motives, goals of his own educational and cognitive activity. The universal task of the teacher is to find the most appropriate ways for the student, individual methods of entering the educational activity, the school team, the formation of an adequate self-esteem.

Adaptation of a student to educational and cognitive activity is a complex and multifaceted process. Educational activity is a specific type of activity for a person. V.V. Davydov and many other domestic psychologists determine its specificity by the fact that educational activity is the subject's activity in mastering generalized methods of educational actions and self-development in the process of solving educational problems specially set by the teacher, based on external control and evaluation, turning into self-control and self-esteem. Entering into an educational activity is the assumption of all its constituent components: tasks, subject, methods, means, results, conditions, etc.

Scientific support of the school development program is aimed at promoting, first of all, pedagogical activity. Attitudes toward pedagogically productive activities of teachers depend on a number of semantic substantive foundations of the professional activities of the teaching staff. The leading role in scientific support is played by the competency-based approach, the development of the teacher's focus on mastering the psychology of educational and cognitive activity [1].

The classic of Russian psychology S. L. Rubinshtein noted: "In order for a student to really get involved in the work, it is necessary to make the tasks set during the educational activity not only understandable, but also internally accepted by them, that is, so that they acquire significance for students and thus find a response and a supporting point of view in his experience ... a personally significant attitude substantially determines their development and understanding "[3].

Teacher's pedagogically productive attitudes are tested throughout his professional career. The personality-oriented approach, unfortunately, is rarely considered in relation to the teacher. Excessive requirements, expanding the range of

professional duties, red tape is just a small list of those adverse conditions that are an objective factor in reducing the teacher's attitude toward the pedagogical productivity of professional activity. The result of these adverse factors is a decrease in the quality of education. It is known that, it cannot be higher than the quality of the teacher's professional activity. To limit the range of professional tasks and highlight a number of universal ones is the main goal of the scientific support of innovative activities at school. Based on this position, we draw a conclusion formulated by Rubinstein S.L. as far back as 40-50 years of the twentieth century: "The only task of education is not to inform the child of certain knowledge, but merely to develop certain abilities in them: it doesn't matter what material to inform the child, it is only important to teach him to observe, think, etc. This is how the theory of formal learning teaches, which sees the task of education not in the fact that the student must mastered a certain amount of knowledge, but in the development of certain abilities necessary for him to get it "[3, p. 495].

It is the ability to affect, influence students, reveal their potential, direct them towards the desire for self-development is the main universal professional task of a modern teacher. The particular urgency of solving the universal professional task today is related to the need to overcome a number of negative factors in education: a decrease in students' interest in studying, low motivation for socially approved activities, susceptibility to the bad influence of the environment, juvenile delinquency, etc. Overcoming these negative objective and subjective consequences, in our opinion, is a goal for a teacher capable of solving the following universal professional tasks:

1. The inclusion of students in educational and cognitive activities based on the creation of positive motivation.

2. The development of interest in learning based on the basic needs of students in communication and joint activities.

3. Actualization of students' potential abilities through the development of independence and creativity.

4. The transformation of educational and cognitive activity into a means of shaping the personality of the student, his need for self-discipline and self-education.

Scientific support for the school development program includes a range of the following tasks:

1. Development of criteria for successful social adaptation of students to the educational space of the school.

2. The study of the features of social adaptation of schoolchildren in age, sex, and individual aspects.

3. The study of factors ensuring the successful social adaptation of students.

4. Development of a program of psychological rehabilitation of socially maladaptive adolescents.

5. Development of criteria for the analysis and development of pedagogical productivity of teachers.

6. Development of a program of a training seminar for teachers and school leaders “Development of teacher’s pedagogical productivity in solving universal professional problems” [1].

The experience of interaction between the teachers of the department and the teaching staff of the school showed that scientific support is a specific form of interaction, which has its own structure and dynamics. The content of this interaction is a joint search for specific socio-psychological mechanisms and ways to increase the teacher’s pedagogical productivity.

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诊断和评估医务人员专业重要个人素质的方法论方法

METHODOLOGICAL APPROACHES TO THE DIAGNOSIS AND ASSESSMENT OF PROFESSIONALLY SIGNIFICANT PERSONAL QUALITIES OF MEDICAL PERSONNEL

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抽象。本文致力于开发用于诊断和评估医务人员专业重要个人素质的方法学方法。

威斯巴登问卷和聚类分析方法用于研究和评估各个专业组（医生，护理人员和行政管理人员）在专业上具有重要意义的个人素质（PSPQ）。

这些技术的应用使我们能够在各个专业群体中形成一组最佳的具有专业意义的个人品质，并确定会对职业活动产生负面影响的负面品质。

体征共轭的研究结果表明，医务人员的人格特质发生频率不同，在服务人员和医护人员中最为明显。在秤上可以看到相同的图像。

使用聚类分析，确定特定职业的最佳个人素质，并确定他们的对应关系。具有重要专业意义的个人素质的最佳指标与行政部门，医务人员更加一致，而与维护人员的联系则较小。

根据这项工作的结果，我们编写并测试了计算机程序“评估医务人员的专业和心理适应性”，并于2016年获得了联邦知识产权局局长的批准。针对人格特质的个性特征，提出了以人格为本训练形式的教养工作。

关键词：专业个人素质，医务工作者，诊断，预防。

Abstract. *This article is devoted to the development of methodological approaches for the diagnosis and assessment of professionally significant personal qualities of medical personnel.*

The Wiesbaden questionnaire and the cluster analysis method were used to s*tudy and evaluate professionally significant personal qualities (PSPQ) of individual professional groups (doctors, nursing staff and administration).*

The application of these techniques allowed us to form an optimal set of professionally significant personal qualities in individual professional groups and identify negative ones that will negatively affect professional activities.

The results of the study on the conjugation of signs revealed a different frequency of occurrence of personality traits among medical workers and they are most pronounced among service and paramedical personnel. The same picture is observed on the scales.

Using cluster analysis, optimal personal qualities for a particular profession were identified and their correspondence was determined. The optimal indicators of professionally significant personal qualities are more consistent with the administration, medical workers and to a lesser extent with the maintenance staff.

Based on the results of this work, we wrote and tested in practice a computer program "Assessment of the professional and psychological suitability of medical workers", which was approved by the Head of the Federal Service for Intellectual Property in 2016. At low values of individual characteristics of personality traits, correctional work in the form of personality-oriented training is proposed.

Keywords: *professionally personal qualities, medical workers, diagnostics, prevention.*

Medical workers, along with the presence of high professional skills, must have the presence of certain personal qualities that are necessary for effective medical interaction.

The problem of assessing professional and personal characteristics of various categories of medical workers becomes relevant due to the lack of a unified methodological approach to solving this problem.

Questions of professional choice, development, adaptation, and professionalization of a physician's personality are among the most important and poorly studied problems of labor psychology [8, 17].

The formation of a specialist in a profession does not at all consist in the accumulation of a system of knowledge assessment. It is important to diagnose professionally significant qualities of specialists, to determine their weak and strong components, motivation for work and professional suitability [6,8]. The solution to this problem will make it possible to objectively assess the professional suitability of an applicant entering a university, the employee's suitability for the job, improve the professional and personal qualities of the employee, and form the abilities and qualities of a good leader based on adapted and tested diagnostic methods [3, 11].

In the course of mastering the profession, professional and personal important qualities are formed - human abilities, which determine the level of future specialist qualifications. For the quick adaptation of a specialist in a profession, his professional suitability is important, which is determined by a combination of psychophysiological and psychological features, etc. [9, 10].

Professionally significant (important) qualities are a rather complex formation, which includes various characteristics of a person.

Domestic scientists name following professionally significant qualities: moral and ethical; communicative; strong-willed; organizational; psychophysiological features and even anatomical and morphological characteristics of a person [2,7,8,13,14].

Moreover, the definition of professionally significant personal qualities of employees includes various key features: individual qualities and abilities [16]; communicative, self-regulation [1]; professional suitability [9,10]; successful implementation of professional activities [4,12], etc.

In professionally significant personal qualities, we include the optimal individual psychological properties of the personality, which can have different structural and functional components of the psyche and thereby affect the effective adaptation and productive professional activity [5].

Individually oriented psychodiagnostics and correction can be an important tool for supporting professional development and the most complete realization of the professional psychological potential of a specialist, maintaining the highest professional labor productivity. In addition, this will allow to identify and highlight weak and strong qualities, improve development and diagnosis.

The study of professionally significant personal qualities of medical workers included a comprehensive study of the type of behavioral activity, level of personal neuroticism, mental type and personality traits of a person, which included 27 indicators, using the methods of Wasserman and Gumeniuk, V.V. Boyko, Susan Dellinger, N. Peseshkian.

As a result of testing, we received for each medical specialist a characteristic that included: personality type (A, B, AB), level of anxiety (high, medium, low), mental type (circle, zigzag, rectangle, etc.) and a list personal characteristics (high, medium and low).

The application of these techniques allowed us to form an optimal set of professionally significant personal qualities of a specialist and identify negative ones that will adversely affect professional psychological adaptation.

Further, it was important to identify and distinguish from a large list of professionally significant personal qualities, as a result of testing by the Wistbaden questionnaire, those qualities that can be considered optimal for individual professional groups (doctors, nurse, attendants and administration).

To analyze the obtained test results, we applied statistical modeling methods and cluster analysis.

Cluster analysis allows you to combine close attributes (qualities) into clusters that are as close as possible according to the observed signs and have differences with other groups [15].

When studying professionally significant personal qualities of different professional groups of medical workers, we estimated the frequency of occurrence of qualities in relation to each group and the frequency of occurrence within them. The study involved 285 specialists (table 1). The results were estimated by structural units and to obtain more accurate results, we summed up the average and high values.

The results of the study, presented in table 1, showed that the frequency of occurrence of personality traits among medical workers has significant differences and depends on where they work. The highest frequency is found among attendants and paramedical personnel (average indicators 60-62), doctors (43), and administration (35).

I wanted to draw attention to how the experts answered the question "body/sensations", high scores of which indicate a different degree of severity of psychosomatic pathology. This problem is most significant for attendants, doctors, nurses and, to a lesser extent, for administration.

Table 1

The correlation of signs of some professionally significant personal qualities of medical workers according to the results of the Wiesbaden questionnaire (frequency of occurrence medium + high)

Scales	Service staff	Nursing staff	Doctors	Administration
Tidiness	50,6	76,4	43,1	29,9
Cleanliness	67,3	55,2	49,6	27,8
Punctuality	64,1	59,1	41,6	37,3
Politeness	61,9	75,2	45,3	35,7
Honesty/directness	59,5	54,2	44,2	42,0
Diligence/activity	57,5	59,2	48,3	35,0
Complaisance	61,8	53,0	47,0	38,2
Thriftiness	66,6	61,1	47,3	25,0
Obedience	59,5	59,5	51,7	29,2
Contacts	60,2	50,0	47,4	42,3
Body / sensation psychosomatics	84,3	41,6	47,0	27,0
Activity	68,9	70,9	37,0	26,2
Contacts/Action	43,3	69,0	21,4	64,3
Average performance	61,9	60,3	43,9	35,4

Through the maximum similarity by observed signs (cluster analysis), we identified the optimal professionally significant personal qualities for each specialty (table 2).

Table 2

Optimal indicators of professionally significant personal qualities

	Optimal PSPQ characteristic
Service staff	Hope, Contacts, Fantasy, Faith/religion, Fidelity, Honesty / Directness, Neatness, Complaisance, Cleanliness, Time
Nursing staff	Obedience, Cleanliness, Diligence/activity, Courtesy, Contact / Action, Fidelity, Faith / Religion, Accuracy, Hope, Punctuality
Doctors	Hope, Diligence/activity, Contacts, Obedience, Justice, Complaisance, Courtesy, Cleanliness, Tidiness, Trust

To obtain more accurate and interrelated results, we increased the sample size by combining nursing staff + doctors. Thus, we got an enlarged group working with patients.

As an example, we present the results of the grouping of similar attributes (qualities) into clusters that are as similar as possible to the observed attributes and have differences with other groups (Figure 1).

The medical staff working with patients (nursing staff + doctors) includes the following 10 professionally significant personal qualities: Hope; Diligence/activity; Love; Punctuality; Cleanliness; Fidelity; Honesty / directness; Obedience; Politeness; Contacts/action.

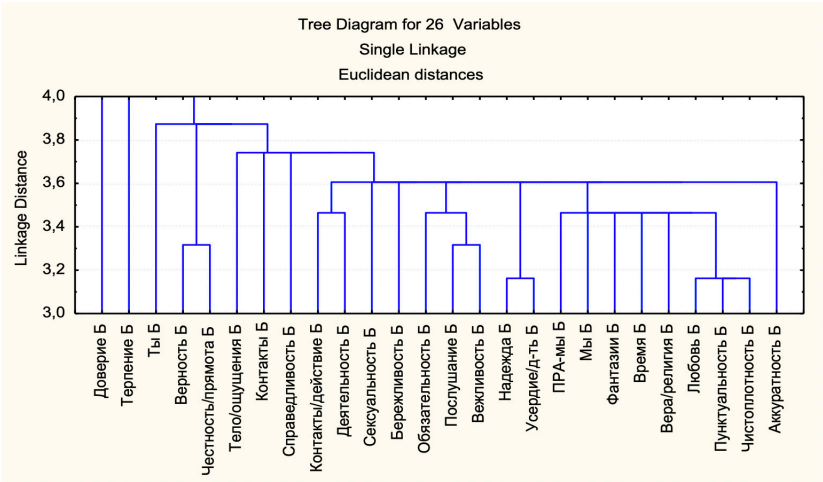

Figure 1. *Indicators of professionally significant personal qualities of an enlarged group (nursing staff + doctors)*

Thus, a brief interpretation of the scales of the questionnaire of optimal professionally significant personal qualities for an enlarged group of medical personnel working with patients (nursing staff + doctors) should include:

- Hope - confidence in the development and success in the present and future;
- Diligence/activity - a willingness to work hard and tiring for a long time to achieve a certain goal;
- Love - an emotional attitude to the quality and behavior of another person, which is characterized by his acceptance as a person;
- Punctuality - strict adherence to the agreed or expected time;
- Cleanliness - the cleanliness and neatness of the body, clothing, premises and the environment;
- Fidelity - a long follow-up of subconscious or conscious norms and concepts;
- Honesty/directness - an open expression of one's opinion;
- Obedience - the execution of requests, instructions, orders of the leadership and the requirement of similar behavior from others;
- Politeness - super friendliness, gallantry, good manners, inability to refuse;
- Contacts/action - the ability to establish and maintain relationships when problems arise.

Highlighted optimal (high + medium) professionally significant personal qualities allowed us to assess how these indicators can correspond to a specific professional activity (table 3).

Table 3

Compliance with the optimal indicators of professionally significant personal qualities for a particular profession (in%)

	Service staff	**Nursing staff**	**Doctors**	**Administration**
Compliance	33,3	43,0	44,4	57,0

The obtained results of conformity of qualities showed low rates. The most difficult situation is for EMERCOM staff, which requires additional research and development of a comprehensive prophylactic program.

Determining the optimal and unimportant characteristics of professionally significant personal qualities of individual professional medical groups and a specific specialist makes it possible to identify compliance or non-compliance with optimal indicators. As an example, we give the results of service staff, which show that a particular specialist is characterized by both high rates and low PSPQ. As a result, we get a certain set of professionally significant personal characteristics, according to which we can draw preliminary conclusions about the professional suitability of a particular specialist and form corrective work (table 4).

