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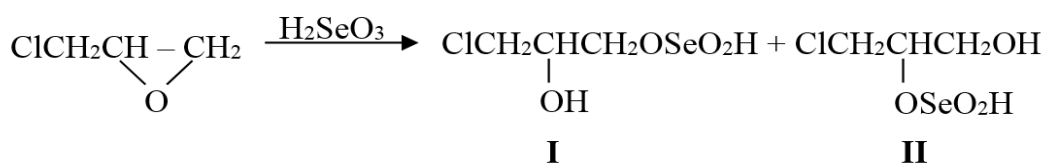
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CEMICAL SCIENCE**Selenium-containing epichlorohydrin derivatives: synthesis and biological activity**

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Epoxy compound - epichlorohydrin has many possibilities for obtaining on its basis new organic compounds with a set of useful properties, for use in various industries. At the same time, it is known that organic selenium compounds and their derivatives have high bioactivity and are included in various medicines. Synthesis of new compounds based on these two classes - α -oxides and selenorganics - will a priori enhance the polyfunctional properties of the newly obtained compounds and expand the limits of their application. The synthesis of selenium-containing compounds obtained by the interaction of selenic acid with various organic compounds belongs to the poorly studied areas of organic chemistry. In reactions with α -oxides selenic acid and its anhydride act as oxidizing agents rather than selenizing agents [1]. We have found conditions for synthesis of functionally substituted organoselenic compounds based on selenic acid and epoxy compounds [2] and studied biological activity of newly synthesized compounds. The reaction of selenic acid with epichlorohydrin was carried out in dimethylformamide in the presence of a catalyst (boron trifluoride etherate) at 40 - 50°C and for 2.5-3 h in a nitrogen atmosphere. As a result, two adducts I and II in the ratio 7:3 was obtained. The opening of the epoxy ring proceeds both according to the rule and against the Krasussky rule with the formation of a mixture of α -(I) and β - isomers (II) of selenic acid esters in a total yield of up to 80%:



The synthesized compounds 2-hydroxy-3-chloropropyl selenic acid ester -(I) and 1-chloro-3-hydroxyisopropyl selenic acid ester (II) were tested for antibacterial and antiviral properties.

Antibacterial activity of compounds I, and II was studied by the method of diffusion in agar [3] and confirmed by the method of determining changes in the optical density of the microbial suspension on a nephelometer. The studies revealed that both compounds have effective antibacterial properties and inhibit the growth of Ecoli bacteria. The antiviral activity of the synthesized compounds has been studied by traditional methods [4] by determining the hemagglutinating titer and infectious virus titer on the model of influenza virus type A (strain WSN) in cell culture in comparison with the known antinfluenza drug - remantadine. It has been found that the chemotherapeutic index (CTI) of compound I is 64, which is 4 times higher than (CTI) of remantadine, which index is 16. The (CTI) of compound II is 11, which is lower than that of remantadine, but nevertheless this compound has a certain chemotherapeutic value.

Key words: epichlorohydrin, selenorganics, selenic acid, epoxy compounds

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ECONOMICAL SCIENCE

Factors and directions of development of pilgrim tourism

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Annotation

The article examines the development of pilgrim tourism, factors and opportunities that affect it. Various approaches to the definition of the concepts of religious tourism, pilgrim tourism, Islamic tourism are analyzed. The achievements in the development of pilgrim tourism in the country are analyzed and the tasks that need to be solved are highlighted.

Key words: religious tourism, pilgrim tourism, religious excursion tourism, tourist infrastructure, the concept of tourism development, conscientious standard.

Currently, the restoration of tourism in Uzbekistan in the post-pandemic period, attracting investment in the industry, creating new jobs, increasing the potential of personnel and, ultimately, turning tourism into one of the locomotive sectors of the economy are urgent tasks.

Uzbekistan has a high potential for the development of various types of tourism. According to the Ministry of Tourism and Culture Development of the Republic of Uzbekistan, it can be seen that the indicators of tourism development in the country in 2016-2019 steadily increased. The number of tourists who arrived in the country in 2016-2019 increased 3.2 times and amounted to 6.7 million people. In 2020, despite the financial, organizational and economic measures taken to improve the situation, 1.3 million tourists visited the country, i.e., the number of visits decreased by 5 times. 2021 was a period of tourism recovery, during the year 1.9 million foreign tourists visited Uzbekistan. Despite the increase in the number of tourists who arrived in the country by 2.7 times compared to the previous year and amounted to 5.8 million people, in 2022 the level of 2019 was not reached.

It is known that the tourism sector creates a significant amount of secondary demand in other sectors of the economy, in particular, in transport, catering, crafts, trade, and this has a significant impact on the country's economy.

According to World Bank calculations, the indirect contribution of tourism to the economies of Europe and Central Asia (taking into account the multiplier effect) averages 4.3 percent. In 2020, the closure of external borders completely stopped the arrival of foreign tourists. In addition, the introduction of quarantine restrictions throughout the country has practically stopped domestic tourism. As a result, revenues received from the export of direct tourism services in our country decreased by more than 4 times compared to 2019.

The Ministry of Tourism Development of the Republic of Uzbekistan, together with the international organization Crescent Rating, has developed proposals and recommendations for the development of pilgrimage tourism in our country. Based on these recommendations, the necessary conditions were created for performing rituals at international airports. Based on the Malaysian Standard "MS 2610:2015 – Muslim-oriented hospitality services. Tourist services" in the country, a draft standard has been developed - "Oz DSt: 2018 Muslim hospitality. One of the most important events in the field of pilgrimage tourism is the introduction of the Halal standard.

At the same time, the country has not formed an information package on the objects of pilgrimage tourism, tour packages have not been classified taking into account the country of arrival, culture, customs, religious values, etc., maps of objects have not been compiled, and the infrastructure of pilgrimage tourism has not been sufficiently formed.

At present, the theoretical aspects of the development of pilgrimage tourism have not been sufficiently studied. Experts do not have a common opinion on the definition of the concepts of religious tourism, pilgrimage tourism. According to most experts, religious tourism is a type of activity related to meeting the needs and

providing services to tourists traveling to holy places and religious centers located outside the territory of residence.

It includes pilgrimage tourism, religious excursion tourism and religious and scientific tourism. Accordingly, religious tourists are people who leave their place of residence for a period of not more than one year to visit various religious centers and holy places, perform certain rituals, study religion and religious sources. Pilgrimage is a visit by people to holy places and the performance of certain actions, rituals there, and pilgrimage tourism is a type of activity aimed at providing services to pilgrims.

Religious excursion tourism includes trips to religious centers where tourists can see religious monuments, museums, and participate in religious events. This type of tourism is closely related to scientific tourism. Scientists visit existing religious centers, countries and regions with rich religious traditions and study religious heritage - manuscripts, objects of religious architecture.

It should be noted that in our country there is an opportunity to develop all of the listed areas of pilgrimage tourism. Thousands of tourists from different parts of the world visit Uzbekistan every year to visit and travel to historical and holy places.

The recognition of Uzbekistan as one of the centers of pilgrimage tourism in the world community gives impetus to the development of tourism infrastructure in the country and a significant increase in the flow of tourists. Religious sites alone are not enough for the development of pilgrimage tourism. To attract tourists, there should be good advertising work, a convenient visa regime, conditions for praying at the airport and hotels.

For the development of pilgrimage tourism, it is necessary to solve the issues of developing the hotel system, waiting rooms in hotels, airports and train stations that meet the standards of pilgrimage tourism.

MEDICAL SCIENCE**The frequency of comorbid and opportunistic pathologies in patients with HIV infection****Bayjanov A.K¹, Achilova M.M², Ibadova N.X¹.****1-Research Institute of Virology of the Republican specialized scientific-practical medical center of Epidemiology, microbiology, infectious and parasitic diseases, Uzbekistan****2-Samarkand state medical university, Republic of Uzbekistan, Samarkand****Key words:** giardiasis, blastocystosis, HIV infection, intestinal parasitosis

Introduction. The epidemic situation in the world is characterized by an increase in the number of patients with HIV infection, respectively, the duration of the disease increases, thereby increasing the number of patients with concomitant and opportunistic diseases. One of the main reasons for the progression of HIV infection is comorbidities and opportunistic diseases against the background of a decrease in the body's immune status. The causative agents of opportunistic infections can be bacterial, viral, fungal, parasitic and other microorganisms. Among the parasitic concomitant pathologies, intestinal parasitosis – giardiasis and blastocystosis occupy one of the leading roles in patients. Simultaneous infection with intestinal parasitosis and human immunodeficiency virus significantly worsens the quality of life and the prognosis of the disease. Among bacterial diseases, one of the most common infections in patients with HIV infection is tuberculosis. Diseases of the nervous system are also of great importance; clinical manifestations are observed in 40% of patients at different stages of HIV infection. Often (up to 70%), HIV patients develop lesions of the skin and mucous membranes. With an increase in immunodeficiency, these diseases are prone to generalization.

Thus, the presence of concomitant diseases and the development of opportunistic pathologies largely determine the prognosis of HIV infection, negatively affect the quality of life of patients, so timely diagnosis and effective treatment are necessary.

Aim of the study. The aim of the study was to study the incidence of comorbid and opportunistic pathologies in people living with human immunodeficiency virus.

Materials and methods. The study was conducted at the clinic of the Research Institute of Virology and the Samarkand Regional Clinical Infectious Diseases Hospital. A retrospective analysis of case histories of 55 patients with IV clinical stage of HIV infection was carried out using the general sample method. Informed consent was obtained from patients for participation in this study. The study analyzed the presence and frequency of concomitant and opportunistic diseases in patients with HIV infection. The diagnosis of "HIV infection" was made based on the results of studies using enzyme immunoassay and immunoblot, the diagnosis of concomitant pathology was established based on the results of clinical, modern laboratory and instrumental studies. Statistical processing of the results of the study was carried out using a standard computer program on Excell with the determination of average indicators.

Results. HIV infection in most patients was verified at the age of 25 to 35 years - 30 (54.5%) people. Duration of HIV infection (since registration) was 78.3 ± 4.1 years. In the study of immunological parameters, it was found that the average level of CD4-lymphocytes was 132.5 ± 36.5 cells/ μ l, the average viral load was 643152.3 ± 95124.1 copies/ml. At the time of the study, 35 (63.6%) patients were not receiving antiretroviral therapy or received it irregularly. HIV-infected patients were admitted for inpatient treatment due to a worsening condition with a diagnosis of HIV infection with secondary diseases. Since only patients with stage 4 HIV infection were included in the study, all patients had comorbid and opportunistic diseases at the time of admission. The following combinations of concomitant and opportunistic pathologies were identified: intestinal giardiasis (11 cases - 20.0%), blastocystosis (13 cases - 23.6%), pneumocystis pneumonia (5 cases - 9.09%), cerebral toxoplasmosis (1 case - 1.81%), herpetic infection (3 cases - 5.45%), candidal infection (6 cases - 10.9%), cryptococcal meningitis (2 cases - 3.63%). In addition, 2 (3.63%) patients had a combined course of progressive multifocal leukoencephalopathy with candidal esophagitis, cryptosporidiosis with Kaposi's sarcoma. In addition to generalized forms of mycobacterial infection, disseminated

pulmonary tuberculosis was diagnosed in 3 (5.45%) patients, focal tuberculosis - one (1.81%) case in history.

Thus, intestinal giardiasis and blastocystosis are among the most common comorbidities in HIV-infected patients with profound immunodeficiency (intestinal giardiasis 20.0% and blastocystosis 23.6%).

Conclusions. All patients with the IV-th clinical stage of HIV infection have multiple pathology, which can significantly complicate early diagnosis, worsen the effectiveness of therapy and the prognosis of the disease. Giardiasis of the intestine and blastocystosis were observed as comorbidities, possibly worsening the condition of patients with the progression of immunodeficiency.

Current issues in tb control

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Annotation

The purpose of the study: to assess the impact of concomitant diseases on the course of tuberculosis, as well as to take a closer look at the statistical picture of tuberculosis in recent years. **Materials and Methods:** A literature review was conducted based on various monographs and textbooks on the research topic. Also, the statistical data of the World Health Organization for the last 5 years were analyzed. **Analysis and discussion of results:** Tuberculosis is one of the 10 leading causes of death in the world. According to the World Health Organization, up to 10 million people fall ill with tuberculosis every year in the world, of which about 1.5 million people die. In 82% of the examined patients with tuberculosis, diabetes mellitus was a previous background disease; the occurrence of tuberculosis in patients with peptic ulcer and duodenal ulcer complicates the course of both diseases.

Key words: tuberculosis, bronchitis, diabetes mellitus, ischemic disease, treatment, pandemics, virus, tuberculosis bacillus.

Tuberculosis is one of the top 10 causes of death in the world. According to the World Health Organization, up to 10 million people fall ill with tuberculosis every year in the world, of which about 1.5 million people die. [1].

Long-term studies of foreign scientists (Guglielmetti L, Veziris N, Al-Omari A, Alhuqbani WN, Zaidi ZRA, Al-Subaie F.M, Alanoud M Cantini F., etc.), including Russian scientists (Romanov M., Antonov O., Moddik A., Merko E), show that the course of tuberculosis is complicated by the influence of concomitant diseases and treatment becomes difficult, and for such patients the organization of coordinated special treatment is required [2].

Tuberculosis is not only a medical-biological problem, but also a social problem, because social factors (income level of the population, medical literacy, housing

conditions, provision of medical care, etc.) have a strong impact on the health of the population.

A thousand years ago, our great ancestor Abu Ali Ibn Sina gave the first information about the contagiousness of tuberculosis, its widespread distribution among the poor and those living in difficult conditions, and made a special instrument to puncture exudative pleurisy and extract fluid. Tuberculosis was defined as the cause of this disease.

"The susceptibility to tuberculosis," wrote R. Koch, "is high in a debilitated body living in poor conditions." Tuberculosis will never disappear as long as there are dark, dirty, poor living conditions, huts with no sunlight [3].