Table 4

Some medical test results

№	Full name	Wiesbaden questionnaire	
		High	**Low**
1	A	Fidelity	Tidiness, Punctuality, Honesty/directness, Diligence/ activity, Complaisance, Thriftiness, Justice. Patience, Activities, Contact/action
2	G	Cleanliness, Courtesy, Justice, Patience, Contacts, You, We	Tidiness, Contact/action

Based on the results of our research work, we wrote and tested in practice a computer program "Assessment of the professional and psychological suitability of medical workers" approved by the Head of the Federal Intellectual Property Service in 2016 and received a certificate of state registration of a computer program. This program can be used in the personnel department of a medical institution, at a medical university or college to determine the professional suitability of the work of a current or future medical specialist. With the help of the program we obtain a characteristic, expressiveness, compliance or non-compliance with optimal professionally significant personal qualities.

Based on the test results, the head of the medical institution together with the head of the personnel department and the clinical psychologist make a decision on employment. With minimal indicators or the absence of severity of individual personality traits, it is recommended that the clinical psychologist conduct individual psychocorrectional work with subsequent employment.

As an individual psychocorrectional work, we can offer training aimed at the formation, development and correction of professionally important characteristics of a specialist, taking into account the requirements of professional activity.

Training can combine role-playing games and discussions using various approaches: psychodramatic, gestalt therapy, transactional analysis, social psychoanalysis, biographical method, etc.

In the design of professional trainings, the priority role belongs to improving the personality of the specialist and his professionally important qualities.

The choice of the type of training depends on the professional experience, level of qualification, basic education and the severity of compliance or non-compliance with optimal professionally significant personal qualities.

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没有父亲的家庭中男孩和女孩的教育特点

FEATURES OF EDUCATION OF GIRLS AND BOYS IN FAMILIES WITHOUT FATHERS

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抽象。 在这篇文章中，作者试图归纳文献中有关父亲的角色和功能的重要性，父亲参与抚养子女的性别问题的数据。 揭示了这项研究的实际意义，表明了在没有父亲的家庭中抚养孩子时会遇到什么困难。 所获得的数据可用于带孩子的教育心理学家的实践活动，也可用于培训与年轻人及其父母一起工作的专家的过程。

关键词：完整的单亲家庭，抚养男孩和女孩。

Abstract. *In the article, the authors attempted to generalize the data available in the literature on the problem of the importance of the role and function of a father, his participation in raising children depending on gender. The practical significance of the study was revealed, which shows what difficulties arise when raising children in families without fathers. The data obtained can be useful in the practical activities of educational psychologists with children, and can also be used in the process of training specialists working with young people and their parents.*

Keywords: *complete and single-parent families, raising boys and girls.*

Я не начало жизни, не конец.
Я продолженье жизни – я отец.
M. Svetlov.

Currently, the topic of raising boys and girls in families where there is no father is very relevant. Many prominent educators and psychologists N.K. Krupskaya, A.S. Makarenko, P.P. Blonsky, M. M. Rubinstein, and other educators and psychologists studied this issue. For example, A.S. Makarenko attached particular

importance to the structure of the family. He introduced the concept of "complete" and "incomplete family", meaning a family, which does not have a father or mother [1]. According to the Ministry of Labor and Social Development, every 7th child under 18 in Russia is brought up in an incomplete family [2]. Most single-parent families are mothers with children (94%). Problems of single-parent families and their impact on the development of a child's personality were considered in the works of V. M. Tseluyko, M. I. Buyanova, I. F. Dementieva, and others [3].

Like any organized process, family education provides for a certain determination, the presence of specific tasks. Since in our society the interests of the state and parents regarding the upbringing of the younger generation most often coincide, the goals and objectives of social and family education are basically the same. Consequently, the main goal of raising children in the family is the comprehensive development of the personality, combining spiritual wealth, moral purity and physical perfection. Achieving this goal includes the implementation of such tasks as physical, mental, moral, labor, aesthetic education.

The problems of sex education of the younger generation are obvious today. In modern society, it is not uncommon to see a girl who is difficult to distinguish from a young man, and sometimes it is almost impossible or, on the contrary, a young man, with behavior, gestures, and even a girl-like appearance. Raising a woman with all her weaknesses and virtues in a little girl, and in a boy a real man, is one of the tasks of a teacher. Sex education is a necessary part of raising children and adolescents. Each child will become a man or woman, and without the appropriate influence of the surrounding society, he cannot form correctly and behave as a full-fledged representative of his gender [4].

We chose the topic "Features of the education of girls and boys in families without fathers" because we consider it relevant and promising.

The purpose of our work is to study the characteristics of the upbringing of boys and girls in families without fathers.

The object is the personal sphere of boys and girls.

Subject of research: the specifics of family education of boys and girls in families without fathers.

Research objectives:

1. Consider various approaches to gender education in the family.

2. Study the features of raising children in families without fathers.

How we educate our children, what personal qualities we can develop in them, taking into account their individual and gender characteristics, directly determines what women and men will become in the future, what parents they will be for their children. The importance of the period of preschool childhood is invaluable in general for the development of the personality of the child. All the most important personality traits, inclinations and abilities are formed precisely at preschool age.

Often, parents forget that girls and boys see, hear, touch, differently perceive and orient in space, and most importantly, they differently interpret everything that they encounter in this world. And, of course, not the way we, adults do.

Observing modern children, it can be noted that girls become aggressive and rude, and boys adopt a female type of behavior. In older groups, many girls are deprived of modesty, tenderness, patience, and cannot peacefully resolve conflict situations. Boys, on the contrary, do not know how to fend for themselves, are weak physically, lack stamina and emotional stability, they lack a culture of behavior towards girls. The content of children's games is also alarming: children demonstrate behaviors that do not match the sex of the child, do not know how to negotiate a game, and distribute roles. In addition, in the process of labor activity, children find it difficult to independently distribute responsibilities based on the sex of the partner. Boys do not want to help girls when physical strength is needed, and girls are in no hurry to help boys where care and accuracy are needed.

To correct the situation of "mixing" of the sexes, parents need to adjust the process of raising girls and boys. You can't bring up children on the principle of "the way I was raised " [5].

When raising children, parents should consider their gender characteristics. Boys and girls differ not only in appearance: male or female nature manifests itself long before puberty and lays its definite imprint on their feelings, consciousness and behavior. At the same time, one should not forget that the representatives of the male and female sex are nevertheless, first of all, united by universal human qualities, which are characteristic of both; sexual characteristics are mainly distinguished only by some emphasis within the limits of the characteristics of a person in general. To know about this and keep in mind the psychological characteristics of a person due to their gender, means to be able to rely on everything positive, take into account possible negative manifestations and, therefore, carry out family education more effectively.

Some significant differences between boys and girls are found already in the first months of their lives. For example, girls develop somewhat faster than boys both physically and psychologically, they start talking about 2-4 months earlier. On average, by the age of three, both boys and girls, with the help of parents and others, already know about their gender, distinguish the sex of other children and adults [6].

As the child grows, sexual psychological characteristics gradually increase. They appear in the level of emotional reactions, in specific interests and inclinations, in the nature of thinking, in relation to specific facts, etc.

The goals, methods and approaches of raising boys and girls should be different. Biological gender differences bring with them various emotional, cognitive, and personality characteristics (Table 1). Hence the need for a differentiated approach in the education of boys and girls from the first days of life.

Table 1.

Psychological and pedagogical portrait

girls	boys
area of interest related:	
- with a person and the sphere of immediate being (relationships, surrounding consumer goods, domestic activities, creating coziness and comfort, concretization of actions, creating order, etc.)	- with high motor and cognitive activity, the need for transformative activity, neglect of the existing order;
space organization:	
- aims to control a limited space, - both the play space and the lesson space are carefully worked out and indicated (J. Piaget's experiments with young children: crawling in the direction of the boys, grouping and sorting the borders with toys and objects for girls);	- lack of space limitations in both horizontal and vertical plane; in connection with which many details of the immediate environment slip away from attention, rearrangements are not noticed, objects move, an apparent disorder is created, are not reflected in consciousness; - as a result, helpless in everyday situations, worse accustomed to self-service; - use all the space;
attitude to things:	
- better understand the purpose of a thing, its consumer value;	- better understand the structure of things, breaking - are interested in what is inside, - used for various purposes, - deliberately find unexpected use; - use items without much frugality and not for their intended purpose;
inclusion in activities:	
- fast, active, - There is a pronounced need for approval (looks, gestures, facial expressions, etc.); - questions are asked not so much for organizing work as for establishing contact;	- physiological rather than psychological, related to the need to prepare, plan, turn on longer, less often look at the face of another in the process of activity; - questions are asked for information, - not afraid to make a mistake;
propensity for activity:	
- trustee, guardianship, mentoring; - reliance on short-range action;	-mobile, without rules; - reliance on the long term;
design games:	
- with great pleasure work according to the model, creativity is limited to the plan and the named rules;	- ingenuity, scale, design, design using the entire space;
speech:	
- subject-evaluation - more nouns, adjectives, negatives and statements;	- more words denoting distant objects and general concepts; - more verbs and interjections;

thinking features:	
- more accuracy and integrity; - more general view of objects; - more suggestible, but also more decisive in action; - better perform landmark tasks, more thoroughly refine the established requirements; - more accurately convey events, but with subjective perception; - greater attention to the personal side of events; - need understanding and goal setting, concretized task, ignorance - alarming;	- see the essential; - inclined to generalizations, but less specific; - more desire for search activity, new tasks; - less efficiently and less thoroughly complete the task; - less careful and accurate in the design of the result; - are better oriented in an unfamiliar situation and perceive positively; - more attracted to a variety of activities, but less organized;
adoption of moral standards:	
- moral concepts are formed somewhat earlier than boys, like to follow the rules; - show others how to do it; - they like to rely on authorities, which are very important for them; - better adapt to the situation, although in an unfamiliar environment at first they get lost, but quickly find their place;	- do not listen to authorities; - do not comply with the rules and regulations; - do not adhere to boundaries not out of disrespect, but because of an urgent need to act; do not follow specific rules; - prone to transformative activities
features of education:	
- take into account that identification by gender is carried out upon reaching 2-3 years;	
- sustainability of gender self perception is formed in 4-7 years	
- the left hemisphere develops faster (speech);	- the figurative-sensual sphere dominates longer;

The above methods and approaches for raising boys and girls show that it is in childhood that most of the difficulties and problems in communicating between children and parents arise. This gives rise to a large number of problems and fears that come precisely from childhood: fear of criticism, failure and loss. This can be seen especially vividly in families where children are deprived of one of their parents, they feel a lack of love and attention and generally inferiority, although no one denies that this situation is also possible in complete families, if parents behave incorrectly towards children.

Many families live without a breadwinner or with stepfathers (this is one of the best options for the development of events), and unfortunately, rarely children can be completely happy.

What is a family? As stated by V.A. Sukhomlinsky: “Family is not just an important thing, it’s everything”, it is certainly difficult to disagree, because childhood is one of the factors in the formation of a harmonious personality [8]. The child receives the first lessons in life in the family; parents become the first sources

of behavior. Girls take an example from their mothers, boys from their fathers. A boy who grew up in a prosperous and complete family often adheres to the same family principles in adulthood. The relationship of the young man with the opposite sex depends on how the father communicates with his mother. Attitude towards women is formed in childhood by the example of parents and in later life it is difficult to fix anything. Choosing a spouse in the future, the children are guided differently: boys are looking for future wives similar to mom, and girls - dad. And if it happened that the family, for whatever reason, was deprived of one link in the family, for example, the father, then in this situation, boys and girls lose an example of a man's behavior model. It is generally accepted that single-parent families come about for various reasons: death, betrayal of one of the spouses and leaving for a new family, or simply leaving the family (perhaps not even created - a type of "pseudo family" - cohabitation) father's fear of responsibility, when wife's pregnancy and divorce. As we all know, father performs many functions and roles:

The roles of husband, father and son. Father Functions Featured by Some Authors:

F. Cowan, K. Cowan, N.A. Korkina, M. Epstein:

- Intellectual development;
- Father as a source of knowledge about the world, work, technology;
- Orientation to a future profession;
- Creation of socially useful goals and ideals [7].

J.D.G. Goldman, R.J. Goldman, M. West, M. Conner:

- Build capacity for initiative and opposition to group pressure [1].

V.N. Druzhinin:

- Form an attachment to oneself (the father), which will increase the child's self-esteem, and this, in turn, will teach them to attach importance to spiritual and social values (rather than material, individualistic) [2].

Z. Freud:

- The embodiment of power as an object of admiration and love;
- Realization of the need for security and protection;
- The authority that punishes misdemeanor and, thus, regulates the behavior and, subsequently, moral attitudes of a person [2].

I. Langmeer, Z. Matejczyk:

- Being an example of behavior;
- Being a source of confidence;
- Being an authority;
- Being the personification of discipline and order [2].

(According to E.I. Zakharova). Also, the father is one of the first objects that plays a role in identifying the child. It is the father who helps the newborn to realize his gender [4].

So what is the difficulty of raising children without a "head of the family"?

Paternity, on the one hand, is a form of self-realization of men, and on the other, it studies the contribution of the father's personality to the development of the child. These approaches are interrelated, they consider the phenomenon of paternity from the perspective of different functions. The difficulty of raising children without a father is that the mother has to be in the role of mother and replace the father. In our view, mom is soft, compliant and affectionate, while dad tries to keep discipline, shows firmness and unwaveringness in decisions and punishes with a view to upbringing. Often, mothers adopt a father's behavior pattern, or become too affectionate and show excessive care and control. These two extremes will not lead to a harmonious and comfortable development of the child. The difficulty lies in the fact that in a single-parent family the child has to look for an "identifier", protection and one of the parents has to make up for the absence of the spouse in every possible way, and the children do not always perceive this positively, they can become locked in themselves, consider themselves guilty, doubt themselves and at each step or take aggressive behavior as protection against the pain that may come subsequently.

We have designed a questionnaire and conducted an on-line survey. The range of questions included the selection of one or more answer options, taking into account gender differences. As a result of this survey, we needed to reflect the statistics of possible problems arising from single-parent and full families. The empirical study involved 20 people, from the age of 17-24 years of female, male, equally from single-parent and complete families.

According to the results of the study, we received from respondents from single-parent families:

Of all respondents: live only with mom - 42%; with mom and grandmother - 17%; mom, grandparents - 16%; mom and dad who does not live, but, according to the subjects, participates in education - 14%; mother and stepfather - 11%.

- When answering the question what is the reason for the absence of a father in your family - 56% said that the parents separated; 15% - the father died and the same number that he was afraid of responsibility (15%).
- In the answers to would you like for you to have a complete family; the majority of respondents (45%) answered that they are satisfied with everything; equally (9%) indicated that they were not satisfied with this or did not know what to say.
- To the question whether there is a difference between your father and stepfather for you: no, –44.4% answered and 38, 9% answered "yes".

Thus, most of the subjects are brought up by only one parent, most often the family becomes inferior as a result of the divorce of the parents. However, most of the subjects do not want to return to the previous situation, and they consider their childhood to be full.

Let us analyze the answers of the subjects on other questions and compare them with the answers of the subjects from complete families.

Table 2.

Responses of subjects from complete families	**Answers of subjects from single-parent families**
Do you think that father must be involved in raising children, or can mother handle it alone?	
18% - consider that participation in raising a father is not necessary; 46% - mother can partially manage; 33% - dad should also participate; 4% - parents have different educational functions.	10% - consider that participation of a father in raising is not necessary; 39% - mother can partially manage; 35% - dad should also participate; 5% - parents have different educational functions.
Do you consider your childhood to be complete?	
81% answered - “yes”.	82% answered – «yes».
Do you feel a lack of attention?	
20% - “yes”; 28% - “cannot answer for sure”; 52% - “no”.	14% - “yes”; 32% - “cannot answer for sure”; 54% - “no”.
Do you have difficulty interacting with the opposite sex?	
10% - “yes”; 19% - “cannot answer for sure”; 71% - “no”.	6% - “yes”; 19% - “cannot answer for sure”; 75% - “no”.

Based on the above output, it can be assumed that the students surveyed do not suffer from a lack of attention due to the fact that their family is incomplete. And there are no vivid manifestations of the fact that in the future when building relationships with the other sex they will have less problems than children from complete families. Of course, there are exceptions. Therefore, we will continue our empirical study.

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俄罗斯改革30年：如何总结
THIRTY YEARS OF RUSSIAN REFORMS: HOW TO SUMMARIZE

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抽象。 本文试图分析近三十年来现代俄罗斯发展的主要成果。 起点是1990年6月12日通过的《俄罗斯国家主权宣言》。该文谈到分析俄罗斯进行的改革的重要性，有必要比较该国历史悠久时期取得的成就。 历史为1921–1941、1945–1985和1990–2020年。 这篇文章证实了在苏联后三十年的框架内对该国发展的批判性评估，并讨论了调整战略路线并明确定义独特的俄罗斯文明的目标，目的和指导方针的必要性。

关键词：历史经验，发展战略，改革，“改革”，人口崩溃，文明，制裁，衰退，全球和平。

Abstract. *The article attempts to analyze the main results of the development of modern Russia over the past thirty years. The starting point was the adoption of the Declaration on State Sovereignty of Russia on June 12, 1990. The article speaks of the importance of analyzing the reforms carried out in Russia, of the need to compare the achievements made in such historical periods in the country's history as 1921-1941, 1945-1985 and 1990-2020 years. The article substantiates a critical assessment of the country's development within the framework of the thirty-year post-Soviet period, it talks about the need to adjust the strategic course and clearly define the goals, objectives, and guidelines for the unique Russian civilization.*

Keywords: *historical experience, development strategy, reforms, “perestroika”, demographic collapse, civilization, sanctions, recession, global peace.*

In January 2020, the composition of the government changed unexpectedly and qualitatively for the first time in Russia. President of the Russian Federation V.V. Putin seriously took up not only foreign policy issues, but also turned to acute social problems, to a complex and contradictory picture of the development of the country's internal life. However, without a serious comprehensive analysis of the historical path taken by Russia after the adoption of the Declaration on State Sovereignty of the RSFSR of June 12, 1990, the collapse of the USSR in August-

December 1991 and the adoption of the current Constitution of the Russian Federation on December 12, 1993, to determine the further development strategy, positioning Russia in the modern global the world is hardly possible. What criteria should be used to assess changes in the political, economic, social and spiritual-cultural life of the country? What problems should we focus on? How should historical experience be used to define strategic goals and priorities? This article attempts to offer answers to the questions posed.

It is worth recalling that during the period of "Gorbachev's perestroika" (1985-1991), the beginning of a broad public discussion was laid by the report of the Secretary General of the CPSU Central Committee M.S. Gorbachev on the 70th anniversary of the Great October Socialist Revolution [1]. In 2020, the 75th anniversary of the Great Victory of the Soviet people in the Great Patriotic War of 1941-1945 and the 150th anniversary of the birth of the great revolutionary and founder of the Soviet state V.I. Lenin can serve as a starting point for much-needed and overdue wide discussion.

What did the Soviet people defend in 1941-1945? At the end of “perestroika” and in the beginning of the 90s, the idea that the Soviet people defended the “damned Stalinist regime” instead of overthrowing it was actively pursued in the information field. Large writers said that it was necessary to surrender Leningrad to the Nazis. Veterans were afraid to openly wear military decorations, were insulted.

In the spring of 2020, it should be recognized that the multinational Soviet people in 1941-1945 defended not only life, freedom and independence, but also the gains of socialism, the renewed, greatly changed Fatherland, their confidence in future, even more grandiose accomplishments. The number of scientists increased from 11.6 thousand (1913) to 98.3 thousand (1940), universities from 105 to 817. In 1918-1940, 1 million 208 thousand people received higher education, 1 million 790 thousand people received secondary education, the career education system in 1929-1940 trained over 2.3 million skilled workers. In 1917, there were 240 thousand people with higher and secondary specialized education in Russia, and in 1940, 2.4 million people [6]. More than 9000 were built only in large enterprises in 1928-1940, and the number of engineering and technical workers grew from 50 thousand in 1920 to 1 million 656 thousand in 1939. By most quantitative indicators in the economy of the USSR, it came out on top in Europe and second in the world [7]. Thanks to these achievements, despite the high cost of socialism (losses during collectivization, mass repressions, etc.), built mainly, the USSR was able to withstand another European aggression. In 1812, Napoleon led the European invasion, in 1941 - Hitler.

And what kind of society and why arose in post-Soviet Russia after the collapse of the USSR? What did the citizens of the RSFSR dream about by voting for

the people's deputies of the RSFSR in March 1990 and voting for the Chairman of the Supreme Council of the RSFSR B.N. Yeltsin to become the first President of the RSFSR on June 12, 1991? What future did compatriots promise the President of the RSFSR Yeltsin and his "team"? For the formulated and many other questions over the past almost thirty years, directly opposite in meaning answers-estimates have been given, which in itself is a huge and extremely complex object for research.

Fast and not too painful reforms for the population did not work. Already in the spring of 1992, Yeltsin himself, with the phrase "we are following an unknown path through the taiga", recognized the adventurous nature of the model of transformation adopted. Adjustments and changes only worsened the situation. The default, the recognition of the Russian state as bankrupt in August 1998, meant the complete collapse of "Yeltsinism" [3], the political career of the first president of new Russia. The rapid transition of state, collective-farm and cooperative property, the property of many public organizations and tens of millions of people into the hands of people close to "Family", "Yeltsin's environment" was the second edition, the revival of capitalism in Russia.

In 2000-2008, President V.V. Putin managed to suspend the impending collapse of the country, suppress extremist and separatist movements, and significantly improve the socio-economic situation during the period of high prices for energy and raw materials. In 2008-2019, the global crisis, the subsequent recession and the sanctions war against Russia complicated the situation, forced to change priorities. In any case, about smart and modern modernization, the need for which was announced on November 12, 2009 by D.A. Medvedev, who served as president [8], neither he as chairman of the government (2012-2020), nor president V.V. Putin, none of the ideologists for some reason did not remember.

Meanwhile, to compare the results of the last thirty years with other historical periods within the framework of the 20th or even other centuries, there are quite substantial positions. In 1921-1941 and in 1945-1985, the population of the USSR (RSFSR) grew. For 1990-2020, despite the absence of major wars, epidemics, global natural disasters and the weakness of the positions of the LGBT community, the population of Russia decreased from 150 million to 146 million people. Demographic losses are estimated at 20-30 million. But the country's presence in the format of demographic collapse is not publicly discussed. Only in 2018-2020 did senior management agree that the minimum wage should not be less than the cost of living, the notorious minimum "consumer basket". The fact that the pensions of teachers, doctors, associate professors (candidates of science with thirty years of scientific and pedagogical experience), cultural workers and other intelligent professions do not exceed the subsistence minimum, the leadership prefers to remain silent.

For most economic positions, Russia is at the level of 1990 or even further. Good indicators have nowhere to come from. In the 50-60s, 5 thousand enterprises were commissioned annually, and in 30 years 70-80 thousand enterprises were closed.

In Russia, in 2007, the Strategy for the Development of Railway Transport until 2030 was adopted. With this document, it was planned to build annually from 700 to 1000 km of main railways, but in the best years the actual network expansion rarely exceeded 100 km. The local speed of freight trains from 40 km/h in 1970 increased by 2018 to 47 km/h. In Russia, not a single kilometer of high-speed passenger highways with an average speed of over 250 km/h was built [4]. Implemented and under implementation, important transport superprojects ("Power of Siberia", "Nord Stream-2", "South Stream") only demonstrate the preservation of the raw material orientation of the Russian economy despite talking about overcoming it. According to experts, machine-tool building, aviation, automobile, instrument-making, textile and other industries need reconstruction, the prospects of which are not visible in the plans of the Russian leadership.

The main and quite obvious reason is the low level of government, regulation, control. According to the estimates of Doctor of Economic Sciences V.M.Simchera, over thirty years, the budget losses of countries amounted to 200 trillion rubles, or 3.2 trillion dollars, on which 30 thousand objects or 32 million first-class apartments could be built. But half of the country's oil and gas revenues settles in the pockets of a narrow circle of people [2].

According to estimates of the Accounts Chamber, about a trillion rubles are not used annually from the annual state budget and hundreds of billions are used for other purposes. In 2017, a three-year financial plan was adopted, which provided for annual state budget deficits in the amount of 2 trillion rubles. However, by the spring of 2019 it turned out that in fact more than 10 trillion of free funds had been accumulated in the country. Without any analysis of this level of incompetence, the country's leadership began to implement national projects in which it is difficult to see any serious strategic plan.

One of the important results of the analysis of the thirty-year development of Russia is the ever-growing conviction that, in principle, in Russian society and in political life, little is changed and is returning "back to square one". The ruling elite is still not interested in the opinion of the people: after the adoption of the new Constitution on December 12, 1993, not a single all-Russian referendum took place. The Federal Assembly of the Russian Federation, political parties, courts, police do not have civil authority among the population. Most of the top officials in the country are the nomenclature of the President of the Russian Federation. Attempts to plant civil society from above turn out to be ineffective, since there has not been a real mechanism for monitoring the activities of the executive branch

by civil society. Thesis M.M. Speransky - "The executive branch must obey the legislature" - after two hundred and ten years remains relevant.

Of the thirty past five years, under the powerful pressure of the collective West, there have been positive trends in the real sovereignty of Russia. Thanks to the Soviet legacy, the domestic military-industrial complex showed that it's "still got it" The rearmament of the army with modern warfare began. An advance was made in agriculture. A number of new industries have appeared. The construction of the Crimean bridge, the solution of other problems of the new constituent entity of the Russian Federation, the Republic of Crimea, inspired optimism for many Russians [5].

Thirty years after the adoption of the Declaration on State Sovereignty of the RSFSR, the country was again at a crossroads. The choice of alternatives seems small.

1. Russians for another 10 years or more will follow their "Moses" along the path of building "capitalism with a human face". Resources in the richest country in the world will be enough for a long time. But there is a danger that countries that have entered the post-industrial stage of development will want to use these resources themselves, free of charge, without Russia. The combination of internal contradictions with powerful pressure from the outside can have fatal consequences for independence, for the very existence of the country, as was the case in 1991-1998.

2. As a result of a serious analysis of the thirty-year period of the country's development, part of the Russian elite, taking into account the interests of the absolute majority of the population, will adjust its domestic policy and develop a strategy for forced renewal of all aspects of the country's life, taking into account the characteristics of Russia as a unique, distinctive civilization that plays an important role in the modern global world.

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诊断胎儿内缺氧的另一种方法
AN ALTERNATIVE WAY TO DIAGNOSIS OF INTRANATAL FETAL HYPOXIA

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抽象。目的：目前，胎儿缺氧在围产期死亡率结构中仍处于领先地位。因此，胎儿的产前和产中保护是现代产科的基本问题之一，其最重要的任务是及时诊断胎儿的宫内状况并选择最佳的分娩方法。但是，并非所有人都能确保诊断的可靠性和准确性。我们的目标是找到一种诊断上有效且最合理的解决方法。

材料和方法：在FPO妇产科的基础上，在Kursk地区围产期中心进行了临床研究。研究主题是2017-2018年的320个分娩故事和320个新生儿的故事。选定的孕妇群体具有代偿性和代偿性不足的慢性胎儿缺氧的迹象，已通过各种方式得到证实。我们的任务是比较CTG和CTG + STAN两种方法的诊断质量，并从中选择最合适的方法。

结果：根据研究结果，STAN CTG方法被认为是有前途的，有效的和安全的，具有高灵敏度和特异性。 STAN和CTG的组合使用将显着减少不合理剖腹产手术的次数。

关键字：胎儿缺氧；心动图； STAN;剖腹产 ;真空萃取

Abstract. *Objective: Currently, fetal hypoxia still has a leading position in the structure of perinatal mortality. That is why antenatal and intranatal protection of the fetus is one of the essential problems of modern obstetrics, the most important tasks of which are timely diagnosis of the intrauterine condition of the fetus and selection of the most optimal method of delivery. However, not everyone can ensure the reliability and accuracy of diagnosis. Our goal was to find a diagnostically effective and most rational method of resolution.*

Material and Methods: *Clinical studies were conducted out in the Kursk Regional Perinatal Center, on the basis of the Department of Obstetrics and Gynecology of FPO. The subject of study were 320 stories of childbirth and 320 stories of newborns for 2017-2018. The selected groups of pregnant women were*

with signs of compensated and subcompensated chronic fetal hypoxia, which was confirmed in various ways. Our task was to compare the diagnostic qualities of the two methods of CTG and CTG+ STAN and choose the most appropriate among them.

Results: *According to the results of the study, the STAN CTG method was found to be promising, efficient and safe, with high sensitivity and specificity. The combined use of STAN and CTG will significantly reduce the number of unreasonable caesarean section operations.*

Keywords: *fetal hypoxia; cardiotocography ; STAN; caesarean section ; vacuum extraction*

Introduction

Contrary to the diversity and richness of intranatal diagnostic techniques, cardiotocography (CTG) currently plays a central role. This method is not invasive, provides a quick response, but is minimally reliable and can become a source of false positive results [1]. Often with questionable CTG data, in reality, a large proportion of the fetuses have no signs of decompensation of placental insufficiency and are born with an Apgar score of more than 7 points (low specificity) [2]. Not always by the type of CTG curve, it is possible to judge the saturation of oxygen in the blood of the fetus, the gas composition of the blood and the changes in pH [3]. That is why this method has recently been increasingly subject to constructive criticism.

The solution to the overdue problem of interpreting timely diagnosis of the condition of the fetus was an invasive method of assessing the ECG of the fetus in childbirth from the early stages of gestation recorded by scalp electrodes, which are installed on the upstream part of the fetus [4, 5]. In response to acute or chronic hypoxia, the fetus exhibits disorders in cardiac muscle conduction function and shortness, which are effectively detected by morphological analysis of fetal ECG elements [6]. This method allows to carry out qualitative, morphological analysis of teeth, segments and intervals of cardiac cycle. Predominantly ST- analysis, known in the literature as STAN [7]. This technique is complementary to CTG. It is considered that without evaluating the types of CTG curves, the interpretation and application of fetal direct ECG is unjustified and not even effective [8]. The main objective of using STAN is to identify signs of metabolic acidosis in the fetus and to prevent fetal and neonatal asphyxiation [9, 10]. The technology of producing fetal EGC has provided an opportunity to minimize the number of unjustified surgical interventions, especially in pathological and hard-to-interprite types of CTG, to reduce the level of perinatal mortality, as well as the number of diseases caused by intranatal fetal hypoxia.

Material and Methods

The study was carried out in the Kursk Regional Perinatal Center. In accordance with the goal and objectives set, during the retrospective analysis we studied 320 history of births and 320 history of newborns for 2017-2018. Details of gynaecological and obstetric history were studied. The criteria for inclusion in the observation group were antenatal fetal hypoxia anthatalan, doubtful or pathological CTG, single-fetal pregnancy, head preposition in gestation periods of 36 weeks or more. According to the data studied, puerperas from group studies were between the ages of 19 and 39 years (mean age 28 ± 1.5 years).

The 1st group- a group of pregnant women, which included 160 women with signs of compensated and subcompensated chronic fetal hypoxia. In order to determine the indications for cesarean section, the biophysical profile of the fetus was monitored, the presence of umbilical cord around the neck of the fetus and registration of pathological CTG were taken into account. The degree of fetal hypoxia was confirmed by determining the acid-alkaline condition, (Zaling test, 1962), (pH, pCO2, pO2, BE) and the lactate content of umbilical cord blood using a Statstrip Xpress Lactate.

The 2st group-160 women with signs of compensated and subcompensated chronic fetal hypoxia. In the interest of improving the specificity of CTG, a transabdominal ECG of the fetus with a morphological analysis of all its elements was performed simultaneously with all pregnant women, with the main focus on the analysis of the ST segment. The level of the acid-base condition of the fetus and the concentration of lactate in the umbilical cord blood were also evaluated.