Ischemic heart disease is one of the accompanying diseases that actively affect the progression of tuberculosis. Studies have shown that, firstly, 78 percent of patients with tuberculosis had ischemic heart disease; secondly, tuberculosis affects the circulatory system.

The effect of tuberculosis on blood circulation is manifested in:

- * Specific effect that destroys the heart and blood vessels;
- * Functional disturbance in blood circulation.

Diabetes is another comorbidity that affects the progression of tuberculosis.

Studies have shown that:

- * In 82% of patients with tuberculosis, diabetes was a primary concomitant disease, that is, a disease that appeared before tuberculosis;
- * There are more diabetes patients in men than in women with tuberculosis;
- * Functional disorders of the liver were observed in patients with tuberculosis and diabetes;
- * Tuberculosis develops when the body's resistance to infections is weakened, and the diabetes develops when the body's resistance to infections is weakened [4].

In 82% of the examined patients with tuberculosis, diabetes mellitus was a previous background disease; the occurrence of tuberculosis in patients with peptic ulcer and duodenal ulcer complicates the course of both diseases.

Chronic diseases of the respiratory organs are another of the accompanying diseases that actively affect the transmission of tuberculosis. Diseases related to the respiratory organs cause chronic bronchitis in patients with tuberculosis. In tuberculosis, nonspecific inflammatory processes occur in lung tissue and bronchi. The following forms of tuberculosis are more common in patients with respiratory diseases:

*Infiltrative;

*Fibrous-cavernous;

*Tuberculoma.

Patients with residual post-tuberculosis changes in their lungs complain of cough with sputum, difficulty breathing or wheezing with exhalation in chronic bronchitis and especially when there is inflammation in the area of bronchiectasis.

Several studies in recent years have shown a direct link between tuberculosis and cancer. This relationship is manifested in:

*The tumor appears independently, but causes the reactivation of the tuberculosis process;

* Rapid and long-lasting cold in tuberculosis causes pre-cancerous morphological changes in the mucous membrane and mucous membrane epithelium, which creates favorable conditions for tumor formation.

It can be seen that in 2021, the number of people suffering from tuberculosis in the world increased significantly compared to previous years. Also, in 2021, the number of deaths from tuberculosis worldwide has increased significantly compared to previous years [5].

The cases mentioned above indicate that the measures to combat tuberculosis in the countries of the world are not producing the expected results. This is explained, first of all, by the lack of financial means to fight tuberculosis. If in 2019 \$5.8 billion were allocated to combat tuberculosis in the countries of the world, in 2020 this amount was \$ 5.3 billion [6].

Scientific studies have shown that:

* There is a combination of clinical cases of tuberculosis and COVID-19 in practice; the need to implement epidemic measures in the context of the COVID-19 pandemic has led to the unavailability of TB infection screening, and also to the suspension of many TB support programs [7]; late detection of coronavirus in TB patients has led to increased mortality in these patients [8].

Conclusions: the use of a 4-month course of treatment for patients with drug-susceptible tuberculosis aged 12 years and older based on rifapentine, isoniazid, pyrazinamide and moxifloxacin, the use of a 4-month course of treatment for patients with a mild form of tuberculosis at the age of 3 months to 16 years gives a high effect; the occurrence of tuberculosis in patients with peptic ulcer and duodenal ulcer is due to severe metabolic disorders caused by frequent exacerbations; the spread of the SARS-CoV-2 virus and ongoing epidemiological measures may affect the increase in the incidence of tuberculosis, which is associated with objective difficulties in detecting this infection against the background of COVID-19 and the development of complications after the disease.

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The use of budesonide in acute obstructive laryngitis in children.

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Introduction: Obstructive laryngitis is a common respiratory disease in children, characterized by a sharp, barking cough, stridor (high-frequency breathing sounds), and difficulty breathing. Although obstructive laryngitis can be treated with medication, it is still a major public health problem.

The purpose of the study: The aim of this study was to evaluate the efficacy of nebulized budesonide as a treatment for obstructive laryngitis in infants and children.

Materials and methods: The study was a prospective study in which 18 infants and children (0.4-4.9 years) with moderate to severe obstructive laryngitis were assigned to receive 2 mg of nebulized budesonide (12 children) or saline (6 children). The severity of the disease was assessed using a total clinical score based on stridor, cough, retractions, dyspnea, and cyanosis, as well as a total clinical impression score (0-100).

Outcomes: Two hours after treatment, the total score for obstructive laryngitis and the total score for assessing clinical impression improved significantly in the budesonide group, but not in the saline group. The total score for obstructive laryngitis decreased from 8 to 4.5 in the budesonide group, while it remained unchanged in the saline group (8-8). Similarly, the total clinical impression score decreased from 50 to 25 in the budesonide group, remaining unchanged in the saline group (60-62). The results showed that nebulized budesonide is a safe and effective alternative to the treatment of children and infants with moderate to severe obstructive laryngitis.

Conclusion: The study found that nebulized budesonide may be a safe and effective treatment for obstructive laryngitis in children and infants. The results support the use of nebulized budesonide as a potential alternative to other treatments, but further research may be needed to establish its safety and efficacy.

Aspects of overweight and obesity in the population

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Relevance. Currently, one of the urgent health problems of the adult population is the problem of overweight and obesity. Some risk factors for overweight are manageable: stress, unhealthy diet, low physical activity.

The purpose of the study: to assess the frequency of overweight among the adult population in various age groups.

Materials and methods. 50 people were examined (25 men and 25 women), average age 45 ± 7 years (from 18 to 65 years), who were selected by sampling among the outpatient cards of the Family Polyclinic in Tashkent. The subjects were divided into the following age groups: up to 30 years old, from 30 to 49 years old, from 50 to 65 years old. The study included a survey of respondents, as well as measuring their height and weight. The assessment of the presence of overweight and the determination of the degree of obesity was carried out in accordance with the recommendations of the World Health Organization based on the determination of the body mass index and, according to the data obtained, were divided into 3 groups: a group with normal body weight (BMI < 25 kg/m²), overweight persons (BMI 25-29.9 kg/m²), obese patients (BMI > 30 kg/m²).

Results and discussion. It has been established that 45% of the subjects under the age of 30 have a deviation from normal body weight, of which: 35% are overweight and 10% are obese patients. Among patients in the age group from 30 to 49 years, 48% have deviations from normal body weight, of which: 36% are overweight and 12% of patients are obese. The group of 50-65 years old includes 62% of persons with body weight deviations of varying degrees: 38% overweight, 20% obese and 4% severely obese. Based on the results of the survey, it was found that the main reasons for the development of overweight were: poor nutrition, excessive consumption of carbohydrates, sedentary lifestyle, poor awareness of healthy eating.

Conclusions. Based on the data obtained, it can be noted that there are deviations from normal body weight in all three age groups of the surveyed residents of the

Republic of Uzbekistan. Of these, overweight is at least 30% for each age group. Obesity is at least 10%, and the highest peak of obesity occurs in the age group from 50 to 65 years and accounts for 20% of the total number of patients with weight deviations.

Assessment of endoscopic hemostasis in ulcer bleedings

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Abstract. The article discusses the results of endoscopic hemostasis in ulcer bleedings. The effectiveness of repeated endohemostasis made it possible to level the need for surgical treatment for recurrent bleeding against the background of erosive gastritis from 2.9% to 0. Against the background of the proposed method, a reduction in the duration of hemostatic therapy and the time spent by the probe in the stomach was noted.

Keywords: ulcer bleedings, laser, mucosa, endoscopic hemostasis.

Introduction. In the surgical treatment of ulcerative bleeding, an individual approach to the choice of treatment tactics is required [1]. Recently, endoscopic hemostasis is more often mentioned as an alternative method, although a number of authors believe that it is widely available, quickly performed, and at the same time highly informative [2,3]. The big advantage is that with the help of endoscopy, not only diagnosis is carried out, but also the simultaneous elimination of gastrointestinal bleeding [4,5].

Aim - to study the effectiveness of endoscopic hemostasis in erosive and ulcerative processes of the stomach and duodenum.

Materials and methods. The results were analyzed in 204 patients in the comparison group and 121 patients in the main group.

When analyzing the summary frequency of bleeding recurrence after endoscopic hemostasis, it becomes obvious that with an acute ulcer in the main group, due to the use of a new method of treatment, it was possible to significantly reduce the frequency of bleeding recurrence in all degrees of gastrointestinal bleeding, in total from 10.7% to 1.4% ($\chi^2=5.498$; $df=1$; $p=0.020$). In chronic ulcer, the picture is similar, the recurrence rate in the comparison group was 14.1%, in the main group - 3.8% ($\chi^2=3.765$; $df=1$; $p=0.053$).

Results. If we sum up all the ulcers, we should state the fact that, thanks to the use of new technologies in the main group, it was possible to reduce the number of recurrences of gastrointestinal bleeding from 12.3% to 2.5%, which is almost 5 times lower ($\chi^2 = 9.219$; $df = 1$; $p = 0.003$).

If we analyze the frequency of recurrence of bleeding after endoscopic hemostasis, depending on the severity according to Forrest (1974), it becomes obvious that the greatest difference was noted in the comparison group in patients with F- I a and F- I b degree of gastrointestinal bleeding with symptomatic risk factors ($\chi^2 = 4.305$; $df = 1$; $p = 0.039$). In general, if we take all patients, then with F- I a and F- I b degree of gastrointestinal bleeding, it was possible to reduce the recurrence rate from 20.0% in the comparison group to 5.3% in the main group ($\chi^2 = 4.126$; $df = 1$; $p = 0.043$). With F- II a and F- II b degree of gastrointestinal bleeding, the frequency of recurrent bleeding decreased from 9.0% in the comparison group to 1.2% in the main group ($\chi^2 = 5.568$; $df = 1$; $p = 0.019$). Reducing bleeding recurrence by 4-7 times significantly improves the results of treatment of patients, reduces the rehabilitation period.

When comparing the effectiveness of primary and secondary endoscopic hemostasis depending on the presence of drug risk factors, it turned out that despite the fact that in the main group, even without drug risk factors, the need for repeated hemostasis and surgical treatment was only 1.5% versus 7.5% in the comparison group, in the presence of symptomatic risk factors, this difference was even more tangible and already significant. Thus, in the comparison group, repeated endohemostasis was required in 12 (12.2%) cases, while in the main group in 1 (1.8%) patient, surgical methods had to be resorted to in 5 (5.1%) cases in the comparison group and only in 1 (1.8%) case in the main group ($\chi^2 = 6.396$; $df = 2$; $p = 0.041$). In total, regardless of the presence of drug risk factors in the main group, in 118 (97.5%) cases it was possible to avoid repeated endohemostasis and surgical treatment against 179 (87.7%) cases in the comparison group ($\chi^2 = 9.234$; $df = 2$; $p = 0.010$).

When comparing the effectiveness of endoscopic hemostasis in the DU group, it was found in the main group in 68 (97.1%) cases it was possible to avoid repeated endohemostasis and surgical treatment against 108 (88.5%) cases in the comparison group ($\chi^2=4.501$; $df=2$; $p=0.106$).

When comparing the effectiveness of endoscopic hemostasis in the GU group, the difference between the groups is even more noticeable, in the main group, in 50 (98.0%) cases, repeated endohemostasis and surgical treatment were avoided against 71 (86.6%) cases in the comparison group ($\chi^2=5.143$; $df=2$; $p=0.077$).

When comparing the effectiveness of endoscopic hemostasis in the group with F- Ia and F- Ib bleeding, regardless of the presence of drug risk factors in the main group, in 36 (94.7%) cases, it was possible to avoid repeated endohemostasis and surgical treatment against 48 (80.0%) cases in the comparison group ($\chi^2=4.151$; $df=2$; $p=0.126$). When comparing the effectiveness of endoscopic hemostasis in the group with bleeding F- II a and F- II b, a picture similar to the previous one is noted, in the main group in 82 (98.8%) cases it was possible to avoid repeated endohemostasis and surgical treatment against 131 (80%) cases in the comparison group ($\chi^2=5.619$; $df=2$; $p=0.061$).

When comparing the effectiveness of endoscopic hemostasis in all patients in the main group, a significant increase in efficiency was noted due to the use of laser photocoagulation. In total, in the comparison group, the effectiveness of primary endohemostasis was 179 (87.7%) cases, in the main group - 118 (97.5%), mortality in the comparison group was 3 (1.5%), in the main group of mortality was not observed ($\chi^2=9.555$; $df=3$; $p=0.023$).

Repeated endoscopic examination was performed in 92 patients in the comparison group and 59 patients in the main group. The study in dynamics was carried out 4-5 days after endoscopic hemostasis. It should be noted again that in all cases in both groups, conservative therapy was the same. Comparative dynamics in the reduction of the diameter of the ulcer shows similar sizes of the ulcer at the beginning of treatment 1.54/1.56 cm ($t=0.26$; $p>0.05$) and a more pronounced

decrease in diameter in the main group in the dynamics of 1.24/ 0.97 cm ($t=3.43$; $p < 0.05$).

Conclusions: The proposed method of endoscopic laser retraction of a blood clot on the surface of ulcers of the gastric mucosa and duodenum (for bleeding types F- Ia -b and F- IIa -b) provides a good hemostatic effect, reduces the frequency of bleeding recurrence from 12.3% (in 25 out of 204 patients in the comparison group) up to 2.5% (in 3 out of 121 patients in the main group; criterion $\chi^2 = 9.219$; $df = 1$; $p = 0.003$). Depending on the severity of bleeding, the efficiency of primary endoscopic hemostasis in the F- Ia and F- Ib group increased from 80.0% (in 48 out of 60 patients in the comparison group) to 94.7% (in 36 out of 38 patients in the main group) , in the group with F- IIa and F- IIb from 91.0% (in 131 out of 144 patients in the comparison group) to 98.8% (in 82 out of 83 patients in the main group). In general, the frequency of effective primary endohemostasis increased from 87.7% (in 179 out of 204 patients in the comparison group) to 97.5% (in 118 out of 121 patients in the main group), secondary hemostasis was achieved in 8.8% (18 patients) and 1.7% (2 patients), respectively, the share of surgical treatment decreased from 3.4% (7 patients) to 0.8% (1 patient; criterion $\chi^2 = 9.234$; $df = 2$; $p = 0.010$). Against the background of the application of the proposed method, a more pronounced regeneration of ulcerative defects was noted, so in the comparison group in dynamics on days 4-5 after endohemostasis, the diameter of the ulcers decreased from 1.54 ± 0.44 cm to 1.24 ± 0.45 cm, while in the main group from 1.56 ± 0.47 cm to 0.97 ± 0.49 cm ($t = 3.43$; $p < 0.05$). The achieved efficiency of endoscopic hemostasis made it possible to reduce the number of hospital bed days from 5.8 ± 1.3 days to 4.6 ± 1.1 days ($t = 8.74$; $p < 0.05$).