ECG registration was performed using Stan S31 fetal monitor. In order to correctly interpret the ST- segment and determine competent timely obstetric tactics, we used a specially developed manual presented in Table No. 1, in which

- The normal zone is established based on the results of the fetal CTG and ECG parameters, which do not exceed the limits of the norm. Obstetric interventions are not recommended, provided there are no other medical indications.

- The doubtful zone is characterized by the presence of single ST-events during normal or disturbing CTG. In this embodiment, a wait-and-see tactic with dynamic observation should be chosen

- The pathology zone indicates the registration of the pathological type of CTG, against the background of single ST-events of the fetal ECG. Continuous monitoring and further investigation are recommended in order to make a timely decision on emergency delivery.

- The preterminal zone is characterized by the presence of frequent ST events, pathological or preterminal types of CTG. There is a threat to the life of the fetus. It is recommended to review the tactics of conduct in favor of emergency childbirth.

Table 1

Matrix of threatening fetal conditions with obstetric tactics, Taking into account types of CTG and ST-event variants on fetal ECG (STAN)

CTG / ST	Normal CTG	Doubtful	Pathological CTG	Preterminal
Episodic rise T/QRS	-Usual maintaining -Constant observations	> 0,15	>0,10	Emergency childbirth
Raising the starting level T/QRS		>0,10	>0,10	
Two-phase ST		3 registered messages Biphasic*	2 registered messages Biphasic*	

* The time interval of the two-phase messages should be correlated with the CTG diagram and the clinical situation.

CTG was diagnosed using a Philips Series 50 IP-2 fetal monitor according to the normal delivery protocol: upon admission within 40 minutes - 1 hour and in intermittent mode for 20-30 minutes: after the amniotic fluid has been poured out, after labor is anesthetized, when the uterine is opened, more than 8 cm. Maintenance of continuous CTG during childbirth, in case of complications.

The Dawes-Redman criteria, a modified W. Fisher score scale, and the International Classification of Types of CTG were used to evaluate CTG. (FIGO, 1987) (table. 2).

Table 2

International Classification of Cardiotocogram Types (FIGO criteria, 1987)

CTG type	Basal heart rate	Variability, bpm.	Decelerations
Normal	110–115 bpm.	5–25 bpm. Existence of accelerations	- Early uncomplicated variable decelerations lasting <60 s loss <60 bpm
Alarming (intermediate)	-100–110 bpm. -150–170 bpm. -Bradycardia episodes<100 bpm.	>25 bpm. Saltatory rhythm<5 bpm. >40 min. and lack of acceleration	- Uncomplicated Variable deceleration lasting <60 and loss> 60 bpm.
Pathological	- 150–170 bpm. - >170 bpm. -Long bradycardia- (<100 bpm. >3 min.)	- <5 bpm. >40 min. - Sinusoidal rhythm	- Complicated Variable deceleration lasting> 60s. -Recurring late decelerations
Preterminal	Total decrease in variability (< 2 bpm.) and reactivity With (or without) deceleration or bradycardia		

To process the results of the study, nonparametric methods of medical statistics were used using the STATISTICA® for Windows Release 8.0 software package (Stat Soft® 8 Inc., USA). Student's t-test was calculated when comparing relative values. The null hypothesis was rejected at p> 0.05.

Results and discussion

In the 1st and 2nd observation groups, the course of pregnancy was aggravated by obstetric and somatic complications. We found various extragenital diseases in 69 (43.8%) women in labor. The majority were: anemia - 13 (18.8%), diseases of the urinary system - 10 (14.4%), diseases of the cardiovascular system - 10 (4.4%). Also identified: endocrine pathology - 15 (21.7%), diseases of the gastrointestinal tract - 4 (5.7%). 8 (11.5%) of pregnant women had obesity I st, 6 (8.6%) had 2 degrees and 3 (4.3%) had 3 degrees. In 10 out of 17 pregnant women with increased body weight, the course of labor was complicated by anomalies of labor, mainly weakness. It is worth emphasizing that in the vast majority of cases a combination of several diseases was recorded, which greatly complicated the course of pregnancy and childbirth. The frequent complications of the course of this pregnancy were edema - 87 (51%), the threat of termination - 62 (39%). Chronic fetoplacental insufficiency (CKDF) was noted in 47 (29%) women, while intrauterine growth restriction (IUGR) was noted in 10 (6.3%), oligohydramnios in 12 (7.6%), polyhydramnios in 10 (6.3%). Pregnancy against the background of preeclampsia 46 (29.2%) women. Tight entanglement of the umbilical cord of the fetus was seen in 42 cases (26.7%).All of the above complications of somatic and obstetric-gynecological anamnesis created a negative background for pregnancy, and also caused dangerous abnormalities during the gestational process and increased the risk of morbidity in newborns.

In the 1st observation group, among 160 cases, the percentage of surgical intervention was 35.6% (57), where cesarean section technique was performed in 45 cases (78.9%) and the use of a vacuum extractor in childbirth was 12 (21.1%). The suspicious type of CTG was registered in 73.3% (33), the pathological type was 26.6% (12). In obtaining the above-described CTG monitoring results, a decision was made on emergency delivery by cesarean section. Among 12 (21.1%) cases where a vacuum extractor was used, according to CTG, the suspicious type was 83.3% (10). In 16.6% (2), a physiological basal rhythm, where the prolonged period of the 2nd stage of labor and the presence of extragenital pathology, served as an indication for VE. The percentage of vaginal delivery was 64.4% (103) of the entire observation group. During the analysis of CTG results and classification of types according to the International scale (FIGO), a decrease in the motor activity of the fetuses was recorded, and the records of the heart rate were recorded as alarming, pathological and preterm. The obtained data served as an indication for urgent delivery by caesarean section. However, it was found that at the registration

of pathological CTG, almost half of the children were born with an Apgar score of more than 7 (low specificity). This indicates the presence of unreasonable interventions that are not beneficial for the fetus, causing distrust in the reliability of CTG, thereby. A thorough analysis revealed that out of 45 cases of cesarean section, only 29 (64.4%) objectively confirmed the presence of intra-partum fetal hypoxia (pH of umbilical cord blood 7.2-7.3) with an Apgar score of 5/6, 6/8, 7/8 points. Of the 12 cases of using a vacuum extractor, intranatal hypoxia of the fetus (lactate 4.3-4.6) was confirmed in 7 (58.3%) with an Apgar score of 5 / 7.7 / 8 points.

In the 2nd group, the following indicators were established: out of 160 cases, 30 (18.7%) surgical interventions were performed, among which 22 (73.3%) had a cesarean section, which was indicated in 16 (72.7%) cases of CTG type suspicious, in 6 (27.2%) cases the pathological type. Of 8 (26.6%) cases of using vacuum extraction, CTG in 6 (75%) cases is a suspicious type, in 2 (25%) cases is a physiological basal rhythm. The use of surgical intervention, in the latter, is justified by the addition of other obstetric pathologies, when prolonged and brave push are contraindicated.

The registered events STAN - 30 (18,7%)

- increase of the basal line more than 0.10- 18 (60,0%)

- T / QRS increase episodes -10 (33,3%)

- repeating biphasic ST-event - 2 (6,6%)

Of the 22 caesarean sections, in 20 (90.9%) cases, intranatal fetal hypoxia (cord blood pH 7.2-7.3) was confirmed with an Apgar score of 5/7, 6/8, 7/8 . Of the 8 cases of using a vacuum extractor, 6 (75%) confirmed intranatal fetal hypoxia (lactate 4.3-4.6) with an Apgar score of 6 / 7.7 / 8.Vaginal delivery –130 (81,2%) - the type of CTG is suspicious, there are no STAN events.

Table 3

Characteristic of groups by various parameters

Group	Surgical intervention		Vaginal delivery	CTG		STAN events	Confirmation of fetal hypoxia after delivery
	C-section	Vacum extraction		suspicious	pathological		
1-st	28,1%	7,5%	64,3%	26,8,0%	7,5%	not applied	63,2%
2-nd	13,7%	5%	81,2%	13,7%	3,7%	18,7%	86,6%

One of the important points when using the fetal ECG was the exclusion of a false negative result of a non-stress test, when a healthy developing fetus, during the sleep phase during CTG recorded a monotonous rhythm of the pathological type. At the same time, the fetal ECG did not reveal disorders temporal and amplitude parameters of the heart cycles which proved the absence of fetal hypoxia, despite the “pathological” type of CTG recording.

The study of the process of adaptation and the condition of newborns was of great interest. 320 newborns, 160- from the CTG group and 160 from the STAN+ CTG group were examined.

The average birth weight was 3380 g. Average height 51.28 ± 0.19 cm. The head circumference is 35.05 ± 0.12 cm and the abdominal circumference is 34.05 ± 0.11 cm. In 25 (7.8%) cases, the birth of a large fetus weighing more than 4000 g.

In satisfactory condition, 21 large children with an Apgar score of 6 / 7-8 points. The state of moderate symptoms was observed in 4 large newborns, which was due to the presence of intrauterine pneumonia and acute hypoxia in childbirth. Later, with the aim of nursing, these children were transferred to the second stage. There were no statistically significant differences in anthropometric data between the two groups of newborns.

256 (80%) children were recovered in satisfactory condition , 132 (51.5%) and 124 (48.4%) in the CTG and STAN+CTG groups, respectively. Moderately serious condition was in 55 (17.2%) children, 27 (49.0%) in the 1 group, 28 (50.9%) in the 2 group. 9 (2.8%) children were born in severe hypoxia with an Apgar score of 2-4 points. In 55.5% of cases in the STAN + CTG group and 44.4% in the CTG group.

31 (9.6%) children were transferred to the neonatal intensive care unit (NICU).

In the CTG group 17 (54.8%) and the STAN + CTG 14 group (45.1%). Department of Newborns 289 (90.3%). Transfer to step-by-step care required 61 (19.0%) newborns, in the vast majority of cases for pneumonia. 5 newborns were transferred to the Department of Children's Clinical Hospital №2 with congenital malformations. Significant differences between the two groups according to the above results were also not found. However, analysis of the data presented showed that in the STAN +CTG group in newborns, there were more cases of confirmation of hypoxia than in the CTG group (86.6% and 63.2%, respectively).

The most frequent complications in the postnatal period were: cerebral ischemia - 84%, fetal distress and pneumonia - 69%, neonatal jaundice - 26%, cephalohematoma - 19 %, acute hemorrhagic edema - 16%, toxic erythema of the newborn- 6%, muscle imbalances - 4%, dropsy of the testicle -3%, congenital heart defect -3%, intestinal obstruction, intestinal paresis - 2%.

Special attention was taken to assess the condition of skin of newborns in the place of installation of spiral electrode. We have not recorded any case of any cosmetic defects and other complications after the use of electrodes for direct ECG, which proves the safety of the application of this method.

Conclusion

Comparing the course of the study of the technique STAN+CTG with a single CTG, it was proved that the invasive method of evaluation of ECG in combination with CTG leads to a more reliable and qualitative diagnosis of intranatal

fetus pathology. Significantly reduced the number of samples from the presenting part due to indirect information on fetal blood oxygenation obtained. Also, the decrease in the frequency of use of operative delivery, which allows to reduce the risks for mother and fetus health and reduce material costs. In the conditions of modern trends to increase the number of operative delivery, invasive method of monitoring the state of the fetus can play a crucial role in timely diagnosis of threatening conditions of life of the fetus, taking the right tactics and optimization of childbirth.

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生殖治疗的基本规定
BASIC PROVISIONS OF SANOGENETIC TREATMENT

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抽象。在本文中，作者使用适应性的建构性理论证实了造血疗法的主要规定：1）诊断第二种类型的终末状况（确定病理学不可逆转的威胁）； 2）由于外部收入补偿和恢复外围资源的移动部分； 3）病灶的检测以及对适应的病理影响最小化； 4）确保最佳环境条件； 5）通过重要功能的外部调节来提高思考的效率；6）形成生理优势基因； 7）识别人体中的薄弱环节，加强其结构和功能； 8）逐渐扩大与外部环境的接触，并为不断变化的环境中的活动做准备。

结论是，合理的规定构成了普遍待遇制度。该系统的特殊性不是中断和消除病理学发展机制，而是创造生活条件。

关键词：造血，适应性建设性理论，造血治疗的主要规定。

Abstract. *In the article, using the constructive theory of adaptation, the authors substantiate the main provisions of sanogenetic treatment: 1) diagnosis of terminal conditions of the second type (identification of the threat of irreversibility of pathology); 2) compensation and restoration of the mobile part of the peripheral resource due to external revenues; 3) detection of the lesion and minimization of its pathological effects on adaptation; 4) ensuring optimal environmental conditions; 5) increasing the effectiveness of thinking by external regulation of vital functions; 6) the formation of a physiological dominant; 7) identification of weak links in the body, their structural and functional strengthening; 8) the gradual expansion of contact with the external environment and preparation for activities in changing conditions.*

It is concluded that the justified provisions form a universal treatment system. The peculiarity of this system is not the interruption and elimination of the mechanisms of development of pathology, but the creation of conditions for life.

Keywords: *sanogenesis, constructive theory of adaptation, the main provisions of sanogenetic treatment.*

Introduction

Life (self-reproduction) represents the movement of an organism from the past to the future. The present (PR) is a function of the past (PA) and the future (FU):

$$PR = F (PA, FU).$$

In a living organism, the past - the body structure and the programs that they work on, the future - a plan for changing body structures and related programs [3].

Under the influence of damaging factors in the body there are mechanisms of the development of the disease - pathogenesis and mechanisms of recovery - sanogenesis. The common basis of pathogenesis and sanogenesis is adaptation (adaptive reaction) [5].

The pathogenetic principle of treatment aims to interrupt and eliminate the mechanisms of the onset of the disease. Pathogenetic treatment begins with a diagnosis, which consists of collecting an anamnesis, studying the body structures and the programs that they work on, then efforts are directed to interrupting and eliminating the mechanisms of the onset of the disease. At the same time, the clinician is essentially trying to do the impossible - to change the past.

The sanogenetic principle of treatment aims to translate the mechanisms of the development of the disease into mechanisms of recovery. The organization of appropriate and effective adaptation ensures recovery. This treatment principle is more justified.

The authors of the article managed to develop a constructive theory of adaptation [3], which is the theoretical basis for organizing expedient and effective adaptation.

Purpose of the study – using the constructive theory of adaptation, substantiate the main provisions of sanogenetic treatment.

The results of the study

The basis of the constructive approach is the use of concepts containing guidance on the algorithm for creating the desired object [1, 3].

Necessary concepts of the constructive theory of adaptation

Viability (ability to live) is ensured by efficiency and reactivity. Efficiency - the ability of the body to perform its characteristic functions with the necessary intensity. Reactivity - a set of functions characteristic of the body, provides its capabilities.

Living organisms perform external and internal work due to the self-destruction of their biological structure and there are mechanisms that reproduce the destroyed in a new form, more relevant to the future. The permissible level of self-destruction (critical level of organization) is determined by the minimum set of functions sufficient for self-reproduction [1, 3].

The peripheral resource of viability is determined by the excess of organization of biological structures relative to a critical level. It consists of stable (structures that perform vital functions) and mobile (energy-intensive substrates intended for consumption) parts. The central resource of vitality includes a set of adaptive programs, the ability to assess the situation and extract the necessary program from memory [1, 3].

The mobile part of the peripheral resource provides uptime. The stable part of the peripheral resource and the central resource is reactivity.

Adaptive are such reactions of the morphofunctional transformation of the body that restore its working capacity. With **current adaptation**, reactivity does not change, with **pathological adaptation**, reactivity decreases, with **physiological adaptation**, reactivity increases [3].

In the case of the current adaptation, the mobile part of the peripheral resource is restored by external receipts according to the programs available to the body, the stable part of the peripheral resource and the central resource are not changed. When adaptation cannot restore working capacity, anxiety appears, the body begins to look for a way out of the current situation and goes to restore working capacity by destroying biological structures that perform vital functions, adaptation becomes pathological.

In the case of pathological adaptation, the mobile part of the peripheral resource is restored by the transformation of biological structures that perform vital functions into energy-intensive substrates intended for consumption. The stable part of the peripheral resource decreases and the central resource does not change. Signs of pathological adaptation are anxiety and a tentatively research reaction. Pathological adaptation creates the conditions for developing a new, necessary for the body, adaptive program: in the process of searching, general awareness increases, a stable part of the peripheral resource is mobilized, the body receives cellular and organ information about the past and the need is formed.

In the case of physiological adaptation, the mobile part of the peripheral resource is restored due to external income with the participation of a new adaptive program, the stable part of the peripheral resource and the central resource increase.

The conditions for the development of a new adaptive program are: the formation of a need, the satisfaction of which eliminates the threat to life, caused by the mismatch of the programs available to the body to the current (future) moment; a peripheral resource sufficient to survive the development of a new adaptive program; adequate perception of the surrounding world and the internal environment (sufficient awareness); effective thinking [3, 4].

A new adaptive program eliminates the threat to life, the reproduction of a stable part of the peripheral resource begins, biological structures become more complicated, adaptation becomes physiological [3].

Conditions for recovery. Physiological adaptation takes the body to a higher functional level and leads to recovery. Thus, **sanogenetic treatment consists in providing the conditions for the development of a new adaptive program.**

If the adaptive program necessary for the body is not developed, then the adaptation remains pathological, when the organization of biological structures approaches a critical level, the functioning of physiological systems becomes intense and the body refuses active activity to maintain the ability to reproduce itself. **Strenuous functioning and refusal of vigorous activity should be considered as internal signs of a life threat - terminal conditions of the second kind.**

Pathological adaptation is a necessary stage of progressive development on the one hand and the cause of death on the other.

With pathological adaptation, a weak link in the body — the target organ — is damaged, which depends on the individual characteristics of a person [2, 3].

The clinical manifestations of damage to the target organ, failed and pathological adaptation are a variety of functional and structural disorders. An attempt to eliminate them without providing the conditions for the development of the necessary adaptive program contributes to the memorization of ineffective programs - a stable pathological condition (pathological dominant) is formed.

Obviously, the focus of damage in the body can disrupt the natural course of adaptation processes, its pathological effects should be eliminated [2, 3].

Thus, the conditions for recovery are:

1. Recovery of the mobile part of the peripheral resource due to external factors.
2. Elimination of the threat of irreversibility of pathology.
3. Minimizing pathological effects from the lesion.
4. Prevention of the occurrence and / or elimination of a stable pathological condition (pathological dominant).
5. Strengthening the weak link - the target organ.
6. Maximum body awareness of the situation.
7. Effective thinking.

The main provisions of the sanogenetic treatment. When the body enters an irreversible state of dying, recovery is impossible. Given this, treatment should begin with the identification of the threat of irreversibility of the pathology and the removal of the second type from the terminal state. To do this, it is necessary: to restore the mobile part of the peripheral resource due to external factors, to minimize pathological effects from the lesion, to increase the efficiency of thinking.

The use of pharmacological agents, taking into account the functional characteristics of the nervous system (if necessary, surgery) will minimize the pathological effects from the lesion.

Rational enteral, if the latter is limited, parenteral nutrition will contribute to the restoration of the mobile part of the peripheral resource due to external factors.

An insufficient peripheral resource can be compensated for by its economical expenditure, for which it is necessary to reduce the overall activity and increase the body's consistency with the external environment - to create optimal environmental conditions. To do this, organize rational sanitary - hygienic and motor regimes, external support of certain vital functions (energy supply - parenteral nutrition, blood circulation - controlled hemodelution, respiration - artificial lung ventilation).

External provision of vital functions in accordance with the principle of dominance will release the nerve centers by which these functions are regulated. An increased neural resource will contribute to the development and implementation of new adaptive programs - increaseing the efficiency of thinking.

A natural way to prevent and eliminate a pathological dominant (steady pathological condition) is to form a useful (physiological) dominant, in which pathological impulses will reinforce a reaction useful to the body. The most important physiological dominants are: sensitive, motor, energy-saving, food and heat-producing.

Sensitive dominant enhances body awareness. For its formation, restoration and activation of all types of sensitivity is necessary. Of great importance in this are relaxation methods: neuromuscular relaxation, autogenic training, meditation and hypnosis.

The motor dominant is formed in the process of a targeted increase in range of motion. Since physical activity is a natural regulator of life, a rational motor regimen increases the effectiveness of thinking.

Limiting the supply of oxygen will contribute to its better absorption and transfer of the body to an economical mode of energy consumption. Therefore, to form an energy-saving dominant, you can use arbitrary restriction of lung ventilation.

Food dominant is formed by various diets with the inclusion of dosed fasting.

Dosed cold exposure (hardening) forms a heat-producing dominant.

In the serious condition of the patient and the impossibility of self-control, special therapeutic techniques can be used to form physiological dominants: controlled ones - hypoglycemia (insulin therapy in psychiatry and narcology), hypotension and hypothermia (in anesthesiology and intensive care), hyperthermia (in immunology and oncology), etc.

Physiological dominants contribute to increasing the functionality of the basic life support systems, therefore, the process of their formation should be considered as a general homeostatic training.

An important point of treatment is the identification of weak links in the body, their structural and functional strengthening. To do this, use directed treatment of damaged organs and a special physical training.

The elimination of adaptation disorders, the restoration of the peripheral resource, the structural and functional strengthening of weak links create the condi-

tions for the necessary expansion of information contact with the external environment and preparation for activities in changing conditions.

Thus, the main provisions of sanogenetic treatment are:

1. Diagnosis of terminal conditions of the second type (identification of the threat of irreversibility of pathology).

2. Compensation and restoration of the mobile part of the peripheral resource due to external factors.

3. Detection of the lesion and minimization of its pathological effects on adaptation.

4. Ensuring optimal environmental conditions.

5. Improving the effectiveness of thinking by external regulation of vital functions.

6. The formation of the physiological dominant.

7. Identification of weak links in the body, their structural and functional strengthening.

8. The gradual expansion of contact with the external environment and preparation for activities in changing conditions.

Conclusion

The substantiated basic principles of sanogenetic treatment form a universal system. The peculiarity of this system is not the interruption and elimination of the mechanisms of development of pathology, but the creation of conditions for life.

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水力研磨法在儿童恒牙裂隙封闭中的应用
THE USE OF HYDRO-ABRASIVE METHOD FOR FISSURE SEALING OF PERMANENT TEETH IN CHILDREN

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抽象。 这篇文章提供了对58名患者进行的两年观察的数据，这些患者接受了194颗恒牙的裂隙封闭。 研究表明，与传统的非侵入性技术相比，采用空气研磨方法处理裂痕的预防措施的质量显着提高（提高了63,4%（x2= 16,638，P〈0.001））。

关键字：裂隙封闭，水磨法，预防龋齿，儿童。

Abstract. *The article presents data from a two-year observation of 58 patients who underwent fissure sealing of 194 permanent teeth. As the study showed, the use of the air-abrasive method of processing fissures significantly increases (by 63,4% (χ^2=16,638, P<0,001)) the quality of preventive measures, compared with the traditional non-invasive technique.*

Keywords: *fissure sealing, water-abrasive method, prevention of dental caries, children.*

Tooth decay in children is a significant social problem. According to available literature data, the prevalence of this pathological process in 6-year-old children in permanent teeth reaches 13% [3]. The reasons can be both low parental awareness, insolvency and irregularity of individual hygiene procedures, and disadvantages of preventive work [2].

Due to the completion of mineralization of tooth enamel within 1-4 years after eruption, a high risk of tooth decay remains. Especially (up to 80% of cases) fissures and physiological fossae of teeth are exposed to this process [1, 4].

One of the important elements of primary prevention is fissure sealing. Due to the presence of a sealant, firstly, a mechanical barrier is created in natural depressions, preventing the accumulation of plaque, and secondly, enamel is mineralized by active ions [5, 8]. There are two methods of sealing: non-invasive and invasive. An indication for the first technique is the prevention of caries in clinically healthy teeth, in the early stages after eruption in children with a compensated form of the carious process. The second technique is carried out in cases of sub- and decompensated forms of caries, deep and pigmented fissures, and low levels of oral hygiene [2].

Adhering to the principles of minimal invasion, the disclosure of fissure can be done in several ways. So, it is possible to use diamond burs and fissurotomes, laser systems and ultrasonic devices. However, in the first case, vibration and sound are present, which is psychologically difficult for some patients to tolerate, and microcracks may form on the enamel surface [9, 11, 12]. In the second case, the high cost of the equipment does not allow the method to be widely implemented in practice.

In addition to the above methods, air-abrasive devices are actively used. The method is based on the removal of hard tooth tissues by powder particles (aluminum oxide, sodium hydrogen carbonate or calcium carbonate), supplied at high speed (up to 800 km/h) [7, 10, 13]. Despite such advantages of the method as painlessness, lack of vibration, chips and cracks on the enamel, mechanical and microbial contamination of the surface remains. Therefore, it is more preferable to use the a water-abrasive technique. The presence of a water stream reduces dust formation, washes the surface and increases the cutting ability of the powder (aluminum oxide powder of 27 and 50 microns is used in the systems) [9, 10, 12], which further improves the adhesion of the sealant to enamel.

Purpose of the study – evaluate the effectiveness of sealing fissures of permanent molars using a water-abrasive technique.

Materials and methods

A clinical study was conducted on the basis of the children's dental department of the dental clinic of the FSBEI HE KubSMU of the Ministry of Health of Russia (Krasnodar). Dental procedures were performed with the written informed consent of the parents. The criteria for inclusion of children in the study were:

- age of 6-7 years;
- compensated form of the carious process;
- good or satisfactory oral hygiene;
- clinically healthy molars.

Children were divided into two groups. The experimental group consisted of 30 children (105 teeth) who were sealed using a water-abrasive method. The control group included 28 children (89 teeth), who underwent standard non-invasive sealing. Patients were monitored for 24 months.

Method of sealing

1. Professional cleaning using fluoride paste.

2. Isolation of the working field using cotton rolls (control group) and cofferdam (experimental group).

3. Etching with a 37% phosphoric acid solution for 20 seconds, followed by washing with water and drying the surface.

4. Fissure cleansing using the apparatus “Rondoflex plus 360” (“KaVo”) with alumina powder of 50 microns (experimental group).

5. Fissure sealing using “Fissurit FX” (“VOCO”) material.

6. Photopolymerization of the material, followed by correction of occlusion and polishing.

Repeated visits were carried out after 3, 6, 12, 18 and 24 months. The results of the prophylaxis were evaluated using the following criteria:

A – fully preserved sealant;

B – partially preserved sealant (Bn – no caries, Bc – with caries);

C – completely absent sealant (Cn – no caries, Cc – with caries).

Evaluation of the effectiveness of sealing was determined by E.M. Melnichenko formula modified by us [6].

$$FSE = \frac{C\ non-invasive - C\ water-abrasive}{C\ non-invasive} \times 100\%$$, where:

FSE – fissure sealing effectiveness;

C non-invasive – number of carious teeth with non-invasive technique;

C water-abrasive – the number of carious teeth when conducting a water-abrasive technique.

Statistical data are presented in percent; criterion χ^2 was used to identify differences between groups.

Results and its discussion

In total, 58 children took part in the study, who had 194 teeth fissure sealed. The main parameters of the dynamics of the results of preventive manipulation are given in table. 1.

***Table. 1** – The dynamics of the results of sealing for 24 months of observation (%)*

Observation period	Test group (N=105)					Control group (N=89)				
	A	Bn	Bc	Cn	Cc	A	Bn	Bc	Cn	Cc
3 months	100	--	--	--	--	100	--	--	--	--
6 months	98,10	1,90	--	--	--	96,63	2,25	--	1,12	--
12 months *	91,43	3,81	--	4,76	--	71,91	14,61	2,25	8,98	2,25
18 months**	81,90	6,67	--	8,57	2,86	57,30	19,10	5,62	13,48	4,49
24 months ***	76,19	9,52	---	10,48	3,81	48,31	22,47	6,74	16,85	5,63

* χ^2=11,971, P<0,001 *** χ^2=16,638, P<0,001

** χ^2=14,742, P<0,001

According to the data obtained, the best retention of the stored is observed in the experimental group (up to 76.19% after 24 months). In the control group, the percentage of preserved sealant at the end of the observation period was 48.31%.

As follows from table 1, the partial loss of sealant in the experimental group after 6 months was 1.90%, after 12 months - 3.80%, and after 18 months - 6.67%, after 24 months - 9.52%. In the control group, similar values were 2.25%, 16.85%, 24.72% and 29.21%, respectively. A complete loss of sealant in the children of the experimental group was observed after a year and amounted to 4.76%, and after two years - 14.29%. In the control group, there was already a loss of sealant after 6 months (1.12%). After 1 and 2 years, the total loss of sealant was 11.24% and 22.48%, respectively. This fact may be associated with a violation of the adhesion of the sealant to the tooth enamel under the influence of a constant chewing load.

Analyzing the result of two years of observation, we found that in the main group, caries developed in 3.81% of cases, and in the control group it was noted in 12.37%. Thus, the efficiency of fissure sealing using the water-abrasive method is 63,4% (χ^2=16,638, P<0,001) times higher than the non-invasive technique.

Conclusions

1. The use of water-abrasive devices (for example, “Rondoflex plus 360” (“KaVo”)), due to high-quality cleansing of the fissure, improves the adhesion of the sealant to the tooth tissues (76.19% of preserved sealant after two years of observation);

2. A partial loss of sealant in children of the experimental group was observed only a year after the sealing. In children of the control group in 2.25% of cases after 6 months. a partial absence of a sealant was observed.

3. The presence of carious dental lesions in children whose teeth were sealed using a water-abrasive technique was observed 3.25 times less often than in children with a non-invasive sealing technique.

Thus, in order to increase the effectiveness of caries prevention when sealing fissures of young teeth in children 6-7 years old, it is preferable to pre-clean natural cavities using water-abrasive devices.

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首都布拉迪斯拉发和布拉格的光污染对经济和生态造成的影响
ECONOMIC AND ECOLOGICAL CONSEQUENCES OF LIGHT POLLUTION IN THE CAPITAL CITIES BRATISLAVA AND PRAGUE

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抽象　光污染是所有散布在大气中的烟雾所散布的人所产生的光。在美国（阿拉斯加，夏威夷除外）和欧洲，全世界约三分之二的人口和99%的人口居住在夜空高于污染极限的地区。现在，欧洲人口已经看不到银河系的视线。由于天空的亮度，欧洲六分之一的人口不再以夜视调节眼睛。俄罗斯是欧洲最大的发光体。污染最严重的城市是莫斯科和彼得斯堡。由于这些原因，有必要关注欧洲的光污染。本文的目的是分析斯洛伐克和捷克共和国首都的光污染现状。在分析当前情况之后，我们已提请注意减少光辐射所需的个别措施。斯洛伐克和捷克共和国地区无法解释的夜空被认为是自然财富的一部分。

关键词：生态，经济，光污染，人口。

Abstract. *Light pollution is all disturbing light produced by man scattered in the atmosphere light smog. Around two thirds of the world and 99% of the population in the United States (except Alaska, Hawaii) and Europe live in areas where the night sky is above the polluted limit. Europe's population has now lost sight of the Milky Way's eye. One-sixth of the population of the European Union no longer looks at the sky with their eyes adjusted for night vision because of the brightness of the sky. Russia is the biggest light emitter in Europe. The most polluted cities are Moscow and Petersburg. For these reasons, it is necessary to focus on light pollution in Europe. The aim of this article is to analyze the current state of light pollution of the capitals of the Slovak and Czech Republic. After analyzing the*

current situation, we have drawn attention to the individual measures necessary to reduce light radiation. Unexplained night sky in the regions of Slovakia and the Czech Republic is considered to be part of natural wealth.