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Childhood cancer and the risk of developing diseases in the future.

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Annotation:

Cancer occurs in people of any age and can affect any part of the body. It begins with genetic changes in individual cells, which then begin to multiply, leading to the formation of a neoplasm (tumor). Left untreated, the cancer grows, invades other tissues in the body, damages them, and leads to death.

Key words:

Oncological diseases, retinoblastoma, genetic factors, cancer tumor, inability to obtain an accurate diagnosis.

Relevance. As is known the mean incidence of late major surgery over 35 years of follow-up was 206.7 per 100 cancer survivors and 128.9 per 100 controls. Cancer survivors were 80% more likely to have major surgery later than their siblings. Women were 40% more likely to have surgery than men.

Most often, major interventions were required in people who survived Hodgkin's lymphoma, Ewing's sarcoma, and osteosarcoma (mean cumulative incidence over 35 years was 322.9 and 269.6 per 100 cancer survivors, respectively).

Now all she needed was surgery on the central nervous system, endocrine, cardiovascular and respiratory systems. The average age of the participants was 6.1 years. Patients who survived cancer required 28,000 late major surgeries. In the control group, 4110 abdominal operations were performed.

Approximately 400,000 children and adolescents between the ages of birth and 19 develop cancer each year. The most common childhood cancers include leukemias, brain malignancies, lymphomas, and solid tumors such as neuroblastoma and nephroblastoma.

Reasons for lower survival rates in LMICs include late diagnosis, failure to obtain an accurate diagnosis, unavailability of therapy, interruption of treatment, death due to intoxication (side effects), and relapses that could have been avoided.

Measures to improve access to health care for children with cancer, including access to essential medicines and technologies, are feasible and highly cost-effective, and improve survival in all settings.

Cancers in children, unlike adults, in the vast majority of cases do not have an established cause. Many researchers have attempted to identify the causes of childhood cancers, but only a small number of childhood cancers are caused by environmental or lifestyle factors. The main objective of cancer prevention in children should be the formation of such behavioral patterns in them that will prevent the development of preventable cancers in adulthood.

According to the data available today, approximately 10% of all childhood cancer patients have a genetic predisposition to cancer.

Early diagnosis has three components:

- Awareness of the child's symptoms by family members and primary health care providers;
- Accurate and timely assessment of the clinical picture, diagnosis and staging (determination of the degree of spread of cancer);
- providing access to urgent treatment.

Screening is generally not an effective way to detect cancer in children. In some cases, screening may be considered for high-risk groups. For example, some eye cancers in children may be caused by a genetic mutation, and if family members of a child with retinoblastoma are found to have such a mutation or disease, they may be offered genetic counseling combined with sibling monitoring with regular eye exams. in the early stages of life. Genetic factors play a role in only a small proportion of childhood cancers. However, there is no high-quality evidence to support the need for screening programs for the entire child population.

In 2018, WHO, with the support of the Children's Research Hospital, a global childhood cancer control initiative to provide leadership and technical assistance to governments in developing and sustaining high-quality childhood cancer programs.

The aim of the initiative is to reach at least 60% survival rate for all children with cancer by 2030. This means about doubling the treatment success rate and saving another million lives in the next ten years.

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HISTORICAL SCIENCE

Diplomatic relations of the turkic khaganate with byzantium

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Annotation. The article shortly considers the diplomatic relations of the Turkic Khaganate with Byzantium and analyzes the role of communication roads in these relations. For instance, it briefly investigated trade relations and reveals the importance of the ancient routes controlled by the Turkic Khaganate in cooperation with with Byzantium.

Key words: Turkic Khaganate, Byzantium, diplomatic relations, communication routes, The Great Silk Road, silk, trade, Sughd merchants.

Like all the great kingdoms that appeared on the borders of Eurasia in the early Middle Ages, the Turkic khaganate also sought to continuously expand its territory. By the last decades of the 6th century, as a result of military conquests, the Turkic khaganate established control over the routes of the Great Silk Road, which passed through a huge area from China to the lands of Byzantium, and over international trade relations. The conflicts with China and the Sassanids of Iran and the changing geopolitical situation became one of the unique factors that served to increase the importance of the political dialogue with Byzantium in the foreign policy of the Turkic khaganate.

In the early Middle Ages, due to the political conflicts between Sassanids of Iran and the Ephthalites, and later the Turkic khaganate, the activity of the communication route leading to the ports of the Mediterranean Sea through the territory of Iran lost its importance for a certain period of time. This is one of the clear proofs of the great impact of foreign policy on economic and cultural relations. During the period of Turkic khaganate's rule, the system of trade routes of Central Asia underwent major changes. New directions of international political, economic and cultural relations appeared during the period of the Turkic khaganate, which

took control of the main routes of the Great Silk Road from China to the borders of Iran and Byzantium, and the khaganate took an important place externally.

In the relations of the Turkic khaganate with Byzantium, two important aspects are noticeable - economic and political interests. First of all, the economic relations conducted through the Great Silk Road served to increase not only the economic, but also the political power of both countries. It is known that in the early period of the activity of the Great Silk Road, Chinese silk was highly valued as a rare and valuable product. This situation was preserved even in the early Middle Ages. In particular, in Byzantium, Chinese silk was valued as much as gold and other precious stones, and it was considered the main product for paying the mercenary army in addition to the needs of the Constantinople court and nobility¹. Mercenaries were the main force protecting the external political interests of Byzantium. During the Turkic rule, the Turkic, who gained control over the silk trade and the international trade route from China through Sassanids and the Black Sea to Byzantium, and the Sughd merchants who traded under their patronage, dominated and had established direct control over the silk trade in Central Asia. This situation was one of the factors that served to bring Byzantium closer to the Turkic khaganate. Sughd merchants who benefited greatly from trade with China, primarily silk trade, bought Chinese silk and other products directly from producers through their trading factories in Eastern Turkestan and China, and sent them along the Great Silk Road to Byzantium and other Western countries². Thus, in the development of economic, trade and cultural relations along the Great Silk Road, the role of Sughd merchants under the patronage of Turkic khaganate was extremely important.³

It is significant that the political elite of Sughd played an important role as the main intermediary in the foreign political relations of the Turkic khaganate. This can also be seen in the case of the diplomatic relations of the Turkic khaganate with

¹ Гумилев Л.Н. Древние тюрки. – СПб.: СЗКЭО Кристалл, 2003. – С. 48, 56.

² Ртвеладзе Э.В. Великий шелковый путь. – Ташкент: “Ўзбекистон миллий энциклопедияси” Давлат илмий нашриёти, 1999. – С.137-138.

³ De la Vaissiere Etinne. Histoire des Marchands Sogdiens. – Paris: Institut des Hautes Etudes Chinoises, 2004.

Byzantium. Diplomatic relations of the Turkic khaganate with Byzantium serve the political interests of both sides and seek to establish an alliance that serves the solution of their conflicting relations with the powerful Sasanian state.

The ambassadors sent to Byzantium in 567 under the leadership of Sughd merchant Maniakh from the Turkic khaganate established the geopolitical interests of both countries and the beginning of political rapprochement⁴. The warm reception of the ambassadors in Byzantium and the immediate sending of an ambassador to the Turkic khagan in response testifies to the geopolitical importance of Turkic-Byzantine relations⁵.

In the works created by Byzantine historians in the IV-VI centuries, can be found some information about Byzantium's foreign policy, especially its relations with the Turkic khaganate. In particular, they contain information about the socio-political situation and international relations of this period, the caravan routes that passed through the territory of the Turkic khaganate, and the means of transport⁶. In Turkic-Byzantine relations, the trade route leading from Yettisuv through the steppes of Kazakhstan and from the Khorezm oasis to Mangishlok, the Lower Volga embankment, Transcaucasia and the Black Sea through Trebizond to Constantinople begins to acquire importance. In this direction, the Khorezmians and Khazars played an important mediating role. The importance of this road increased in the later period, when economic and cultural relations with the regions of the North Caucasus and Eastern Europe developed rapidly. The discovery of silver coins, silver vessels and other material finds in the North Caucasus, near Kislovodsk, during the Afrighids period, is a clear proof that the activity of a trade route that led from the

⁴ Абусейтова М.Х., Абылхожин Ж.Б. и др. История Казахстана и Центральной Азии. – Алматы: БІЛІМ, 2001. – С. 89.

⁵ Мавлонов Ў.М. Марказий Осиёнинг қадимги йўллари: шаклланиши ва ривожланиш босқичлари. – Тошкент: Akademiya, 2008. – Б. 142-144.

⁶ Аммиан Марцеллин. Римская история / Перевод с латинского Ю.А. Кулоковский. – М.: АСТ, 2005. – 495 с.; Менандр. Византийские историки / Перевод с греческого С. Дестуниса, дополненный с примечаниями Д. Дестуниса. – СПб., 1860; Прокопий Кесарийский. История войн римлян с персами / Перевод с греческого С. Дестуниса. – СПб., 1876. Ч. I.

lower reaches of the Amudarya to the north of the Aral Sea and the Caspian Sea to the Volga River, and from there to the Caucasus and the Black Sea⁷.

The famous Sughd merchant Maniakh, who went to Byzantium as an ambassador of the Turkic khagan, also went to the ports on the Black Sea coast along the above route and to Constantinople by water. The ambassadors of the Byzantine ruler Justin II, led by Zemarch, along the northern branch of the Great Silk Road, i.e. from the Black Sea through the steppe region north of the Caspian and Aral Seas, arrived at Yettisuv - the residence of the Turkic ruler. Menander, who left information about this diplomatic visit, reports that the Byzantine ambassadors passed through the Oix River - a large lake - the Ik River - the Daix River on their way back. If we take into account that the Oix River corresponds to the Syr Darya, the Great Lake to the Aral Sea, the Ik River to the Emba, and finally the Daikh River to the Yayik (Ural) River, it becomes clearer the directions of the northern branch of the Great Silk Road connecting Byzantium with China which was under the control of the Turkic Khaganate during this period.

In this way, during the Turkic rule, appeared the Northern route of the Great Silk Road – a short road connecting Eastern Turkestan and Yettisuv with the coast of the Black Sea. This road, passing through the steppes of the north of Central Asia and reaching the shores of the Black Sea, corresponded to the directions of the ancient Steppe Road, and played an important role in the relations of the Turkic Khaganate with Byzantium and Eastern Europe.

⁷ Иерусалимская А.А. О северокавказском “шелковом пути” в раннем средневековье // СА. – М., 1977. – № 2. – С. 72.

PEDAGOGICAL SCIENCE**Pedagogical organizational issues of formation of communicative educational actions in elementary school students****Diyora Khamidova¹, Mirzaali Fayziev²**¹1st-year graduate student of the Uzbekistan-Finland Pedagogical Institute.E-mail: xamidovadiyora410@gmail.ru, Tel.: +998915543964²Associate professor of the Pedagogical Department of the Uzbekistan-Finland Pedagogical Institute, Candidate of Pedagogical Sciences.E-mail: fma@rambler.ru, Tel.: +998979180612

Annotation: Pedagogical organizational issues of formation of communicative educational actions in elementary school students are analyzed in the article. First, the relevance of the topic is presented and the literature on the topic is analyzed. Opinions on the research were given, analysis and results were presented, and conclusions were drawn.

Keywords. Communicative educational actions, universal educational actions, dialogue, position, interlocutor, game, competition, types of activities.

Enter. The social processes taking place in the world in recent years force us to choose new methods of development and form a new context in various areas of human activity, including science and education, where for successful education even in the early period of school education it is important to lay a solid foundation. The existing methods of solving scientific problems cannot always fulfill the modern tasks of teaching schoolchildren, which leads to the conclusion that it is necessary to develop new strategies for the development of education and educational models suitable for the time.

It implies that the formation of communicative skills in primary school students should be considered as one of the tasks of a modern teacher and its solution should be carried out both in the classroom and in the extracurricular activities of students. Issues of forming the communicative culture of primary school students - the Law "On Education" of September 23, 2020, in the "Development Strategy of New Uzbekistan for 2022-2026" and other documents the tasks of reforming the continuous education system are defined in public documents, which is the basis for

the successful implementation of working with students in the educational process, forming them as a mature generation at the state level. In particular, Article 9 of the Law "On Education" states that "Primary education is the literacy, knowledge, skills and abilities necessary for students to continue general secondary education." It is emphasized as "aimed at forming the basics of skills" [1].

Analysis of literature on the topic. M.S.Kagan, S.A.Arutyunov, V.M.Mejuev, E.N.Yurkevich and others worked on the study of the main principles of communication and its main features, as a rule, on the study of relations between concepts such as society's culture and human culture. Problems of the culture of interpersonal communication were considered by G. N. Andreeva, L. P. Gadzaova, I. I. Zaretskaya, E. P. Ilyin, S. L. Rubinstein and others.

S.N.Batrakova, S.V.Znamenskaya, N.V.Stepanova and others about communicative training; formation of the cultural component of communicative competence V.S. Bibler, A.V. Vartanov, E.M. Vereshchagin, L.G. Viktorova, N.I. Gez, V.S. Ilyin, R.P. Milrud, N.A. Salanovich, P.V. Susoyev, S.G. Ter-Minasova, G.D. Tomakhin and others conducted research.

On the topic of formation of communicative culture and communicative competences in elementary school students, the main doctoral student of Jizzakh State Pedagogical University O.E. Azizov, T.U. Jorayeva, M. Oskanov, Sh. O'. Kamolova, A.I. Hayitov, F.K. Khoshbokova wrote an article.

Research methodology.

By school age, a child should know that other people may have a different point of view and take this fact into account to some extent. However, the gradual accumulation of social experience, which occurs through education and the formation of friendships in elementary grades, encourages him to understand the reasons that lead different people to different points of view, develops the ability to foresee. There will be possible differences in views related to other needs and interests of the interlocutor. By comparing his own and other people's opinions, the child learns to argue and justify his position. All this leads to a closer understanding

of the relativity of judgments and evaluations after finishing elementary school, they become more sensitive to the aspirations and desires of other people, and they begin to improve and understand the feelings and thoughts of others, their inner world. understanding is formed.

Communication, as cooperation, includes a group of communicative educational activities aimed at establishing and implementing cooperation and interaction. The essence of these actions is to combine efforts to achieve a common goal, for which it is necessary to pay attention to the interlocutor.

Primary school age means a special interest in peers. At this time, friendship is actively formed, the desire to participate in group activities is very high. The teacher should use it. Team games, competitions (including sports), organization of joint work during breaks, as well as specially organized educational cooperation during the lesson have a significant positive effect on the development of communicative learning strategies and communication with other people. helps to ensure the ability. The indicators of the formation of this group of communicative educational actions include the following skills:

- ability to negotiate;
- reasoning, defending one's position by convincing the interlocutor;
- the ability to obey the interlocutor if necessary;
- the ability to maintain friendly relations even in a conflict situation;
- the ability to find the necessary information by asking questions;
- the ability to take the initiative, as well as control and mutual support in the process of joint actions.

Universal educational activities of the communicative direction are aimed at forming the personal ability of students for self-development and self-improvement, actively learning the lessons of tolerance, readiness, knowing the world, prepares for learning, cooperation, self-education and self-development. This is facilitated by the following functions of universal education:

- creating an educational environment and conditions for the personal development of young students;
- formation of knowledge, skills and competencies of students based on the ways to achieve successful acquisition of knowledge in any field of science and readiness to master and use the necessary, modern interactive tools;
- ensuring the ability of students to independently set learning goals, develop skills, and search for the necessary methods of their implementation.

We implement communication as a condition of internalization by a group of communicative educational actions, the purpose of which is to carry out information transfer and reflection. It is known that children's speech is initially addressed to the closest adults. Over time, the process of his activity is more clearly described, and his audience expands: communication is carried out with other children, adults, etc. When he enters the first grade, the child already knows how to construct detailed statements that are understandable to the interlocutor. They are used by the child to determine what he sees, hears, knows, does not know, etc. He correctly formulates questions to get the necessary information, knows how to convey instructions for action in speech.

Thus, communicative educational actions provide social competence implemented in the following groups of skills and abilities:

- the ability to take into account the positions of other people, including interlocutors in activities or communication;
- the ability to listen, interpret what is heard and enter into a dialogue, participate in the discussion of problems;
- the ability to effectively relate to a group of peers, to have the principles of cooperation with peers and adults.

Analysis and results.

Assessment of the initial state of communication skills of young schoolchildren can be carried out based on the performance of standard tasks developed on the basis of the methods of J.Piaget [4], G.A. Sekerman [5] and others. ("Right and Left Sides",

"Who's Right", "The Way Home", etc.). Summarizing the criteria for evaluating communicative skills given in the above methods, we created "Criteria for evaluating the level of formation of communicative educational actions in primary school students".

Criteria for evaluating the level of formation of communicative educational actions in elementary school students

First aspect of communication: Communication as interaction.

1. Interlocutor's position during communication:

Low level - does not understand the opinion and point of view of others, does not know how to consider the position of the interlocutor.

Intermediate - Understands the possibility and importance of different positions and points of view, but does not consider the position of the interlocutor.

High Level - Recognizes the possibility of having different positions and takes into account the differences in the position of the interlocutor.

2. Overcoming egocentrism:

Low level - When evaluating something, he does not think about its different aspects.

Middle level - Accepts different bases for evaluating something, takes into account whether different opinions are right or wrong in their own way.

High level - understands the relativity of evaluation, takes into account different positions of evaluators, can express and justify his opinion.

Second aspect of communication: Self-control in communication.

Coordination of actions to achieve the goal, implementation of joint activities:

Low level - Does not know how to negotiate with the interlocutor or does not try, does not show interest in the overall result.

Medium level - tries to negotiate with the interlocutor, but is not always ready to give up; joint action is often neutral (mutual due to necessity), the level of coordination of efforts (mutual control, monitoring the implementation of the plan) is low evidence from the interlocutor; able to be an interlocutor in communication.

High level - knows how to negotiate and come to a common decision; able to manage and argue his position in the presence of strong mutual support, organization of mutual control, division of efforts; a positive attitude to joint activity (works with pleasure) can communicate enough information with the interlocutor and take into account what he knows, sees and what he does not know.

Third aspect of communication: Understanding each other in communication.

1. Transferring information to the interlocutor:

Low Level – Unable to convey instructions to explain his/her opinion.

Intermediate - Can convey only part of the instructions for communicating the idea.

High level - Shares the necessary and sufficient information with the interlocutor, takes into account what he knows, sees and what he does not have.

2. Understanding and mastering the content of speech (ability to ask questions):

Low level - Asks irrelevant questions or conveys them without understanding to the interlocutor.

Intermediate – Questions and answers are vague and do not allow you to get all the information you need.

High level - Knows how to ask questions and interpret answers correctly.

3. Reaching mutual understanding with the interlocutor:

Low level - does not understand the interlocutor, everyone works by himself.

Medium level - does not understand the interlocutor, everyone works on his own.

High level - achieves mutual understanding in the process of active communication, implements mutual control and mutual support, participates in joint activities with pleasure.

The above three aspects of communication often act together, and the successful development of each of them is actually determined by the level of development of the student's speech. The following cognitive parameters encourage students to further improve their speech:

- the ability to arouse interest in communication;

- maintaining communication at a sufficient or high level, discussing one's position, using the available vocabulary and communication tools correctly;
- comrades, classmates, just someone to support;
- the ability to listen to advice and recommendations, to be critical of communication results, to analyze successes and failures and adequately evaluate them;
- creative approach to the topic of communication, flexibility and tolerance in a good friendly relationship.

We consider the education of kindness and respect for the individual in primary school students through all subjects to be the priority in the hierarchy of qualities. Thus, in the process of teaching elementary school students, in the process of developing communicative skills, they need to develop the ability to win, the ability to joke and understand humor, to smile, to look at the interlocutor in communication, and to be self-confident. We must teach how to deal with such traits as anger, resentment, self-interest, and envy. These traits can hinder success. Real friends, beloved family, and others will need to teach children to develop self-control, calmness, and confidence, and to manage emotions (in moderation, depending on age). In the course of educational activities, in practical activities, we inculcate educational knowledge in students. In addition, communication skills are the key to their successful professional career and prosperous personal life.

Conclusions and suggestions. In conclusion, experimental work on the formation of communicative universal educational actions among elementary school students confirmed the relevance of this problem, because the level of their formation affects not only the effectiveness of the educational cycle, but also the process of socialization and personality development. .

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Embracing the power of virtual tours in higher education

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Abstract: In today's digital age, technology has revolutionized various aspects of our lives, including education. In this article, we will explore the importance of virtual tours in higher education and the numerous benefits they offer to students, faculty, and institutions alike.

Key words: virtual tours, higher education, virtual reality, immersive learning, campus exploration, geographical barriers, student engagement.

Virtual tours have emerged as a powerful tool in higher education, revolutionizing the way students explore and engage with campuses and facilities. This abstract explores the importance of embracing virtual tours in the higher education landscape and the numerous benefits they offer to students, faculty, and institutions [1].

Virtual tours provide prospective students with an immersive and interactive experience, enabling them to explore campuses from the comfort of their own homes. Through high-quality multimedia elements, such as 360-degree images, videos, and informative descriptions, virtual tours offer a realistic sense of the campus environment, fostering informed decision-making and visualization of campus life.

One of the key advantages of virtual tours is the ability to overcome geographical barriers. International or out-of-state students often face logistical and financial challenges in physically visiting campuses. Virtual tours break down these barriers by allowing students from anywhere in the world to experience campuses virtually. This inclusivity promotes diversity and expands access to higher education institutions.

Enhancing the Campus Exploration Experience: Virtual tours allow prospective students to explore college campuses from the comfort of their homes.

They can navigate through various buildings, departments, and facilities, gaining a realistic sense of the campus environment. This virtual exploration enables them to make informed decisions about which institutions to apply to and ultimately attend. By offering a glimpse into campus life, virtual tours help students visualize themselves as part of the academic community.

Overcoming Geographical Barriers: For international or out-of-state students, visiting campuses in person can be a significant logistical and financial challenge. Virtual tours break down these barriers by enabling students from anywhere in the world to virtually experience campus environments. This accessibility promotes inclusivity, allowing a diverse range of students to explore different institutions and make educated choices about their educational journey.

Increasing Student Engagement: Virtual tours provide an engaging and interactive experience that captures the attention of prospective students. Through multimedia elements, such as videos, 360-degree images, and informative descriptions, virtual tours create an immersive environment that sparks curiosity. By engaging students at an early stage, institutions can foster a deeper connection and generate interest in their programs and campus life.

Informing Program and Major Decisions: Higher education institutions offer a wide array of programs and majors, each with its unique characteristics and facilities. Virtual tours enable students to explore specific departments, laboratories, libraries, and other academic spaces associated with their fields of interest. This firsthand exposure helps students understand the resources available, the learning environment, and the equipment they may have access to, aiding them in making informed decisions about their educational path.

Supporting Remote and Online Learning: In recent times, the demand for remote and online learning has significantly increased. Virtual tours can supplement these modes of education by providing students with a virtual representation of their institutions. Even if students cannot physically be on campus, virtual tours allow

them to navigate through virtual classrooms, libraries, and campus resources, helping to create a sense of connection and familiarity with the institution.

Recruiting and Marketing Tool: Virtual tours serve as a powerful marketing tool for higher education institutions. They can be shared through websites, social media platforms, and recruitment materials to attract prospective students. By showcasing campus facilities, state-of-the-art technologies, and the overall campus atmosphere, virtual tours help institutions highlight their unique selling points and differentiate themselves in a competitive educational landscape.

Campus Orientation and Alumni Engagement: Virtual tours are not limited to prospective students; they can also benefit incoming freshmen and alumni. New students can take virtual orientation tours to become familiar with the campus layout, key locations, and support services. Alumni, on the other hand, can revisit their alma mater through virtual tours, triggering nostalgia and fostering a sense of continued connection to the institution.

Virtual tours have emerged as a transformative tool in higher education, enabling students to explore campuses and facilities remotely. However, the experience can be further elevated with the integration of 360 devices. In this article, we will delve into the significance of utilizing 360 devices in virtual tours for higher education institutions and the enhanced benefits they bring to students, faculty, and the overall learning environment.

By integrating 360 devices into virtual tours, higher education institutions can provide an immersive, interactive, and flexible experience for students exploring their campuses. The use of 360 devices enhances engagement, facilitates familiarity, showcases specialized facilities, and extends accessibility to prospective and current students. As technology continues to evolve, the integration of 360 devices in virtual tours will become increasingly vital, revolutionizing the way students connect with higher education institutions and shaping the future of immersive learning experiences [3].

To prepare a 360 virtual tour using Python, you can utilize various libraries and frameworks that provide the necessary tools and functionalities. Here's a step-by-step guide to get you started: **Capture 360 Images:** To create a virtual tour, you need to capture 360-degree images of the locations you want to include. You can use a 360 camera or a smartphone with a compatible app to capture these images. Save the images in a specific directory for easy access.

Set up a Python Environment: Ensure you have Python installed on your system. You can download the latest version from the official Python website (<https://www.python.org>). Once installed, open a command prompt or terminal and verify that Python is accessible by typing `python - version`.

Remember to thoroughly explore the documentation and examples provided by the chosen libraries to fully leverage their functionalities.

By using Python and appropriate libraries, you can create a 360 virtual tour by stitching together 360-degree images and implementing interactive navigation. This allows users to experience a seamless and immersive exploration of the virtual environment. Virtual tours have become a game-changer in higher education, offering a range of benefits that enhance the educational experience for students, faculty, and institutions. From facilitating campus exploration and overcoming geographical barriers to increasing student engagement and aiding program decisions, virtual tours have revolutionized how students interact with higher education institutions.

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Pedagogical processes of supervising the training of young handball players during the competition

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Abstract: This article provides information on monitoring and improving the technical and tactical training of young handball players during the competition.

Key words: Handball, ability, selection, control, analysis, competition, research.

In the Republic of Uzbekistan, physical education and sports are increasingly becoming a state policy. Handball sport is developing day by day. Game styles are improving, and handball player's movements are becoming more difficult.

The game of handball helps to develop the basic qualities of movement speed and accuracy, agility, strength, endurance.

The sport of handball has been attracting thousands of people with its essence, content and various game skills and combinations. Modern handball is a type of sport that requires high speed and great effort. First of all, the physical qualities of handball players must be perfectly developed in order to achieve high technical and tactical skills. The management of these qualities in the unity of the game mentality ensures the victory of the competition. Today's handball goalkeeper is tall, active, sharp-witted, quick-thinking, able to react to changing game situations with appropriate action and help the team a lot. But we don't see every handball goalkeeper playing at such a level. Therefore, the correct distribution of physical, technical and tactical qualities of handball goalkeepers in the training process, the correct organization of training, the ability to correctly choose physical loads, and the preparation of goalkeepers for competition activities are under the supervision of coaches. must be.

It can serve as a key factor not only in the physical development of a large number of young children in handball, but also in the pedagogical influence and in the process of education.

In the process of playing handball, several important qualities are developed: team spirit, striving for the goal, self-control, discipline.