Keywords: *ecology, economic, light pollution, population.*

The introduction

In recent years, attention has been focused on international environmental issues, including the depletion of the ozone layer. Most attention of the public is focused on climate change, which is not yet fully subject to effective international control. Experts comment on this topic with a proposal for a better selection architecture that should reduce greenhouse gas production. Light pollution is one of the main causes of pollution. By light pollution we mean a change in the level of night light caused by anthropogenic light sources. Light pollution affects the health of the population, while at the same time spending large amounts of money on lighting streets, industrial parks, buildings, etc.

In addition to the population, animals also suffer from light pollution from passing cars along roads, as well as the glow of light from places that are reflected in forests. Insects are attracted by headlamps that are lethal to him. Luminous foci targeting the sky by confusing migratory birds. Such dazzling will not detect birds and hit the headlamps at high speed, which usually results in their death. This error is caused by the increased brightness of the sky above the mainland, which should normally be above sea level. Animals, vertebrates and invertebrates that are attracted by polarized light can have a negative impact on their mortality, reproduction or food search, thereby disrupting the food network and the functioning of the whole ecosystem.

Private companies are a major producer of light pollution. It is for this reason that private companies have been focusing on the ecological nature of functioning in recent years. One of the problems that individual companies try to solve is light pollution.

Light pollution must be thought of as a global problem in which stakeholders such as consumers, citizens, large companies and the governments of the countries concerned are involved. We will analyze this societal problem in detail on a selected continent, namely Europe.

Diverse civil science projects accumulate data and facts about environmental conditions and embed them in the content of light pollution mapping. In the area of light smog there is a small amount of collected data due to the complexity, time and cost of capturing light pollution in given areas.

The analysis of the cities

In the analysis of this article, we focus on light pollution on a selected continent, which is Europe. In the picture no. 1. we see the areas with the highest pollution, which are marked with red color, then pass into the shade of yellow color. Areas with lower light pollution become greenish. The least contaminated areas are shown in dark blue.

The most intense light pollution in Europe is in the central, western and southern parts of Europe. This could be attributed to the large concentration of the population that inhabits these parts of Europe. Eastern Europe represents the least intense pollution in Europe.

The most lightly polluted cities in Europe are Moscow and Petersburg in Russia, which are shown in Figure 1. marked by an orange circle. In the picture no. 1 we can see other European cities that produce the greatest light pollution, especially Helsinki, Rotterdam and London.

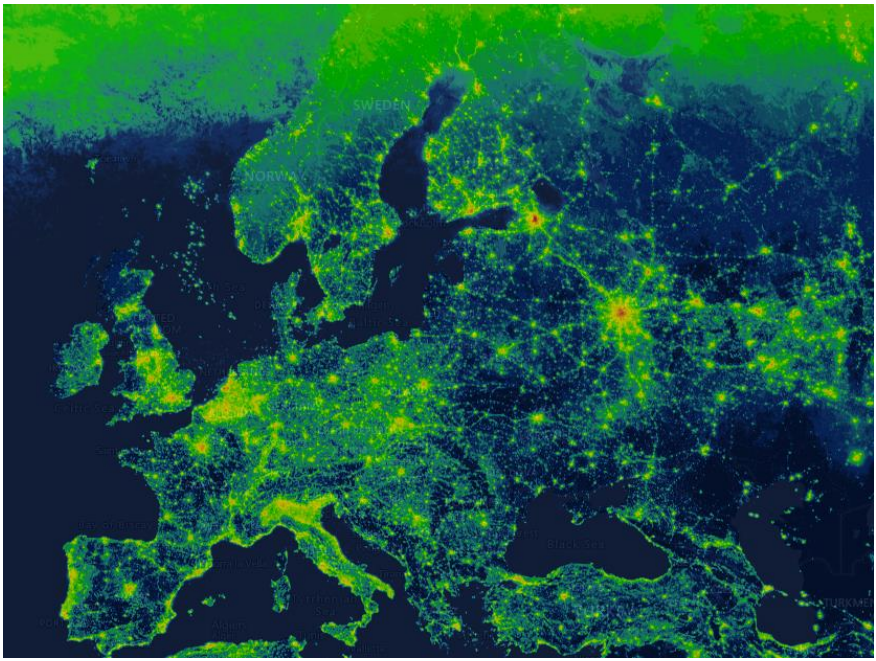

Figure 1. *Light pollution of Europe*
*[**Source:** https://lighttrends.lightpollutionmap.info/#zoom=2&lon=34.17183&lat=49.86490]*

One of the biggest reasons why there is high light pollution on the continent of Europe is that the continent is constantly growing in the population that is involved in light pollution. Due to population growth, measures to reduce light pollution should be introduced. Figure 2 shows the potential increase in population in Europe by 2025. Consequently, it can be stated that from 2025 there is an expected decline in population, but this is not reflected in the reduction of light pollution. On the contrary, light pollution will be constantly high.

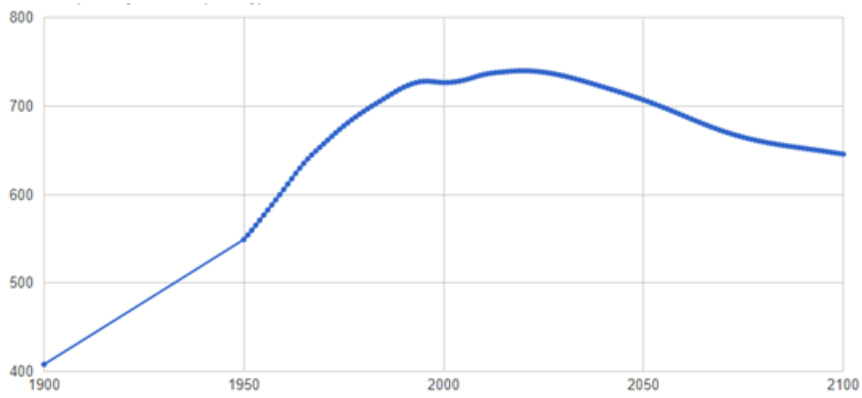

Figure 2. *The projected evolution of Europe's population by 2100 [Source: http://obyvatelstvo.population.city/world/eu]*

Europe's light pollution is largely influenced by public lighting, monument lighting, advertising areas with a large overlap, and so on.

Given the present state of light pollution, it is necessary to address this issue. Within these global problems, we focused on comparable countries in Central Europe that are part of the creation of the most intensive light pollution by the Slovak and Czech Republic. Subsequently, we focused on the main metropolises of these two countries, namely Bratislava and Prague.

The objective / methodics

The aim of this article was to approach the issue of light pollution and then compare two selected countries of Central Europe, where we monitored the state of light pollution in the major cities such as Bratislava and Prague.

In this paper we used methods such as excerpting, analysis, synthesis, induction and deduction. The method of excerpting was used in the investigation of theoretical concepts of the problem. Subsequently, the method of analysis was used, which we used to monitor light pollution within Europe as well as selected major metropolises of the Slovak and Czech Republic. To analyze the analysis, it was necessary to use the web interface: https://lighttrends.lightpollutionmap.info, through which it was possible to assess light pollution within Europe. We used the synthesis method after analyzing the capital cities of Slovakia and the Czech Republic in the field of light pollution, when we came up with individual measures that would have to be implemented in order to reduce the pollution. We used the method of induction and deduction to evaluate the issue and then came to some conclusions.

The results

In this article, we focused on monitoring light pollution in the capital cities of the Slovak Republic, namely Bratislava and the capital city of the Czech Republic, which is Prague. Subsequently, we will analyze in detail the current state of light pollution in these metropolises and identify concrete measures to help reduce such pollution.

Bratislava is the capital of the Slovak Republic. It is also the city with the largest population in the country, but it is one of the smallest capitals in Europe. The city has an area of 376 square kilometers, its district consists of 329 square kilometers and has a population of almost 600 000. The population density (person per square kilometer) is 1,169 people. In 2020, the projected population is approximately 427,000.

Bratislava has registered a steady increase in population over the decades. The development of the city and its favorable conditions for entrepreneurs make it an ideal place for start-ups. Subsequently, it is expected that in the future Bratislava will continue to show the growth of companies and populations that will rise. The map below shows the city of Bratislava with its light pollution. Figure 3 below shows a map of the city of Bratislava with its light pollution.

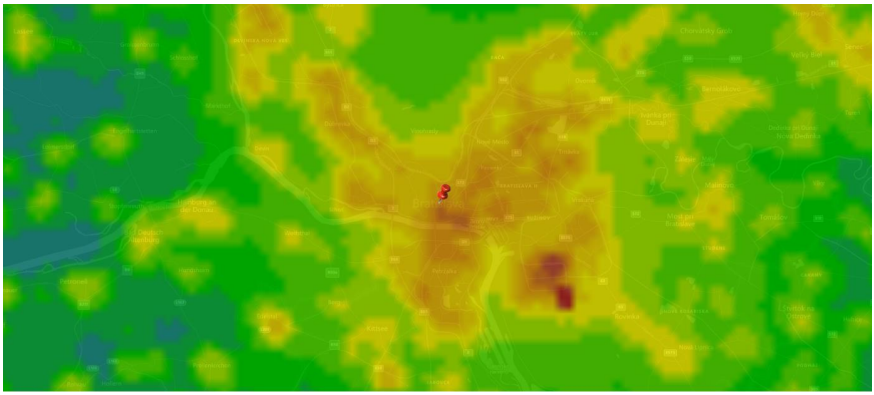

Figure 3. *Bratislava light map*
*[**Source:** https://lighttrends.lightpollutionmap.info/#zoom=10&lon=17.10699&lat=48.14924]*

In the southern part of Bratislava there is the highest level of light pollution, which shows red color. The number of legal entities in Bratislava as at 31 December 2018 was 102 867. The concentration of a large population as well as a large number of legal entities in one place causes a high level of light pollution in the Bratislava area. It is necessary to take into account the population and foreigners

who travel to the capital of Slovakia for work and increase light pollution. The light map of Bratislava shows a high level of light pollution of Bratislava, especially in the south-eastern part. The light smog is located mainly in the streets of Polska, Poľná, Sasinkova, Strážnická, Croatia and others due to unsuitable light source, high density of human and business factors in this area. Light pollution, as a consequence of the wasteful use of light, disrupts the natural night darkness and biorhythms of all living organisms (including man), which inevitably need darkness for effective sleep and life.

The total area of the capital of the Czech Republic, which is Prague, covers 298 square kilometers. The population density is 4 600 inhabitants per square kilometer (12 000 people living per square kilometer). Prague is included in the UNESCO World Heritage List as a historical site. In the historical part of the city there are many monuments, churches and museums. Prague is also a very modern and commercial city. Plants from all over Europe are constantly coming to this capital, where their headquarters are located. Prague accounts for 25% of the Czech Republic's total GDP. At present, the capital is the seat of many businesses focused on the tertiary sector of the national economy, which includes services. Hospitality, finance and business services are the largest, with 80% of these industries remaining. The remaining 20% are industrial plants.

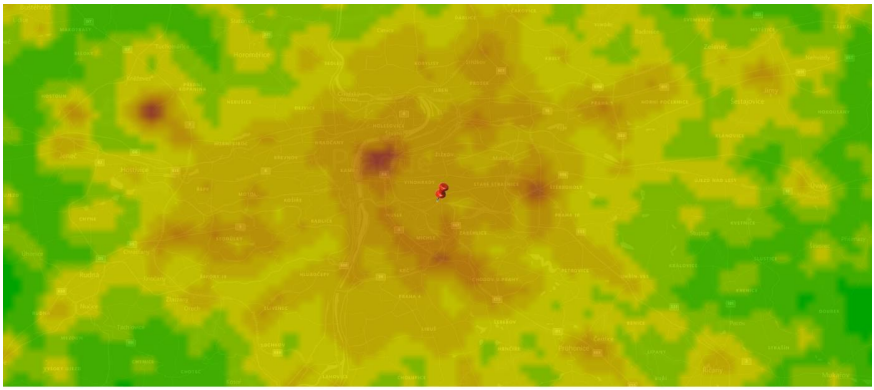

Figure 4. *Praha light map*
[Source: https://lighttrends.lightpollutionmap.info/#zoom=10&lon=14.46585&lat=50.06680]

The map of the capital city of Prague shows an even distribution of large amounts of light smog. The ideal density of the city should be 100 inhabitants per hectare, which in Prague is highly exceeded. In the northern part of the city are the most affected areas. Light pollution is caused by high population density, firms, but also by insufficient measures against inappropriate and unneces-

sary illumination for private companies and public institutions, as well as minor changes in public lighting. Light pollution also occurs in the case of habitats. An artificial light source attracts night insects within a radius of 400 to 700 meters. In the case of Prague, this is particularly the case in urban areas where street lighting is located only 30 to 50 meters apart. Prague has a population density of 24 inhabitants per hectare, which is low compared to larger cities in Europe, such as Vienna (41 inhabitants per hectare) or Milan (73 inhabitants per hectare). It should be noted that densely populated areas are considerably cheaper for public budgets than "carpet" development of family houses.

Both Bratislava and Prague are a multicultural capital. It brings together foreigners and indigenous people who seek employment opportunities provided by prosperous businesses in these areas. Both cities have a low unemployment rate of less than 2%. Cities are home to many private and public institutions, which is largely influenced by the high light pollution of both cities. The economic aspect that promotes greater pollution of the biotic environment is confronted with environmental protection. Businesses benefit from high light pollution due to the majority of three-shift or continuous operation of car factories and other businesses, but it should be stressed that light pollution in these areas is very high and care must be taken to reduce and mitigate light smog in cities in Europe.

Main measures against light pollution:

- Main measures against light pollution,
- Transport planning,
- Reduce public lighting (every other lamp is on),
- Reduction of lighting in industrial parks,
- Analysis of spatial data and population density has an irreplaceable role in modern urban planning,
- Replacement of fluorescent lamps for LED lighting,
- Change the lighting interval of the public lighting,
- Daylight support on passenger cars,
- Correction of incorrectly oriented luminaires.

The European Union and all environmental organizations intend to reduce light pollution. In the case of light smog, it is appropriate to save electricity and to maintain the education of citizens to save electricity. The rules of good lighting will be taken into account by all stakeholders, ranging from citizens to private businesses to public institutions.

In view of the difference with other pollutants, alleviating light pollution could be achieved in a relatively simple way by raising consumer awareness of the negative consequences. This means using less light overall, bulb shading and using low-blue lights. (Schroer & Hölker 2014).

At the local level, it is necessary to identify existing luminaires, their age, suitability of illumination, adequacy of inclination, ratio of luminance to target and to the surroundings. Municipalities and citizens should be involved in the review of appropriate lighting in public areas, as well as the current status of luminaires. Undertakings and various other public institutions should check the status of their lamps and check their inclination. Thus, unnecessary and unnecessary illumination to the surroundings can be avoided.

Citizens respecting freedom of choice are aware that if the transaction costs are high, it may not be possible to avoid a certain type of government action, albeit sometimes coercive. Ordinary people, private businesses are not in a position to continue to pollute the atmosphere with light pollution. In case of high levels of light smog, the government should intervene.

The protection of the natural night environment from light smog has not yet established a legislative aspect in the law, neither in the Slovak Republic nor in the Czech Republic. Many debates and debates are currently taking place on the basis of the goodwill and cooperation of various environmental organizations.

The conclusions

The highest population density is in the area of housing estates, industrial zones and city centers. Clearly it can be said that light pollution would be reduced if the industrial zones around the capitals were switched to energy-saving mode and not wasted electricity, light pollution would be reduced. In the case of electricity, the proposal for improvement is addressed to all market players. It affects individuals, households, businesses and government institutions. It is advisable to save electricity, to teach all generations not to waste this resource, and at the same time to encourage their employees in companies to use electricity appropriately, or in the case of lamps, electrical appliances, etc.