The next stage of development of this sport in Uzbekistan is closely related to the development of handball for young children and teenagers. The more effective the process of training and teaching of children and teenagers is, the more effective the next stage of our handball development will be.

There are several sports schools and schools of higher skill in sports in our republic. It is no secret that each school has its own achievements.

However, despite the progress made, there is still a lot of hard work to be done on the goal of the game and especially the technical and tactical training of young and highly qualified handball players. When mentioning such thoughts, it is possible to rely on the results of many conducted pedagogical observations.

Handball is one of the most popular sports, and it is one of the most popular and, therefore, the most convenient means of physical development of schoolchildren and strengthening their health. It is a really fair game that is equally suitable for adults and teenagers. Two teams of twelve players will participate in the competition. The playing field consists of a rectangle measuring 40x20 m. The goal of the players of the teams participating in the game is to take possession of the ball and enter it into the initially defended goal. All movements with the ball are performed only by hand. It is necessary to comply with the rule of rudeness and unsportsmanlike motion when resisting when looking for the ball. The game lasts from 30 to 60 minutes, depending on the age and gender of the participants. During the game, each player has the opportunity to show his personal qualities. But at the same time, the game requires each handball player to subordinate his personal aspirations to the common goal.

The basis of the game of handball is running, jumping, passing the ball, throwing natural movements that help the players to develop harmoniously in all aspects. Loads have a positive effect on the development of all functional systems in the body. As a result of the training, as well as in the competitions, the mental

activity of the participants improves, the qualities such as quick reaction, imagination, creative thinking, speed and initiative develop. The game of handball can serve as a good tool for general physical training. Handball is a necessary sports game for athletes of any specialty due to the development of physical feelings, at the same time volitional feelings, and tactical thinking by means of smooth running, changing the direction, different types of jumps, and ways of moving at maximum speed. ranked among

Today, handball is widely used in schools, lyceums, colleges and universities. Handball competitions are regular physical training for workers.

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PSYCHOLOGICAL SCIENCE**Psychological characteristics of the development of creative abilities in students.****Akhnazarova Diyora Erkinovna**

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Abstract: Today, as development is taking place in every field, special attention is paid to the development of creative and creative abilities of students. In our research work, we considered the brief classification and content of the theoretical approaches to the problem of creative thinking aimed at studying the problematic situations encountered in the creative ability of the young generation and finding their solutions, based on the "William's creativity" table. We have also given ideas and opinions about the insufficient development of the creativity factor in students, which causes a number of psychological obstacles in their activities and their inadequate perception of the solution to problems.

Key words: divergent, convergent, non-standard, ability, semantic, creative, cognitive, original

Diagnostics of personality and abilities. In order to explain the uniqueness of people in their educational, work and creative activities, the science of psychology first of all addresses the issue of abilities and talent. Because the society is primarily interested in a talented person, besides, he benefits from every action he does.

The problem of abilities is first of all related to the quality of human intelligence, skills, abilities and knowledge. Especially since the mind and intellectual potential of every young person who wants to become the owner of a profession guarantees that he will become a qualified specialist, the concept of ability is studied in psychology in connection with the concept of intelligence. every normal person wants to be smart, even if he doesn't say "I'm smart", he wants people to praise him with this quality in everything he does, says, and thinks. The adjective "stupid, ignorant" offends any person, even a young child. It is also characteristic that, especially among our eastern peoples, we do not even use the expressions

"extremely intelligent" or "extremely ignorant" in relation to someone, we use these characteristics within the framework of average classifications: "So-and-so's son is quite intelligent. The sayings like "the child of the other person is a bit ignorant and the sucker who burns his parents" actually means that the category of "intelligence" is related to the most sensitive qualities close to the heart of a person.

Ch. Using the method of factorial analysis, Spearman proved that there is a relationship between the indicators listed above, and showed that intelligence is a mental property with a complex structure. Another scientist Dj. Gilford proposed to study intelligence as a characteristic that appears as a result of a series of mental operations (analysis, synthesis, comparison, abstraction, generalization, systematization, classification). These scientists used the word intellect more than the word mind, drawing attention to the fact that this word has its own interpretation. Because in their opinion, only a person with intellectual potential can be called talented. Intellectual potential, on the one hand, is considered as a concept that is directly related to all processes in life, and on the other hand, to the individual, and its importance is that it allows to predict existence and future events in advance. Here, let's understand the literal meaning of the word "intellect". Intellect is a concept derived from the Latin word intellectus - understanding, knowing and intellectum - mind, and it is the part of the mind that can be measured, changed and developed.

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The specifics of the attitude of parents towards children with autism

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Annotation: The article is devoted to the specifics of parental attitude to children with autism. The author summarizes the ideas described by domestic researchers about the phenomenon of parental attitude and the peculiarities of parents' attitude to children with ASD, as well as the peculiarities of their emotional sphere and the style of parenting.

Keywords: autism, autism spectrum disorders, parenting, parental attitude.

Parental attitude is such an education that includes a cognitive, emotional and conative aspect. The cognitive aspect implies ideas about the child. The emotional aspect is connected with the emotional and valuable attitude towards the child. The conative aspect is revealed through a system of behavioral reactions, encouragement and punishment of the child [1].

A. Ya. Varga defines parental attitude as a combination of emotional attitude towards the child, the style of communication with him and the peculiarities of understanding the child [1].

As a rule, emotional, cognitive and behavioral components are distinguished in the structure of the parental relationship. The emotional component reveals the features of the emotional attitude towards the child, towards oneself as a parent, satisfaction with one's role.

The cognitive component is associated with the individual's ideas about himself as a parent, the image of an ideal parent, knowledge of parental functions and the image of a child.

The behavioral component is represented by the style of raising the child, as well as the activities of caring for him, taking care of him and direct interaction. An optimal, child-friendly parenting relationship has a number of characteristics, namely:

- adequate, based on a realistic assessment of the child's abilities, the ability to accept his individual characteristics;
- flexible, has the ability to change the style of communication, methods of influence in various conditions;
- predictive, focuses on the current situation of the child's development, on the present and future, and uses various ways of building relationships, taking into account changing conditions.

Many authors describe the appearance of a child with mental developmental disorders in the family as stress, which is associated with the frustration of the significant needs of parents and the need to mobilize the adaptive resources of the individual [2, 3,]. In the future, parents face new problems, such as the acceptance of a child with special needs by relatives, limitations in social functioning, high emotional and physical costs of caring for a child, difficulties in his education and further socialization [4].

Features of the relationship of parents to a child with autism are of particular research interest. In such families, overprotection is more common. Due to the fact that an autistic child avoids emotional closeness with a parent, mothers and fathers often experience stress from the fact that they cannot simply hug and hold the child without receiving a positive emotional response [2,12].

The anxiety of mothers in connection with the unpredictable behavior of the child and alertness in connection with the assessment of his behavior by the society is a specific emotional state. In this case, the child-parent relationship has the character of co-dependence, since adults raise a non-contact child and, at the same time, they need to maintain a certain level of adaptation [3].

We can talk about the inconsistency of the parental attitude towards a child with a mental development disorder: the parents show an inability to change plastically in the process of growing up the child, there is an imbalance between the emotional and behavioral aspects of parenthood, as well as an imbalance in the tendencies towards rapprochement with the child or granting him autonomy. At the

same time, there is also a category of parents with an optimal attitude towards a special child, they have a sufficient level of adaptability.

The maternal and paternal positions in relation to an autistic child are significantly different: namely: there is the greatest involvement in the process of raising a child of a mother, restrictions on her freedom and a strong dependence on an autistic child, a greater tendency of the mother to stress compared to the father, who is often removed from the process raising a child.

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PHILOLOGICAL SCIENCE

Methods of teaching foreign languages

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Abstract

This article aims to identify alternative methods and techniques based on scientific approaches for students who want to learn a foreign language independently. Moreover, it solves the main issue encountered in the organization of the language learning process which is as enhancing speaking skills among learners. Importantly, written about scientifically based views on the importance of learning foreign languages for students.

Introduction

The primary cause of this article is to show distinct methods that are used for overseas language coaching withinside the educational device. To have statistics about FLT strategies give possibilities to instructors a great supply of pedagogical abilities and interact in the studyroom, besides this huge data about the signifance of FLT in innovational century. Teaching procedure is taken in to consideration as a hard procedure and accumulate a lot of attempt from teachers. According to modern conditions, it can be beneficial to pay attention students' pastimes and their abilities for deciding on a specific approach. In methodology three main methos are commonly used all over the world (direct, grammar-translation method, audio-lingual method)

Direct method

Nowadays, learning foreign languages (LFL) is turning into a crucial activity among other, speaking foreign languages is a significant skill in today's globalized world. Especially, English. Students learn foreign languages for many reasons, such as vided to abroad or get a job, probably, they want to carry on their study in the foreign countries of the Europe after university, whatever the reason, the beneficial sides can be incredibly worthwhile. Learning a foreign language (LFL) not only can give you

chance to achieve a successful career for your future but also, make an opportunity to gain cultural knowledge and can help you built more confidence when you go foreign country. This approach could be very famous in coaching device and additionally referred to as a herbal method. In a few manners, this approach certainly contrasts with grammar-translation approach. On this approach complete procedure is accomplished withinside the language that is being learned by students or pupils. All learners need to only communicate in that language and they are not allowed to apply their own language. With the aid of using this approach for inexperienced learners can attain high-quality of pronouncation exercise. People who are the best learning by oral activities, this method is actually effective for such kind of people. In addition to this, grammar accuracy isnt in a goal in direct approach. The cause of this approach is that second language need to play a position like their local language, additionally, in direct approach it's emphasised that create a scenario on this language. As it is important for learners to feel themselves free.

Grammar-translation method

With this technique, studying is largely through manner of translation to and from the goal language. Grammar pointers are to be memorized and prolonged lists of vocabulary determined by manner coronary heart. There may be little or no emphasis on developing oral ability. This technique is, in most instances, commonly applied in secondary education. Gtm focuses on software grammar and correcting sentences. This is mainly useful in training students a manner to put things in writing and examine interchangeable terms. Tests of grammar pointers and translations are easy to collect class activities or study video games are rarely vital, as learners are translating next to another language that students normally use. This can teach language via the usage of this method due to the fact. The emphasis isn't always on the spoken word but on translation.

Audio-lingual method

The audio-linguistic method is a common method used in foreign language teaching. It is based on behavioral theory, which holds that certain characteristics of

living things, and in this case people can be controlled by a reinforcement system. Correct use of a trait will get positive feedback while misuse of a trait will get negative feedback. This approach is similar to another earlier method known as the direct method. Like the direct method, the audio-language approach proposes to teach a language directly to students without using the students' native language to explain new words or grammar in the target language. However, unlike the direct method, the audio-linguistic method does not focus on teaching vocabulary. Instead, teachers teach students to use grammar. Applied to language instruction, and often in the context of a language. This means that the instructor will present the correct sentence pattern and the student will have to repeat it. The teacher will then continue to introduce new words that the students can sample in a similar structure. In the audio-lingual method, there are no explicit grammatical instructions: everything is simply memorized in the form

Conclusion

In summary, the use of innovative methods in foreign language teaching develops students' critical thinking skills, fluent accuracy, and ability to react quickly and accurately. Such methods promote the student's thirst for knowledge. The students are trying to be well prepared for the lesson. This allows students to actively participate in the learning process. The education system sets itself the challenge of educating free-thinking, mature, and responsible individuals so that we, the teachers of the future, can develop innovative technologies more effectively in the future contribute to the teaching foreign languages.

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STATE AND LAW

Scientific problems of examination of draft legislative acts

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Annotation: The thesis also refers to this direction, which comprehensively explores scientific concepts and fundamental legal foundations for the examination of draft regulatory legal documents. Thesis also developed the author's definition of the concept of "examination of the bill". In addition, the thesis analyzes the features, principles and types of examination of the examination of a legal document. At the end of the thesis, the author divided the types of examination of a legal document into certain groups.

Keywords: law, expertise, legal, state, project, system, document.

One of the important conditions for the adoption of normative legal documents, which form the basis of the legislative framework, is their passing through the stage of expertise on legality and relevance. Expertise, in turn, is one of the important institutions in the practice of law enforcement. In other words, the examination of drafts of regulatory legal documents is a complex analysis process, and compliance of each norm of the developed project with the requirements of national legislative documents and legislative techniques is studied.

Based on the analysis of the development trends of the legal frameworks related to legislative expertise, let's dwell on the general scientific approaches and theoretical views regarding this institute.

It should be noted that in legal science there is no single approach to the concept of "expertise of a normative legal document" or a corresponding norm in the current legislation.

Summarizing what has been mentioned, in our opinion, the concept of "**expertise of a draft regulatory legal document**" should be defined as "a study by a specialist (expert) with special knowledge or a group of them aimed at determining the

compliance of a draft regulatory legal document with the legislation and other established requirements" according to

Based on the scientific description of the concept of expertise of the drafts of regulatory and legal documents, it is possible to show the following specific **features**

1. The study of "**compliance with the law**" is the main direction of activity. It is known that the drafts of normative legal documents are analyzed from the point of view of compliance with the legislation regulating these areas in all types of expertise (legal, anti-corruption, gender-legal, economic and financial, ecology, etc.). For example, in the process of legal expertise, the compliance of the project with the Constitution and laws, legal-technical regulations, and the validity and expediency of the application of the reference norms in the project are checked.

2. **Implementation by experts with special knowledge and skills.** Expertise of drafts of regulatory and legal documents is a complex type of activity, which, in turn, requires appropriate knowledge and skills. In particular, as part of the linguistic examination of the legislative document, the compliance of the draft text with the rules and requirements of the state language is studied by linguists.

3. **Completion of the relevant document (summary) based on the result .** Documents in the form of conclusions are prepared based on the results of the examination of the drafts of regulatory and legal documents . For example, the legal service of the developer prepares a conclusion signed by the head of the legal service as a result of the legal examination of the project. According to the current legislation, the existence of a positive conclusion of the judicial authorities on the result of the legal expertise conducted on the normative legal documents is the main condition for its acceptance.

4. **Implementation within certain periods .** Legislation has specific deadlines for the examination of draft legislative documents. For example, the legal examination of draft laws, presidential decrees and decisions, Government decisions is conducted by the Ministry of Justice within ten days from the date of their receipt. Legal examination of departmental normative legal documents is carried out by the

Ministry of Justice within thirty days. Decisions of regional representative bodies are subjected to legal examination by regional justice bodies within two working days, and decisions of the governor within five working days.

The principles of law, first of all, represent the laws of law, moreover, they consist of the most general norms that are valid in the entire field of legal regulation and are applied to all subjects. The principles of law are presented as programmatic ideas for the creator of law, and determine the ways of improvement of legal norms.

It should be noted that while the expertise of the drafts of regulatory legal documents is carried out based on the practice of law enforcement and based on certain principles, there is no specific legal norm or uniform approach that regulates them.

As part of our research work, we have analyzed the scientific opinions of researchers and scientists in the following content regarding the principles related to the examination of drafts of regulatory legal documents.

Although the principles used in the examination of regulatory legal documents are not directly defined in the legislation, the following can be cited based on the practice of applying the law.

– **Legality** . In our country, the examination of normative legal documents is carried out in accordance with the relevant legislation. For information, it should be noted that until today more than 20[1] legislative documents aimed at regulating the field of expertise of normative legal documents have been adopted;

– **Independence of the expert** . The expert performing the expertise of legislative drafts should be independent from the relevant body (official), parties and other entities interested in the outcome of the work. The experts' assessment of the draft legislation will not be related to the point of view of the body that commissioned the expertise;

– **Obligation** . The importance of this principle is that it applies only to 2 types of expertise, namely legal and anti-corruption expertise. That is, in Article 25 of the Law of the Republic of Uzbekistan "On Regulatory-Legal Documents" it is

stipulated that the draft legislative document must undergo legal and anti-corruption examinations;

– **Comprehensiveness and completeness** . Expertise should be carried out in full, covering all parts of the regulatory legal document and its draft.

At the same time, there are types of legal and anti-corruption, economic, financial, scientific, linguistic, environmental expertise in the national legislation. However, several types of normative legal document draft expertise have been shown and studied by researchers and scientists of norm creativity.

Legal scientists and researchers have divided the expertise of the normative legal document project into several types according to the field, implementing entities, term and other criteria.

In particular, N.S. Titov researched the expertise of the normative legal document into 2 groups. That is, socio-legal (anti-corruption, legal expertise, psychological, criminological, gender, economic, environmental) and legal-technical legal (on the subject of normative-legal documents, etc.) expertise. For example, criminological expertise is the analysis and research of current regulatory legal documents prepared in order to identify and eliminate norms that may lead to criminalistic consequences [2].

O.N., who conducted research on this topic. Korotkova distinguished 11 types of expertise (legal, legal, social-psychological, normative-technical, hermeneutic, linguistic, scientific-prophetic, anti-corruption, gender, economic, pedagogical) of the normative-legal document project. For example, if the compliance of the project with a normative legal document with a higher force than itself is studied in the legal expertise, the compliance of the interests of the society and the requirements of the legal norms is studied during the legal expertise [3].

O.N. One cannot agree with Korotkova's views on this matter, that is, the types of legal and legal expertise are logically the same expertise, and in a general sense, the compliance of the project with legislative and legal-technical requirements is analyzed.

A.K. Khudoyberdiev, one of our national scientists, noted in his research work that "the legal basis for the examination of legislative projects has been created in our republic, but it is necessary to ensure its smooth and complete implementation" to create an organizational and legal mechanism for the implementation of new types (anti-corruption, environmental, gender, public)" [4].

In our opinion, we cannot agree with the scientist's opinion that "ecological and public expertise is included among new types of legal expertise."

Article 25 of the Law of the Republic of Uzbekistan "On Regulatory and Legal Documents" dated April 20, 2021 No. ORQ-682 specifies legal and anti-corruption expertise as the types of expertise for which the draft regulatory legal document must be expertized.

In the process of legal examination, the compliance of the draft normative legal document with the Constitution and laws of the Republic of Uzbekistan, other normative legal documents having higher legal force than it, the requirements of legal and technical formalization, including the validity and expediency of the application of the norms referring to the draft normative legal document checked[5].

In our opinion, environmental and public expertise can be defined as types of expertise related to the social sphere.

According to R.A. Osipov, "According to the basis of examination of legal documents, it can be divided into primary, repeated, additional examinations. Preliminary examination of draft laws and legal documents is initially carried out in accordance with the procedure established in methodological recommendations. Repeated legal expertise is conducted a second time on new topics within the scope of the subject of the primary expertise or if there are reasonable comments by the developers or other participants during the review of the draft regulatory legal document. In case of comments on the draft regulatory legal document, an additional legal examination will be conducted to finalize important changes and additions to the regulatory legal document" [6].

N.N.Averyanova and E.O.Loktionova formed the following classification of the types of examination of draft laws:

- 1) according to object – universal and special. At the same time, only legal and linguistic expertise of draft laws can be classified as universal. All other types of examination of draft laws will be special;
- 2) subject b - examination of draft laws conducted by legislative initiative subjects, the supreme legislative body, other state authorities (accounting chamber, prosecutor's office), expert organizations and accredited experts;
- 3) according to the criterion of mandatory transfer - mandatory and optional examination of draft laws. Legal, linguistic, and anti - corruption examination of draft laws is among the mandatory ones.

the examination of draft laws, which will be implemented at the initial stage before the draft law is introduced to the State Duma [7].

Kh. Khaytov stated that "it is appropriate to distinguish general and special (specialized) types of examination of draft laws. These types of expertise differ from each other in a number of features. General examination of draft laws is carried out by the body or working group entrusted with the preparation of the draft law. Conducting this type of examination differs in that it does not require the participation of narrow specialists and experts. However, if necessary, specialized (financial, environmental, linguistic) expertise may be provided by these bodies with the participation of experts in order to adapt the draft law to the requirements of the legislative technique or specific field. In carrying out a specialized examination of draft laws, it is necessary to understand the examination with the participation of experts with knowledge of legislative techniques and experts who have excellent knowledge of the field regulated by the draft law"[8].

In our opinion, depending on the object of research, the expertise of the project of the regulatory legal document can be divided into the following groups:

Legal examination of projects of normative-legal documents (legal, anti-corruption, criminological, gender-legal).

Economic and financial examination of the projects of regulatory and legal documents .

Expertise of projects of regulatory and legal documents related to the social sphere (scientific, linguistic, ecological).

In conclusion, it should be noted that today it is of urgent importance to comprehensively improve the institution of legislative expertise, which is necessary for the adoption of a high-quality and effective normative legal document, and to adapt it to the requirements of the times.

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Issues of the institution of exemption from criminal punishment in some foreign countries

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Abstract: In this thesis, the author made some comments on the some issues of exemption from criminal punishment in the criminal legislation of foreign countries. Also, the author believes that the study of the experience of foreign countries on conditional judgment makes it possible to soften the conditions of conditional judgment, reduce the probationary period and propose to consider issues of its early completion. According to author Most European states are distinguished by the specificity of the legal system (Anglo-Saxon and Romano-Germanic), in particular, by the fact that criminal law has many years of history. Most of them provide for several types of exemption from punishment, and Uzbekistan has similar and different aspects of criminal law.

Keywords: exemption from criminal punishment, grounds for exemption from punishment, Anglo-Saxon legal system, replace by a lighter punishment, exemplary behavior, honest attitude to work, types of exemption from additional punishment.

A comparative study of national law with the legal systems of foreign countries helps to identify its advantages and deeper understanding of the prospects [1] for the development of the industry.

Their discussion and preparation on the basis of a comprehensive in-depth comparative analysis of bills with foreign legal practice will serve to raise the work to a qualitatively higher level.

As Saidov noted, ‘comparative-legal research, on the one hand, helps to identify all the useful factors that have justified themselves in solving the main problem abroad [2], and on the other hand, provides an opportunity to take into account the negative aspects of foreign experience, the ineffectiveness of one or

another legal solutions' [3]. Indeed, at today's stage of improving criminal law, comparative jurisprudence plays an important role in determining the prospects for the development of national legislation, reflecting the existing National Criminal Law and the relativity of Criminal Law.

In criminal law, criminal punishment is defined as a coercive measure that applies to the guilty by a court sentence, providing for the deprivation of a convicted person of certain rights and freedoms or their restriction. It is used in order to morally correct the convicted person, prevent him from continuing criminal activity, and prevent the convicted person, as well as other persons, from committing a new crime.

An analysis of the criminal laws of a number of foreign countries shows that separate chapters are devoted to the Institute for the release of criminal liability in them.

For example, in the Spanish Criminal Code of 1995 there is a norm on 'the abolition of criminal liability due to the fact that the perpetrator was forgiven by the victim until the beginning of the execution of the sentence'. Article 66 of the Polish Criminal Code of 1997 provides for the possibility of 'conditional termination of criminal prosecution if the damage caused is covered [4]'.

Section 7 of the Criminal Code of the Republic of South Korea, adopted by Law No. 293 of September 18, 1953, gives the concept of exemption from criminal liability with the passage of the term of execution of the sentence. According to him, the person who is found guilty by the court must be released from liability with the passage of the term (Article 77), if the sentence has not been executed within the following deadlines, the person will be released from criminal liability if the deadlines have passed (Article 78) [5].

According to the criminal law of the Republic of South Korea, as the basis of exemption from liability, such a type is established as exemption only in connection with the non-execution of the sentence, and conditional exemption from punishment ahead of schedule [6].

Chapter 3 of the Criminal Code of the French Republic, adopted on January 1, 1992, which entered into force on March 1, 1994, paragraph 1, article 132-59, indicates the grounds for exemption from punishment, indicates that the social re-adaptation of the person who committed the socially dangerous act was achieved, the damage and damage caused by the crime was covered, the person

According to Article 133-1 of the French Criminal Code, after the death of an individual or until the liquidation of a legal entity, it is possible to impose on him the amount of a fine and court costs, as well as a punishment in the form of confiscation. He is released from serving the sentence in connection with the expiration of the term of execution of the sentence imposed by the court. Rehabilitation also eliminates the consequences resulting from the indictment.

According to Article 133-2 of the French Criminal Code, if the sentence in relation to the crime is assigned precedent, the appointed punishment will lose its power after exactly twenty years have passed.

If the sentence for the act is imposed by precedent, the appointed punishment will lose its power after exactly five years have passed. If the sentence for the crime is assigned a precedent, the assigned punishment will lose its power after exactly five years have passed. Persons sentenced in absentia do not have the right to appeal in an appellate manner over a sentence in absentia or a decision in absentia about the expiration of the sentence. The question of the expiration of the term of the civil legal obligation arising as a result of the judgment of the court is regulated by the Civil Code.

Comparing the institution of the exchange of punishment for exemption from punishment with the same institution in the criminal law of foreign countries and the conditions of its application, their similarities and differences are also noteworthy.

In the criminal legislation of Uzbekistan, however, the partial or full compensation of the damage caused by the crime is not taken into account when considering a petition or submission to replace the punishment with a lighter one.

Institute for the replacement of punishment with lighter in the Republic of Azerbaijan. The Institute for the replacement of punishment by a lighter one is also expressed in the Criminal Code of the Republic of Azerbaijan, which is enshrined in Article 77 of this code. This article is called the replacement of the punishment that has not been served by a lighter one, and the grounds and conditions for its application are indicated:

‘77.1. A person serving a sentence of imprisonment appointed for crimes that are not of great social risk and not too serious can replace the part of the sentence of imprisonment appointed with another lighter punishment, taking into account the behavior of the person at the time of execution of the judicial punishment. In this case, the person can also be completely or partially released from additional punishment at the same time as the main one [7]’.

In the criminal legislation of the Republic of Armenia, unlike the Criminal Code of the Republic of Uzbekistan, only the part of the non-serving sentence of imprisonment can also be replaced by another lighter punishment. Also, in order for the part of the punishment not served to be replaced by another lighter punishment, the person must also compensate for the damage caused. And this condition is not established by the criminal legislation of our country. One of the more distinctive sides is that the Criminal Code of the country does not specify the circle of persons for whom it is impossible to apply a replacement with a lighter part of the punishment.

According to the Criminal Code of the French Republic, pardon is defined as another type of exemption from punishment. According to him, pardon only means exemption from serving the sentence. Pardon does not deprive the victim of the right to compensation for damage caused by a crime.

The Criminal Code of the French Republic does not specify the concept and grounds for exemption from criminal liability, and only the grounds for exemption from punishment are established. They were prescribed amnesty, pardon, types of

exemption from punishment due to illness in connection with the passage of the term [7].

Article 4.08 of the US model criminal code called the legal basis of the state of mental illness and incapacity that excludes responsibility, protection and exemption from liability. According to him, in cases of mental illness and incapacity of the defendant, which excludes criminal liability, the court instructs the commissioner of Mental Hygiene to place him in a special institution and treat him.

If the court, in accordance with the procedure specified in Part 2 of this article and based on the instructions of the psychics, does not need to parole this person, or provide security for himself and others, it comes to the conclusion of exemption from the necessary liability or exemption from the guard [8].

Most European states are distinguished by the specificity of the legal system (Anglo-Saxon and Romano-Germanic), in particular, by the fact that criminal law has many years of history. In most of them, several types of exemption from punishment are provided, and there are similar and different aspects to our criminal law [9].

Among these states, states that are part of the Anglo-Saxon legal system, criminal law is specific, and there is no single codified document. The issue of criminal liability, including exemption from criminal punishment, is resolved on the basis of a number of laws and a judicial precedent.

The peculiarity of early punishment in English criminal law is that violation of the conditions specified in the control decision entails criminal liability [10], and according to the indictment, the offender may be sentenced to imprisonment or a fine for the rest of the control period at the discretion of the court, or both penalties may be assigned together. The term of the appointed imprisonment is from six months, and the amount of the fine may not exceed 3 levels of the standard scale, or both amounts may be set together.