Due to the size and comparison of the cities, Bratislava has a lower population density and at the same time less light pollution. Prague is highly light-polluted, but this result is not only due to population density, but also to the fact that Prague has not yet implemented sufficient measures to reduce light pollution. A suitable solution for Prague is the introduction of conservation measures such as the creation of an urban plan aimed at even distribution of the population, traffic planning, reduction of public lighting, etc.

Nowadays, a suitable option is the illumination of the contour lighting when illuminating cultural monuments such as churches, castles and other monuments. Lighting from the top is a suitable option for illuminating advertising space. The problematic illumination is the illumination of historical centers of towns, villages with lamps with historical shapes and especially spherical lamps.

World ecologists draw attention to the increasing number of animal deaths due to improperly targeted light sources. Subsequently, large funds are spent on the recovery and rescue of the animals so affected.

Significant funds from both the private and public sectors are unnecessarily invested in unnecessary illumination in meaningless directions, resulting in a large waste of electricity. Non-purposeful light shines senselessly into space. Electricity consumption will drop by a third after replacing disproportionate luminaires with ones that only point to the ground.

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关于提高圆形天线的辐射效率的可能性
ON POSSIBILITY OF IMPROVING THE RADIATION EFFICIENCY OF A CIRCULAR ANTENNA

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抽象。 考虑以电感（或电容）元件形式出现的局部异质性对环形天线辐射特性的影响，该电感（或电容性）元件连接到环形天线的环形电路轮廓（在φ=π之下）。 已经确定，与均质模型相比，具有异质性的模型的辐射水平增加。 结果表明，由于谐振电流分布Iq（φ）（q≥1）不均匀，这种现象与变形有关。

关键词：环形天线，异质性，谐振电流分布。

Abstract. *The influence of local heterogeneity presented in the form of an inductive (or capacitive) element connected to the loop circuit contour of the ring antenna (at $\varphi = \pi$) on the nature of its radiation is considered. It was established that the radiation level of a model having a heterogeneity increases compared to the level of a homogeneous model. It is shown that this phenomenon is associated with deformation due to the inhomogeneity of the resonant current distributions $I_q(\varphi)$ $(q \geq 1)$.*

Keywords: *ring antenna, heterogeneity, resonant current distribution.*

According to the well-known solution to the problem of electromagnetic radiation from a circular turn (frame) of a wire with a uniform current distribution, a frame (of radius $r=a$) of small wave sizes (i.e., when $ka < 1$ k - is the wave number) emits like a magnetic dipole [1,2]

$$P = BI^2\omega^4, \tag{1}$$

where $B = 153900 \cdot a^4$. If the juice is excited by a preassigned electromotive force ε, when $I \propto \varepsilon/\omega$, and, therefore, the level of radiated power already increases as ω^2. When the current distribution is determined by the relation $I_n \cong A_n \cos n\varphi$, the frame radiates as a quadrupole at n=1 (first oscillation form).

As is known [3, 4], in acoustics, often as emitters, ring mechanical systems of the cylindrical shell type are used, in which the radiation mechanism of resonant forms can be changed [5] by installing a local inhomogeneity in the form of an inertial mass on the surface when the field of resonant forms appears monopole type radiation.

In this paper, by analogy with an acoustic emitter, we will consider the effect of local heterogeneity such as inductance or capacitance of an annular frame of radius $r=a$, connected to the model under study on the nature of its radiation into the surrounding space. For definiteness, we confine ourselves to a model of a small wave-size frame [2,6] ($ka < 1$) with heterogeneity in the form of an inductance L, connected at $\varphi=\varphi_1$ ($\varphi_1=\pi$),assuming that at the same point the exciting emf ε is also applied.

It is known [6,7] that when studying the radiation of homogeneous ring turns, the current distribution $I(\varphi)$ is preliminarily determined. To this end, integral equations [6,7] are compiled, compiled with respect to the current, which for small frames can be reduced to telegraphic [2,8,9]. In this approximation, for the inhomogeneous model under consideration, the equations of the problem of forced oscillations, based on the variational principle [10] that allows us to correctly write the boundary conditions, can be represented as

$$\frac{\partial^2 I}{\partial \varphi^2} + a\omega^2 C_0 L_0 I = 0.$$

$$-\frac{1}{aC_0}\cdot\frac{\partial I^{(1)}}{\partial \varphi}_{|\varphi=\pi-0} + \frac{1}{aC_0}\cdot\frac{\partial I^{(2)}}{\partial \varphi}_{|\varphi=\pi+0} + L_0\omega^2\hat{I} = \omega\varepsilon_{|\varphi=\pi} \quad (2)$$

where $C_0, L_0 -$ linear capacitance and inductance of the frame wire, $\hat{I} -$ current value in the connected inductance.

Note that in the case of a model with a heterogeneity in the form of a connected capacitance, it is advisable to write relations (2) relative to the voltage.

The solution to the problem of forced oscillations will be sought in the form of a series expansion in eigenmodes of current oscillation in the considered inhomogeneous frame. Therefore, we will preliminarily analyze the orthonormal system of eigenfunctions of this framework, the main characteristics of which can be obtained in an analytical form, which allows us to give a clear physical interpretation of the effect of inhomogeneity on the nature of the antenna radiation.

From the solution of the homogeneous system (2), we can obtain the current distribution in the azimuth of the frame: $I_q(\varphi) = \cos[(\gamma_q / 2\pi)\varphi]$ for the area $\pi \le \varphi \le \pi$ and $I_q(\varphi) = \cos[(1-\varphi/2\pi)\gamma_q]$ for the area $\pi \le \varphi \le 2\pi$ Here, γ_q - eigenvalues and frequencies $\xi_q = (\gamma_q/\pi) = \omega_q/\omega_1$, ($\omega_1 = (\pi/a)\sqrt{C_0 L_0}$), determined, according to the equations of the problem, by the following relation

$$tg\frac{\gamma_q}{2} + \alpha\frac{\gamma_q}{2} = 0, \quad (3)$$

where $q = 1,2,3...$ - the numbers of the roots of the equation, $\alpha = (L/aL_0) -$ hetero-

geneity parameter. In the extreme case, for $\alpha = 0$, the roots of characteristic equation (3) and the eigenfunctions coincide with the known values for a homogeneous frame with current: $\cos n\varphi$ $(n = 0,1,2,.....)$. Note that the roots of equation (3) can be obtained in the asymptotic approximation: $\gamma_q \cong 2\pi(q-1/2)[1+1/\alpha\pi^2(q-1/2)^2]$. As calculations show, this expression gives values with an error of less than 10% for q = 1 in the area of parameter change $\alpha > 0,7$ and less than 5% at $\alpha > 0,3$ for $q \geq 3$.

Under the action of inhomogeneity, deformation $I_q(\varphi)$ occurs (increasing with increasing parameter α and serial numbers of vibration modes), a convenient measure of which for practical applications can be (as for an acoustic emitter [5]) the values of the expansion coefficients $a_{qn} = 2\chi\cos(\pi n)\sin(\chi\pi)/\sqrt{D_q}\cdot\pi(\chi^2 - n^2)$ (where $\chi = a\omega\sqrt{C_0 L_0} = \gamma_q/2\pi,\ n = 1,2,3,.....)$ corresponding orthonormal eigenfunctions $J_q(\varphi) = I_q(\varphi)/\sqrt{D_q}$ (D_q – norms) in the Fourier series [5]:

$$J_q(\varphi) = \sum_{n=0}^{\infty} a_{qn}\cdot\cos(n\varphi). \tag{4}$$

We proceed to solve the problem of forced oscillations of the frame, presenting it in the following form

$$I(\varphi) = \widetilde{I}_0 \sum_{q=1}^{\infty} C_q \cdot J_q(\varphi), \tag{5}$$

where $\widetilde{I}_0$ – dimensional amplitude, C_q sought amplitudes of natural forms of current oscillation. Substituting (5) into the equations of problem (2) and using the property of orthogonality of the eigenfunctions J_q. We get the expression for C_q

$$C_q = \frac{\varepsilon}{\widetilde{I}_0\omega_1 L_0}\cdot J_q(\varphi_1)\frac{1}{Z_q}\ , \tag{6}$$

where φ_1 - angular coordinate of the connection point of heterogeneity (φ_1=π), $Z_q = [(-\xi_q^2 + \xi^2)(i\xi)^{-1} + 2\Delta]$ - dimensionless impedance of the q – th form of current oscillation (with natural frequency ω_q), Δ – dimensionless parameter of radiation loss, $\xi_q = (\omega_q/\omega_1)$ - resonant frequency $\xi = (\omega/\omega_1)$ - frequency of external exciting emf, ω_1 - normalization frequency (expression for ω_1 see above). As a result of the deformation of the resonant current distributions, in the corresponding expansions (4), the resonant components ($n = 0,1,2,3,...$), appear corresponding to the vibration modes of the homogeneous system. Thus, each deformed shape represents a full range of spatial harmonics, of which, for the considered frame of small wave sizes (ka < 1), the most intense radiation (dipole type) is characteristic of a harmonic with n=0, corresponding to a uniform current distribution in azimuth. In order to demonstrate the results obtained, we study the change in the radiation intensity of the frame under the influence of inhomogeneity, restricting

ourselves, for definiteness, to the first resonant form. First, we note that at frequencies near the frequency of the deformed shape ξ_1, the amplitude I_1, according to (4)-(6), will be defined as $I_1 = a_{10}C_1\widetilde{I}_0$, where a_{10} represents a constant component (n=0). An estimate of the change in the radiation power of the frame in a narrow frequency band, according to (1), (5), (7), can be done using the relation

$$X = \frac{P(\alpha \neq 0)}{P(\alpha = 0)} = \frac{1}{(2\Delta)^2} \cdot a_{q0}^2 \left(\frac{\gamma_q}{\pi} \right) \omega_1 J_q(\varphi_1) \qquad (7)$$

So for the form with q = 1, at α=0,5, when $a_{10} = 0{,}116$, $\Delta = Y\lambda^{-4}$ [1] (where $Y = 307800 \cdot a^4$, λ - emitted wavelength), $\gamma_q = 5{,}69$, $\omega_1 = (\pi / a)c$ ($c = 3 \cdot 10^8$ m/s – the speed of light in vacuum), according to (7), will have an increase in the radiation power by ~ 2 orders of magnitude.

Therefore, local heterogeneity in the form of inductance of the ring antenna connected to the frame will lead to a significant increase in its radiation level.

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行星际磁场的方位分量对世界时间上白天磁层等离子体对流的影响
DEPENDENCE OF THE INFLUENCE OF THE AZIMUTHAL COMPONENT OF THE INTERPLANETARY MAGNETIC FIELD ON THE CONVECTION OF THE DAYTIME MAGNETOSPHERIC PLASMA ON WORLD TIME

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抽象。　基于针对1968年夏季的安静日子构造的地磁变化场（FGV）的回归模型，使用“磁图反演技术（MIT）”，计算了极地电离层中的电势分布　在世界时刻0、3、6、9、12、15、18、21处行星际磁场（IMF）的两个扇区。根据MIT数据显示，在安静条件下，方位角的影响程度　IMF对白天磁层等离子体对流的影响取决于世界时间（UT），并受Russell-McPherron机制控制。

关键字：等离子体对流，世界时间，行星际磁场，电势，高纬度，电场分布。

Abstract. *Based on the regression model of the field of geomagnetic variations (FGV), constructed for the quiet days of the summer season of 1968, using the "Magnetogram Inversion Technique (MIT)", the distribution of electric potentials in the polar ionosphere was calculated for two sectors of the interplanetary magnetic field (IMF) for world moments time 0, 3, 6, 9, 12, 15, 18, 21. According to MIT data, it was shown that under quiet conditions, the degree of influence of the azimuthal component of IMF on convection of the magnetospheric plasma in the daytime sector depends on world time (UT) and is controlled by the Russell-McPherron mechanism.*

Keywords: *Plasma convection, world time, interplanetary magnetic field, electric potential, high latitudes, electric field profile.*

Introduction

Plasma convection in the Earth’s magnetosphere has been studied in many works [1–4], including the influence of the azimuthal component of IMF [5–9, see references therein]. In [1], on June 10–22, 1969, measurements of a high-latitude electric field (HLEF) along the morning – evening meridian within the limits of

(17.00-19.00) local magnetic time (MLT) and (05.00-07.00) MLT on the *OGO-6* satellite were average models of electric field profiles *B, C, D, E, G, H, SC* and *RC* are constructed, controlled by IMF B_y. In [3], according to the data of similar HLEF measurements along the morning – evening meridian in the range (16.00–20.00) MLT and (04.00–08.00) MLT on the *DE-2* satellite, existing models were updated and new average models of electric field profiles were added. According to [3], in the positive IMF sector, there are average models of electric field profiles *B, C, G, SC,* and *RC*, and in the negative sector, there are models *D, E, H, SE,* and *RE*. In both cases, the average value of the K_p index was between 3 and 3^+, which corresponds to slightly perturbed conditions [3].

At the same time, the question still remains open: why, under the same weakly perturbed conditions, in the same IMF sector the above listed different HLEF models simultaneously exist and by what mechanism are they controlled?

The task of the study is to examine this issue in order to elucidate the mechanism that creates under calm conditions various systems of daytime magnetospheric convection in a separate IMF sector.

Mathematical model of the field of geomagnetic variations

The mathematical model of the FGV field is the regression model [10] with a training sample of hourly values of the FGV components - (X, Y, Z) for 20 days of the 1968 V-VIII season with an average sample *AE* = 201 nT. Regression equations have the form:

$$\begin{pmatrix} X \\ Y \\ Z \end{pmatrix} = G(T_n) = \sum_{k=0}^{4}\sum_{i=0}^{12}(A_{ki}\cos kT + B_{ki}\sin kT)W_i(T_n), \qquad (1)$$

where T is the world time in hours (T = 1, 2, ..., 24); T_n - world time with day number (n = 1,2, ..., 20). Equations (1) were obtained from the expansion of G (T_n) in the Fourier series in *UT* and the subsequent expansion of the Fourier coefficients in power regression series in the solar wind and IMF parameters. The regressors in (1) take the values: $W_0=1$, $W_1=V_n$, $W_2=V_n^2$, $W_3=V_n^3$, $W_4=\rho V_n$, $W_5=\rho V_n^2$, $W_6=B_y$, $W_7=B_y^2$, $W_8=B_yV_n$, $W_9=B_z$, $W_{10}=B_z^2$, $W_{11}=B_z^3$, $W_{12}=B_zV_n$. Normalized speed $V_n=(V-300)/50$; V, ρ – speed and density of the solar wind; B_y, B_z – IMF components. Regressors, united by physical meaning, form δ – of FGV field. In the work, we used $\delta_{\rho v+B_y+B_z}$: $W_i=(1, V_n, V_n^2, V_n^3, \rho V_n, \rho V_n^2, B_y, B_y^2, B_yV_n, B_z, B_z^2, B_z^3, B_zV_n)$. According to [10], the coefficients A_{ki} and B_{ki} are expanded in series in the Legendre polynomial to calculate the magnetic potentials of the outer part of the fields δ_i,

$$V_i^e(\theta, t) = R_e W_i \sum_{n=1}^{26}\sum_{m=0}^{4}\left(\frac{R_i}{R_e}\right)^n \sum_{k=0}^{4}(E_{ki}^{n,m}\cos mt + e_{ki}^{n,m}\sin mt)P_n^m(\theta),$$

where R_i – radius of the current-carrying layer of the ionosphere; R_e – Earth radius.

By magnetic potentials $V_i^e(\theta,t)$ field potential $\delta_{\rho v+B_y+B_z}$ is calculated.