The study of the experience of foreign countries in the field of conditional judgment makes it possible to propose to mitigate the conditions of conditional

conviction, reduce the probationary period and consider issues of its early completion.

According to the norms of the criminal law of the Republic of Uzbekistan, when a condition is judged, there is an opportunity to consider issues of reducing the probationary period or canceling a conditional sentence. At the moment, the procedure for implementing this possibility is not provided. In particular, the question of who will take the initiative to reduce the probationary period or cancel the conditional sentence remains open, as well as the circumstances that will become the basis for the implementation of this possibility are not established.

A study of the criminal law of foreign countries showed that in some countries there are differences in the procedure for the appointment of a probationary period. For example, in the Russian Federation, a probationary period with imprisonment for up to one year or with the appointment of a more mild punishment may be less than six months and more than three years, and in the case of the appointment of imprisonment for a period of more than one year – less than six months and cannot be more than five years.

In conclusion, it should be noted that in the criminal legislation of foreign countries it is very difficult to analyze issues related to the release of criminal punishment within the framework of one short thesis, as well as to reveal their peculiarities.

Accordingly, it is possible to draw some conclusions for Uzbekistan from the above. For example:

1) in the criminal legislation of the Republic of Uzbekistan, unlike the RF, the penalty in the field of sending to the disciplinary part is not exchanged for light. In our state, only correctional labor and imprisonment can be replaced by a lighter punishment.

2) based on the analysis of the experience of foreign countries, it is necessary to further clarify the procedure for the appointment of a probationary period in the

criminal legislation of the Republic of Uzbekistan, in particular, to take a measure to differentiate the established probationary period.

3) Based on the national experience analyzed in the article, the problems arising in the practice of applying the law, as well as the experience of foreign countries analyzed in this chapter, the second part of the Article 72 of Criminal Code of Uzbekistan should be stated in the following wording:

‘The trial period is set for a period of six months to five years.

In the case of the appointment of punishment in the sect of deprivation of liberty for a period of up to three years and penalties of a milder type, the duration of the trial period can be appointed for a period of three to five years, in the case of the appointment of a punishment in the sect of deprivation of liberty for a period The trial period is calculated from the date of the sentence. The calculation of the probationary period begins on this day, even if the decision on the conditional conviction was made by the higher court’.

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TECHNOLOGICAL SCIENCE

Development of the architecture of regional telecommunication networks

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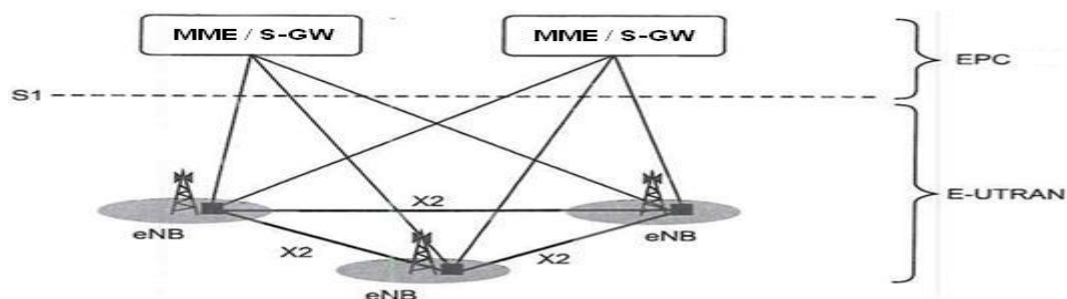
Abstract: the article discusses not only the stages of development, but also the main trends, approaches to the construction of digital information systems, as well as characteristic communication lines that connect telephone segments can be cable, air, radio relay, laser (fiber optic), satellite, that is, all possible physical communication lines of the primary network are used in the segments, the article also highlights the various types of communication that are required when creating regional telecommunications networks, the article talks about the advantages of the LTE network and provides a simplified diagram of the LTE network architecture

Keywords: Transport communication network, primary communication network, secondary communication networks, Communication network architecture, fourth generation network - LTE (Long Term Evolution)

Today, in absolute terms, not a single branch of the state can do without modern high-tech communications that connect computing systems and remote databases. In recent years, mixed channels (with a predominance of optical fiber) are increasingly used, operating on the principles of packet switching and cloud computing. The combination of communication lines of the primary network is a transport network. Transport network (communications) - a communication network that provides transfer (transportation) and distribution of heterogeneous traffic between access networks, which include the calling and called users [1]. At this point in time, the generally accepted classification of transport networks is as follows: Primary communication network Secondary communication networks Telephone networks, telegraph networks, data transmission networks, facsimile, TM and other networks Automatic switched telephone networks AKTS, Telephone networks

(segments) Intercity regional, Urban, rural, allocated (private), institutional. After studying the needs of users of regional telecommunications networks, it was determined that developing simultaneously different types, different generations of telecommunications networks operating in a given period of time makes it possible to solve most important problems. For these purposes, the regions use equipment of different generations and different types of communication, including LTE networks.

Simplified LTE Network Architecture the LTE network consists of the E-UTRAN (Evolved Universal Terrestrial Radio Access Network) terrestrial radio access subsystem, which is formed by eNodeB nodes - LTE base stations, and the EPC (Evolved Packet Core) packet core. The LTE network is built as a collection of new eNB base stations (Evolved NodeB or eNodeB), where neighboring eNBs are interconnected by an X2 interface. The eNBs are connected to the EPC via the S1 interface. Figure 1 shows the interaction of new elements in the network architecture: S-GW (Serving Gateway) - serving gateways containing management software via the MM protocol (MME - Mobility Management Entity).



Rice. 1. Simplified LTE network architecture

The structure of the LTE 4G network. LTE - Long Term Evolution

The third-generation standards provide a wide range of multimedia services and support data transfer rates up to 14Mbps. This is quite consistent with the needs of subscribers at the present time. However, the volume of transmitted information in telecommunication networks is growing every day. To meet the needs of users in terms of data transfer speed and a set of services for at least 20 years ahead, a new standard, already the fourth generation, is needed [2]. Work on the first standard of

the fourth generation - LTE (Long Term Evolution) began in 2004 by the 3GPP organization. The main requirements that were presented in the process of working on the standard were the following: Data transfer rate above 100 Mbps. High level of system security High energy efficiency Low latency of the system Compatibility with standards of the second and third generations at the end of 2009, the first LTE network was launched in Sweden in commercial operation. LTE networks support data transfer rates up to 326.4 Mbps. For example, downloading a movie in good quality will take less than one minute.

2G 3G network of the same operator

Data

Signaling

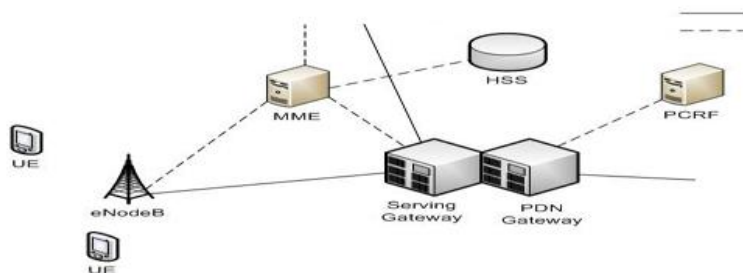
Other fixed and mobile operators and data networks

LTE network structure

From the LTE network diagram presented above, it is already clear that the network structure is very different from 2G and 3G networks. Both the base station subsystem and the switching subsystem have undergone significant changes. The technology of data transmission between the user equipment and the base station has been changed. The data transfer protocols between network elements have also undergone a change. All information (voice, data) is transmitted in the form of packets. Thus, there is no longer a division into parts that process either only voice information or only packet data.

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Requirements for special equestrian sports shoes

Musaev S.S., Samieva G.O., Kurbonov K.Sh.

Annotation: The role of horses in the development of human society in principle, and in equestrian sports in particular, is considered. Attention is drawn to one of the important items of rider's equipment - shoes. The classification of shoes used in equestrian sports, the shortcomings and ways to eliminate them, as well as the basic safety requirements that must be taken into account when developing and creating a shoe design focused on the needs of the rider, are given.

Key words: equestrian sport, footwear, footwear classification, rider.

Previously, humanity carefully modified the accumulated experience. In modern society, unprecedented tasks are set, impossible projects are created. The rate of development has increased. The reason for this is that the technology itself serves as a breeding ground for acceleration. Technological innovation consists of three stages linked together in a self-renewing cycle. First, there is a creative, feasible idea. Secondly, its practical application. Thirdly, its distribution in society. Horses also played an important role in the efficiency of solving the problems of society and in its development. After they were tamed, the true possibilities of these animals were revealed. So horses became excellent helpers in the field, in war, and in transportation. Previously, they worked both on the ground and underground. Most often they were ponies. On the battlefield, the horse also served a lot to man. During the war years, the Assyrians used them in battles. In many battles, sometimes even the cavalry played a decisive role: knightly cavalry, dragoons, lancers, cavalry guards, hussars, horse guards, Cossacks. Everyone has their own, special manner of fighting, and hence their own requirements for training, breed, exterior of the main partner - the horse [1]. There were also certain requirements for the equipment of the rider - it had to serve as protection from enemy guns and allow him to freely control the horse. In our time, technological progress has pushed horses aside, but people cannot do without them even now. These animals are very actively used in sports. Racing and trotting trials on hippodromes are very famous. Equestrian sport

demonstrates the strength and grace of horses, their mutual understanding with humans. In the 21st century, technologies are created for consumers, for specified properties based on pre-design studies, specific goals and objectives. Equestrian sports did not stand aside, namely, one of the important items of equipment for a rider - shoes. Since the horse is used not for military purposes, but as entertainment, the requirements for its exterior and rider equipment are different.

Horseback Riding. Equestrian sport is a collective concept, which refers to sports games using horses. When riding, the rider actively interacts with the movement of the horse. The horse is controlled by shifting the rider's weight, squeezing the hips, and loosening or tightening the reins. The voice of the rider can also influence the movement of the horse, but not all equestrian sports allow this. The rider's shoes are important not only for him as leg protection and a means of control, but also for the horse itself - they should not injure him, should not interfere with the correct understanding of the commands sent to him. Traumatism in equestrian sport. A rider who falls at the beginning of the movement and gets entangled in the stirrup can be seriously injured. If the fall occurred while galloping, with the leg not released from the stirrup, in addition to the injury to the entangled limb, the athlete receives severe injuries to the head and upper body as a result of contact with the ground and dragging along it. The horse may also hit the rider with the back of the head while throwing back its head in an attempt to get rid of it. The blow falls on the face with damage to the bones of the facial skeleton, loss of consciousness and a fall with entanglement in the stirrups. The main way to prevent entanglement is to use shoes that fit freely into the stirrup and have a small heel. The sole of the shoe should not be corrugated or have a thick sole [1-2].

Types of equestrian sports. Equestrian sport is very diverse, but it can be schematically divided into the following groups: national and international, team and individual.

According to the structural-objective feature that determines the subject of the game, the main actions of the players and the target task they strive for during the game, equestrian games can be divided into the following groups:

Ball games: pushball, chovgan, guybozi, chavgonbozi, lelo, makanakhah, polo;

Games in horsemen's power moves (martial arts): taking a winter town, ulak-kokpar, odarysh;

Javelin throwing at the target: zhambiatu, isindi, tent-peggy, nizaki-netum;

Catching and dodging: wrestling for the flag, fox, kyz-kuu, tarchia, pato;

Races for distillation: baiga, runs, zhorga-zharys, lam, alam, marula;

Games with gymnastic exercises: vaulting, horse riding, lifting a scarf from the ground;

Games with the use of chopping weapons: the battle of the sultans, the headless horseman, cutting the vines. For competitions and for various equestrian games they use: boots, boots, low shoes [3-4].

Disadvantages of the shoes used and their elimination. Footwear in equestrian sports must meet several objectives: safety, since in essence it is work footwear for the rider; to promote closer contact between the rider and the horse, because the leg is the main means of control; aesthetic beauty - all competitions are partly indicative. Athletes who are not properly dressed may be denied the right to take part in the competition. Shoes on the rider's foot should sit very tightly, the upper edge of the shaft should not cut into the leg. However, there should be a small space between the shoe and the foot for freedom of movement, otherwise, when working, it will rub the leg, but the leg should not hang out in the shoe. Riders pay special attention to the tightness of the tops, this is not only due to contact with the horse, but also so that rocky dust does not get in during the ride, which can damage the foot, and water, the quality of the seams, the tread of the sole, the presence of small heels (up to 2 cm.), reliability of fittings, the presence of spurs and a reinforced back of the shoe; the material must be wear-resistant and withstand sufficiently large loads. Given the fact that it is not fashion trends that affect the shape of the toe-beam part of

equestrian footwear, but only the dimensions of the stirrup (its width and height, which have several sizes) for safety reasons, it is possible and necessary to develop a unified series of lasts of several widths in each gender and age group. This will allow the production of shoes (both for work in the stable and for competition) in different combinations of fullness of the feet and shafts, which will expand the range of choice of shoes for the rider, which is currently missing. Currently, imported footwear used in equestrian sports does not meet the required properties (there is no nationally produced professional footwear). For example, in winter, thermal boots are worn on the leg. It is known that, in winter, condensation forms in thermal boots, the foot is supercooled, and the rider quickly freezes; they get stuck in the stirrup. Athletes from hopelessness use this type of footwear, which was not originally developed for their needs. Also, existing shoe designs are inconvenient to use due to the method of fastening on the leg. Riders need thermal boots made of modern materials that do not differ in properties and fit from summer boots. Low shoes, and sometimes moccasins, given out as equestrian shoes, are also not specialized for these purposes. We also found that when a rider is on a horse, shoes in the ankle joint area have large folds that rub the rider's leg, so a detailed study of biomechanics was required. The study also uncovered other problems. The development and creation of a rational shoe design focused on the needs of the rider in practice will increase the safety of both him and the horse and improve the performance of the tandem.