Data

The data are models of ionospheric plasma convection from [6, 7], constructed from measurements of plasma convection and longitudinal currents in the daytime sector on satellites *DE-1* and *DE-2* for two IMF sectors under calm conditions. Also, the electric potential distributions at high latitudes calculated using the MIT [10] using the FGV model (1) and wave [11], corpuscular [12] polar ionosphere conductivity models. This work uses the distribution of electric potential corresponding to a calm FGV $\delta_{\rho v+B_y+B_z}$ (ρ=5 cm^{-3}, V=400 km/s, B_y= ±4 nT, B_z=1 nT) in the following world time hours *UT* = 0, 3, ..., 21 for two IMF sectors. Figure 1 shows the convection models for two IMF sectors: the upper row from [6, 7], the lower rows are the convection systems of the field $\delta_{\rho v+B_y+B_z}$ for 00.00*UT* (fig.1b) and 12.00*UT* (fig.1c).

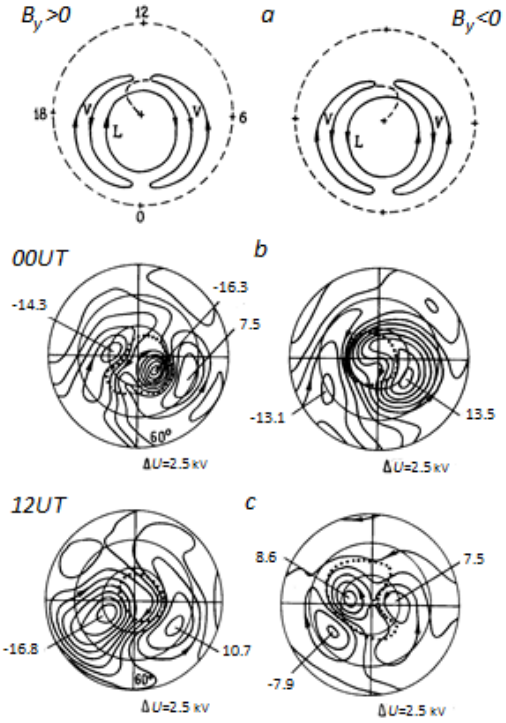

Figure 1. *Convection models for two IMF sectors in calm conditions*

It can be seen that ionospheric plasma convection models from [6, 7] in both IMF sectors have the following features:

1) convection systems consist of three components, which are controlled by various mechanisms: quasi-viscous interaction (*V*-type convection on closed force lines), reconnection in the lobes of the tail (*L*-type convection associated with open force lines in the lobes of the tail) and fusion at the daytime magnetopause (*M*-type convection associated with lines of force that open at the daytime magnetopause and close at the tail of the magnetosphere);

2) in convection systems are observed at $B_y > 0$ ($B_y < 0$) in the morning (evening) sector one revolution in convection, in the evening (morning) - two revolution.

On convection systems calculated using MIT, the dots indicate the boundary of the polar cap (PC), determined by the procedure [10]. It can be seen that the position of the PC depends on the B_y sign. At $B_y > 0$, PC is shifted to the morning sector, and at $B_y < 0$, to the evening sector, which is consistent with [13]. It can be seen from FIGS 1b and 1c that convection systems, regardless of the sign of B_y change with *UT*, even qualitatively. At $B_y > 0$ at 00.00*UT*, the convection system contains a L-type convection vortex clockwise in the PC and a double flip of convection at the evening boundary of the PC. At 12.00*UT* with $B_y > 0$, the convection system is two vortex and does not contain a double revolution. At $B_y < 0$ at 00.00*UT*, the convection system is two-vortex and does not contain a double flip, and at 12.*00UT* a L-type vortex appears counterclockwise in the PC and a double flip of convection at the morning boundary of the PC.

Thus, the MIT data confirm the results of [6, 7] regarding the existence of an L-type vortex in the polar cap, on open force lines, and the associated double reversal of convection in both sectors under calm conditions. Moreover, the MIT data show that the intensity of the L-type vortex in the polar cap and the appearance of double revolution convection dependent on *UT*. Moreover, this dependence is different in different sectors of IMF, which follows from the data in fig.1b and 1c.

To study the dependence of the *L*-type vortex on *UT* from field convection systems $\delta_{\rho v+B_y+B_z}$, calculated for *UT* = 0, 3, ..., 21, the intensities of convection *L*-type U_L, controlled by IMF B_y, were determined. The method for determining the U_L intensity will be described in the data of Fig. 1 (lower two rows). To eliminate subjectivity, it is assumed that the value $U_L = 0$, if the convection system does not have a pronounced *L*-type vortex (the right figure in Fig. 1b, the left figure in Fig. 1c). In the case when the *L*-type vortex is clearly expressed, the U_L value was determined by multiplying the number of isolines forming the vortex by a step between the isolines. For example, for 00.00*UT* with $B_y > 0$ the value $U_L = 13$ kV (Fig. 1b, left figure), for 12.00*UT* with $B_y < 0$ the value $U_L = 8$ kV (Fig. 1c, right figure). Similarly, U_L values were found for full days in 3-hour increments for both IMF sectors. The results are shown in FIG.

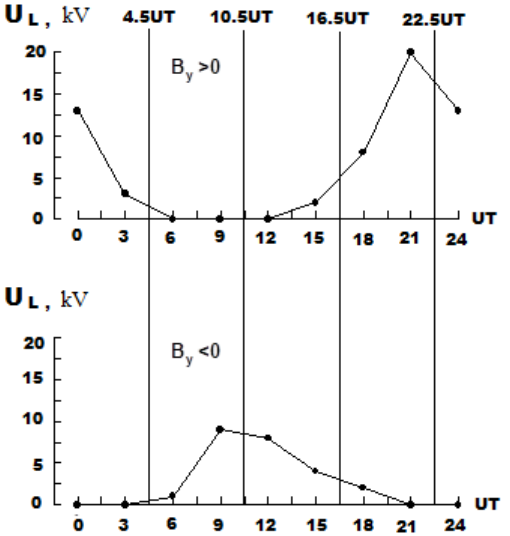

Figure 2. *UT dependence of the U_L intensity of the L-type convection vortex in two IMF sectors controlled by the Russell-McPherron mechanism [14]*

Discussion

For a detailed study of the dependence of magnetospheric plasma convection in the daytime sector on *UT* for calm conditions at IMF $B_y \neq 0$, refer to FIG. 2. This shows the existence of a strong dependence of the vortex intensity U_L on *UT* in both sectors of IMF. With $B_y > 0$, with a maximum of U_L about 21.00*UT* and with a minimum of U_L about 09.00*UT*. When $B_y < 0$, with a maximum and a minimum of U_L about 09.00 and 22.30*UT*, respectively. It is also seen that for $B_y > 0$ in the interval (06.00-12.00) *UT* there is no L-type vortex and there is no double convection flip at the evening boundary PC. For $B_y < 0$, in the interval (21.00-03.00) *UT* there is no L-type vortex and there is no double flipping of convection at the morning boundary of PC.

To interpret the noted strong dependence of the vortex intensity U_L on *UT*, we turn to [14]. How is it known that the *UT* variation of the equivalent current system controlled by IMF By is described by a simple wave with maxima near 10.30*UT* at $B_y > 0$ and 22.30*UT* at By<0. These variations created by the Russel-McPherron mechanism [14] are caused by changes in the mutual orientation of two coordinate systems depending on the time of day and season of the year: the solar-equatorial (in which the IMF components are specified) and the solar-magnetospheric, controlling the interaction of IMF with the magnetosphere.

According to [14], at $B_y > 0$, in the interval (4.30–16.30) *UT*, an "effective" $B'_z < 0$ with a maximum value of about 10.30*UT* appears, and for $B_y < 0$, an "effective" $B'_z < 0$ with a maximum value of about 22.30*UT* appears in (16.30 –4.30) *UT*. Therefore, the decrease in the intensity of the U_L vortex from 4.30 to 16.30*UT* at $B_y > 0$ (from 16.30 to 4.30*UT* at $B_y < 0$) is associated with an increase in antisolar convection through PC caused by the "effective" $B'_z < 0$ [14].

Thus, the degree of dependence of the influence $B_y \neq 0$ (different for different sectors) on convection in the daytime sector on *UT* is controlled by the value of "effective" $B'_z < 0$, which depends on *UT*. It follows that under quiet conditions in each IMF sector there are different models of electric field profiles corresponding to different *UT*. These models with constant $|B_y|$ correspond to different values of $B'_z < 0$, controlled by *UT* and the Russell-McPherron mechanism [14].

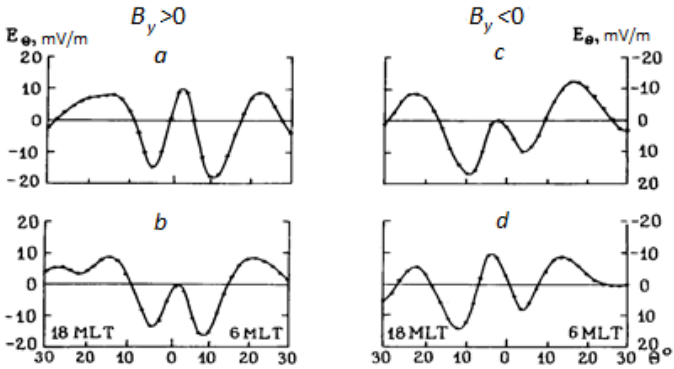

Figure 3. *Distribution of the meridional component of the electric field along the morning - evening meridian in two IMF sectors for the field* $\delta_{\rho v+B_y+B_z}$*: a, c – for 00.00UT and b, d – for 12.00UT*

To clarify what the different models of electric field profiles in a particular IMF sector obtained in [3] correspond to and how they are controlled by the Russell-McPherron mechanism [14], we turn to Fig. 3, which shows the latitudinal distributions of the meridional components of the electric field E_θ along the morning meridian the evening corresponding to convection systems in fig.1b and 1c. It can be seen that the MIT data describe different profile models [3]. At By> 0, the latitudinal distribution of E_θ along the morning – evening meridian at 00.00*UT* (Fig.3a) corresponds to the RC model [3] and is controlled by the Russell-McPherron mechanism for $B'_z > 0$ which is close to the maximum value in absolute value, and the distribution of E_θ is at 12.00*UT* (fig.3b) - model G [3] and is controlled by the Russell-McPherron mechanism for $B'_z < 0$ close

to the maximum value in absolute value. For B_y <0, the latitudinal distribution of E_θ at 00.00*UT* (Fig. 3c) corresponds to model H [3] and is controlled by the Russell-McPherron mechanism for B'_z <0 which is close to the maximum value in absolute value, the distribution of E_θ at 12.00*UT* (Fig. 3d) is the model RE [3] and is controlled by the Russell-McPherron mechanism for B'_z >0 close to the maximum value in absolute value.

From the analysis it follows that, depending on *UT*, at constant $|B_y \neq 0|$, there are different models of HLEF profiles that will correspond to models *B* and *RC* or take intermediate positions between them for B_y > 0, for B_y <0 they will correspond to models *D* and *RE* or take intermediate positions between them.

Conclusion

To confirm the results, we will stop at Fig. 4, which shows the morning-evening electric field profiles measured on the *OGQ-6* satellite [5, see their Fig.4].

Figure 4 shows 3 profiles of the electric field for B_y > 0, measured for 06.15.1969. Upper - measured in (07^h05^m–07^h25^m) *UT* for weak B_z <0 and belongs to (4.5^h –16.5^h)*UT*, in which $B'_z \leq 0$. From the profile it follows that the U_L vortex intensity is weak slightly more than zero (which is due to the suppression of the U_L vortex intensity by anti-solar convection via PC) and the profile refers to the *SC* model [3], which also agrees with the MIT data (see Fig. 2). Medium - measured in (08^h46^m–09^h06^m)*UT* at B_z>0 and belongs to (4.5^h –16.5^h)*UT*, in which B'_z <0. From the electric field profile and the MIT data in figure 2 it follows that the vortex intensity $U_L \approx 0$ and the profile refers to model *C* [3]. The lower profile was measured in the interval (10^h26^m–10^h46^m)*UT* at B_z<0 and belong to (4.5^h –16.5^h)*UT*, in which the value B'_z <0 is close to the maximum. From the profile of the electric field and the MIT data in figure 2 it follows that the intensity of the vortex $U_L = 0$ and the profile refers to model *B* [3].

Thus, the data in Fig. 4, obtained from measurements on the *OGO-6* satellite [5], completely confirm the dependence on *UT* of the influence of the azimuthal component IMF on daytime convection of the magnetospheric plasma under calm conditions and is different in two sectors. The main findings are as follows:

1. Under calm conditions, there is a *UT* variation of dayside magnetospheric convection controlled by the azimuthal component of IMF.

2. The existing *UT* dependence of the influence of IMF B_y on the convection of the dayside magnetospheric plasma is controlled by the Russell – McPherron mechanism [14].

3. It is shown that each *UT* with a constant $|B_y \neq 0|$ will have its own electric field profile [3] (its own configuration of plasma convection) corresponding to models *B* and *RC* or taking an intermediate position between them C, G, SC for B_y> 0, for B_y <0 corresponding to the models *D* and *RE* or taking an intermediate position between them E, H, SE.

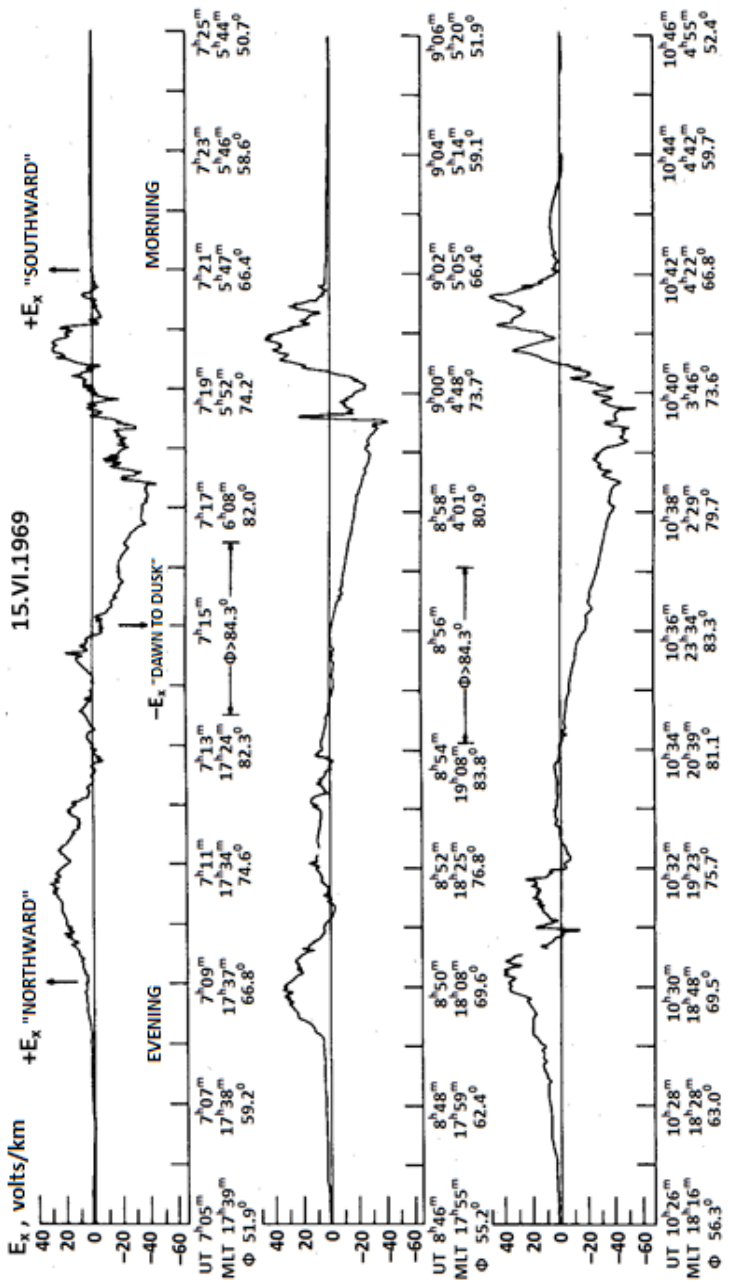

Figure 4. *Electric field profiles from [5]*

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