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The effect of lubricant products on the performance of belt conveyor guide roller mechanisms

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Abstract. The article presents an analysis of theoretical studies on the effect of oil products on the mode of operation of roller mechanisms, which are a component of belt conveyors used in mining enterprises. Therefore, in order to increase the periodicity of roller mechanisms, the selection of oil products and their rational use, analyzed and introduced into production as a result of theoretical and experimental research, are of great importance today.

Keywords. conveyor, roller mechanism, rolling bearing, friction, deformation, moment of resistance, rotation frequency, temperature

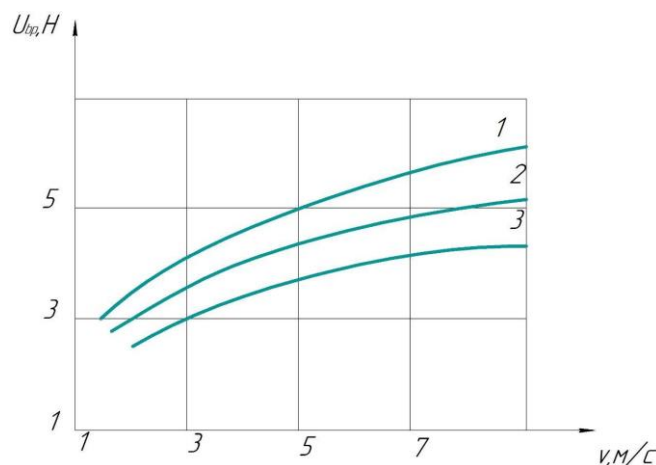
Today, it is of great importance to review the scientific research work on determining the resistance of the belt movement caused by the use of new types of lubricants used in the belt conveyor guide roller mechanisms of mining enterprises, which are used instead of roller bearings. In the past, large-scale scientific research works were carried out in our republic and foreign countries on the use of new types of lubricants used in belt conveyor guide roller mechanisms.

Various brands of lubricants are widely used for the internal surfaces of the belt element sliding bearings recommended for the belt conveyor guide roller mechanism. Despite all the advantages of the use and use of lubricants, based on the experience of using and operating mechanisms in various fields, it was found that the reliability and durability of the lubrication systems in relation to the components of the mechanism are insufficient as a result of the increase in temperature. This disadvantage is characterized by the characteristic properties of lubricants, the

structure of the structural grid, and the operational characteristics of lubricants. However, in order to understand the processes by which lubrication takes place, as well as the effect on the performance of the proposed belt element sliding bearing, the properties of the oil products will need to be considered in detail [1].

With the help of plastic lubricants, it is possible to simplify the design of the protective covers of the guide roller mechanisms, reduce the weight and size of the mechanisms, and increase the working time of the mechanism by using materials with plastic and component belt elements, in which it is required to fill or replace the plastic lubricant [2].

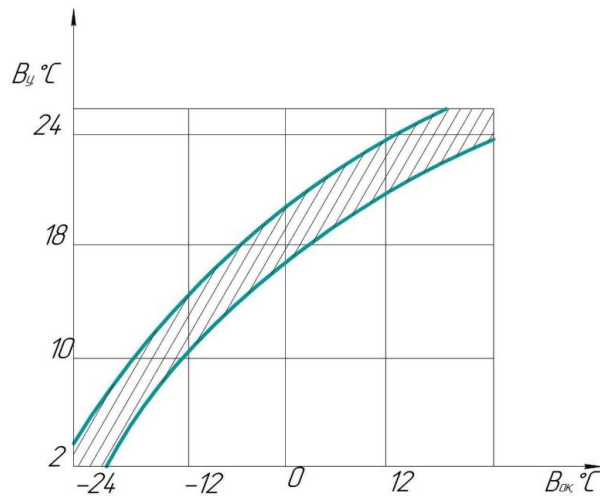
It is important to observe the influence of the degree of filling with lubricants on the trapezoidal grooves opened on the inner surface of the belt element sliding bearing, as well as the behavior of the protective cover details of the new design used in the guide roller mechanism. When the belt element sliding bearing is filled with 60% lubricant, the lubricant has no effect on the protective caps, because the lubricant only spreads along the inner surface of the axis and the part. Of course, this situation reduces the movement resistance of the belt conveyor (Fig. 1).



1 – Fig. The dependence of the resistance to the rotation of the guide roller mechanism on the supply of the inner surface of the sliding bearing with a belt element and the external rotation speed; 1, 2, 3 respectively 45, 30, 10%.

Depending on the operation of your guide roller mechanism, the temperature of the belt element sliding bearing will rise after some time. As the ambient

temperature Θ_{OX} decreases, the level of viscosity of lubricants increases, as a result, the temperature Θ_Y increases in the protective caps (Fig. 2).



2 – Fig. Temperature dependence of the protective covers on the operating area of the guide roller mechanisms based on the ambient temperature

Most of the previous scientific and research work was focused on the selection of lubricants for belt conveyors operating in northern conditions with an ambient temperature of + 40 to - 40 °C [3].

Therefore, the requirements for belt conveyor guide roller mechanisms and their lubricants are increasing. The reason for the increase in the coefficient of resistance to the rotation of the guide roller mechanisms is considered to be due to the quality of the lubricants, which requires research and development to create special lubricants. When the temperature changes within the limits indicated above, the belt conveyor guide roller mechanisms operate without significant changes in rolling resistance coefficients.

Typically, 30 to 50% of the total resistance to belt movement is the resistance to rotation of conveyor guide roller mechanisms. It is worth noting that the use of low-quality plastic lubricants can be one of the reasons for the appearance of distortion during the rotational movement of sliding bearings with a belt element.

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An overview of the implementation of artificial intelligence in the field of medicine

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Abstract: Artificial intelligence (AI) is a novel technical field that utilizes computer technology to explore and develop theories, methods, techniques, and application systems that simulate, extend, and enhance human intelligence. The integration of advanced AI technology has led to significant transformations in the conventional medical landscape. For instance, the accuracy of patient diagnoses based on radiological, pathological, endoscopic, ultrasonographic, and biochemical examinations has been greatly improved, while reducing the workload on medical professionals. The perioperative phase of medical treatments, encompassing preoperative preparations, the surgical procedure itself, and postoperative recovery, has witnessed remarkable advancements, resulting in improved surgical outcomes. Moreover, AI technology has assumed a pivotal role in medical drug production, medical management, and medical education, ushering them towards a new era. This review aims to introduce the various applications of AI in medicine and provide insights into future trends.

Keywords: artificial intelligence, medicine, application, overview

Introduction

Artificial intelligence (AI) is an emerging technical field that employs computer technology to explore and advance theories, methods, techniques, and application systems for simulating, extending, and expanding human intelligence. The concept of AI was initially introduced in 1950 by the renowned scientist Alan Turing, often referred to as the "father of artificial intelligence." Turing developed the "Turing test" and described AI as a concept similar to, but more intricate than, the human brain [1, 2]. In recent years, the progress of AI, particularly with the emergence of deep learning, a branch of computer learning algorithms that forms the core of a new generation of AI technology, has garnered immense interest. Deep learning enables automated learning from extensive data analysis and facilitates independent

decision-making based on acquired knowledge. Various neural networks such as deep belief networks, convolutional neural networks, and long- and short-term memory networks contribute to this domain [3]. Consequently, practical applications of artificial intelligence systems, such as the Internist-1 system [3], MYCIN system [4], CASNET system [5], and numerous databases and record systems [6], have witnessed a surge. AI has been extensively implemented across multiple fields, driving substantial technological advancements and giving rise to a new concept known as "AI plus." AI plus leverages the achievements and technology of AI, integrating them with traditional industries to foster new productivity, innovation, and development. Research in AI has demonstrated promising output-input ratios in the field of medicine compared to other disciplines [7]. The fusion of AI and medicine, often referred to as "AI plus medicine," revolutionizes the traditional medical model and has generated significant attention and anticipation for its potential and future prospects. Therefore, this paper aims to provide a comprehensive review of recent applications of AI plus medicine.

AI IN MEDICAL DIAGNOSIS

When a medical professional employs AI to aid in diagnosing a patient's illness or condition, it significantly reduces the time required for diagnosis and enhances diagnostic efficiency. Through the analysis of various clinical data, including radiology scans (such as X-rays, CT scans, and MRIs), pathology reports, endoscopic findings, ultrasound images, and biochemical tests pertaining to relevant indicators in the human body, AI can swiftly produce results and revolutionize the ineffective traditional medical approach that often fails to provide timely and accurate conclusions, particularly for complex diagnoses. Moreover, since AI can swiftly address these challenges, doctors can devise more thoughtful and rational treatment plans based on the patient's condition.

AI in Radiology

Radiology, as a scientific and intuitive foundation for medical diagnosis, plays a crucial role in diagnosing almost all diseases. However, there is a growing demand

for radiological diagnosis each year, while the training of medical professionals in the field of radiation medicine takes time and progresses slowly. This increasing gap between the supply and demand of medical doctors leads to high occupational pressure and a rise in misdiagnosis rates. Consequently, it is of practical importance to explore alternative solutions like AI to address this urgent situation. In recent years, AI has found numerous applications in radiological diagnosis.

For instance, Francesco discovered a new algorithm with high sensitivity through AI deep learning research, enabling early screening, rapid diagnosis, and grading of retinal diseases. This algorithm's effectiveness has been confirmed in other studies as well. Another example is the AI-aided diagnostic (CADx) system developed by Gong, which utilizes clinical CT data to classify malignant and benign lung nodules. Through analyzing a group of 243 patients with confirmed pulmonary nodules, Gong demonstrated the feasibility and practicality of the CADx system in accurately distinguishing the nature of lung nodules and aiding in early and subtle lung cancer diagnosis. Additionally, Gong's team combined quantitative imaging (QI) features based on AI technology and serum biomarkers to enhance the system's performance in classifying pulmonary nodules, achieving better results compared to using only serum biomarkers.

There is also a study conducted by Rodriguez-Ruiz that compared the performance of an AI system to that of radiologists in diagnosing breast cancer using X-ray images. Based on a total of 2,652 exams, the AI system's performance was statistically equivalent to that of clinical radiologists, indicating that the AI system reached an accuracy level comparable to expert radiologists in breast cancer diagnosis. Similarly, the integration of intelligent technology in breast cancer screening outperformed clinical radiologists, resulting in a lower misdiagnosis rate and an 88% reduction in workload. Moreover, the automatic preselect function provided by AI significantly alleviated the pressure on clinicians.

Furthermore, in the analysis of MRI data, AI algorithms have shown superiority over human observers, greatly improving the detection rate of subtle inflammation in early rheumatoid arthritis.

AI in Pathology

AI has found significant applications in the field of pathology, which serves as the foundation for diagnosing tumors and other lesions. Whole-slide imaging technology, facilitated by advancements in pathological scanning techniques and related software, has become a standard diagnostic approach in pathology. However, there are still challenges in automatically and rapidly analyzing pathological images to obtain accurate diagnoses, necessitating a timely solution. Scholars have recognized that AI represents the future of precision pathology and have proposed a new framework.

The application of AI in pathology has shown promising prospects as a diagnostic prediction tool. Through the augmentation of AI algorithms, processes such as pathological image segmentation, tumor identification, and metastasis determination have been enhanced, resulting in higher-quality work completed in a shorter time frame. Research indicates that in some cases, AI algorithms even outperform expert clinical pathologists in diagnosing based on pathological images. For instance, Hart has achieved exceptional accuracy in distinguishing between Spitz and conventional melanocytic lesions, two distinct pathological types, using a convolutional neural network. Similarly, Kosaraju proposed an innovative multi-task model that employs AI deep learning to simultaneously analyze multi-scale patch images in pathological analysis, demonstrating superior performance compared to other contemporary AI methods in evaluating well-, moderately, and poorly differentiated gastric cancer. Moreover, Coudray confirmed the high accuracy of a deep learning model in predicting six genetic mutations associated with cancer, aiding doctors in subtype and gene mutation detection in cancer diagnosis.

Furthermore, AI has been employed in the diagnosis of various conditions, including epithelial tumors, lung cancer, basal cell carcinoma, and glomerulosclerosis. These

advancements underscore the practicality of implementing AI technology in pathology.

AI technology has significantly advanced endoscopy detection, revolutionizing the traditional approach and enhancing efficiency. Experts believe that AI can effectively improve lesion detection, identify colorectal polyps, and diagnose gastric and esophageal cancer through endoscopy. Gulat and Emmanuel emphasize the immense potential of AI augmentation in endoscopy, stating that deep learning can substantially enhance the diagnosis of stomach and intestinal diseases, such as Barrett's esophagus, squamous carcinoma, and gastric cancer, by reducing detection time and improving diagnostic accuracy.

Furthermore, researchers have gathered a vast collection of clinical images obtained through endoscopy and utilized AI technology to develop a practical neural network algorithm for automated bowel lesion detection. The results demonstrate that endoscopy combined with this new AI algorithm achieves higher sensitivity and more accurate localization of bowel lesions compared to traditional approaches.

As more research confirms the feasibility of integrating AI with endoscopy for diagnosing and classifying various diseases, the future of this innovative technology appears promising.

Conclusion

AI technology represents a cutting-edge advancement that aligns with the progress of the modern era. It is a natural outcome of scientific and technological advancements, following the current trend of the times. Throughout history, there have been two major industrial revolutions—the steam revolution and the electrical revolution—that profoundly transformed human life and propelled human civilization forward. Now, in the era of the scientific and technological revolution, AI technology has emerged as an unstoppable force, growing rapidly and spreading like wildfire.

In the field of medicine, the integration of new AI technologies has brought about significant changes to the traditional medical landscape. Patient diagnoses utilizing

radiological, pathological, endoscopic, ultrasonographic, and biochemical examinations have experienced a remarkable improvement in accuracy and a reduction in the workload for medical professionals. The perioperative medical treatments, including preoperative preparation, surgical procedures, and postoperative recovery, have also witnessed substantial enhancements, resulting in better surgical outcomes. Moreover, AI technology has played a crucial role in medical drug production, medical management, and medical education, redirecting these areas towards new horizons.

The future of AI has arrived, and we firmly believe that this new revolution will be swift, propelling the field of medicine into an unprecedented era of possibilities and advancements.

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