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INCLUSIVE EDUCATION: ENSURING EQUAL LEARNING OPPORTUNITIES FOR ALL

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Abstract. Inclusive education has become a fundamental principle of modern educational systems worldwide. It aims to provide equal learning opportunities for all students regardless of their physical, intellectual, social, emotional, linguistic, or other differences. Inclusive education promotes diversity, equity, and participation while ensuring that every learner has access to quality education within mainstream educational settings. This paper examines the concept of inclusive education, its benefits, challenges, and strategies for effective implementation. The study highlights the importance of supportive policies, teacher training, and collaborative practices in creating inclusive learning environments. The findings suggest that inclusive education not only benefits students with special educational needs but also contributes to the development of more equitable and socially cohesive societies.

Keywords: Inclusive Education, Equal Opportunities, Special Educational Needs, Educational Equity, Diversity, Learning Environment

Education is recognized as a fundamental human right and a key factor in social and economic development. In recent decades, educational systems around the world have increasingly embraced the concept of inclusive education as a means of ensuring that all learners have equal access to quality education. Inclusive education seeks to eliminate barriers to learning and participation while promoting respect for diversity and individual differences.

Traditionally, students with disabilities or special educational needs were often educated in separate institutions or special classes. However, contemporary educational approaches emphasize the importance of integrating all learners into mainstream classrooms where they can learn and interact together. This shift reflects international commitments to human rights, social justice, and educational equality.

Inclusive education is not limited to students with disabilities. It also addresses the needs of learners from diverse cultural, linguistic, socioeconomic, and ethnic backgrounds. By fostering acceptance and participation, inclusive education contributes to the creation of democratic and equitable societies.

According to international educational frameworks, inclusion involves adapting teaching methods, learning materials, assessment practices, and school environments to accommodate the needs of all learners. Rather than expecting students to fit into existing educational structures, inclusive education requires schools to respond to the diverse needs of their students.

The philosophy of inclusion is based on the belief that every child has the right to participate fully in education and society. Therefore, schools should create supportive environments where all learners feel respected, valued, and capable of achieving their potential.

Inclusive education offers numerous benefits for students, teachers, schools, and society as a whole.

One of the primary advantages is the promotion of equal educational opportunities. Students with special educational needs can access the same curriculum and learning experiences as their peers, reducing educational inequality.

Inclusive classrooms also foster social development and mutual understanding. Students learn to respect differences, develop empathy, and build positive relationships with individuals from diverse backgrounds. These experiences contribute to the development of tolerance and social cohesion.

Furthermore, inclusive education helps prepare students for participation in diverse workplaces and communities. By learning together, students develop communication, cooperation, and problem-solving skills that are essential in modern societies.

Despite its advantages, implementing inclusive education can present significant challenges.

One major challenge is the lack of adequately trained teachers. Many educators may not possess sufficient knowledge or skills to address diverse learning needs effectively. Professional development programs are therefore essential for supporting inclusive teaching practices.

Limited resources and infrastructure also pose obstacles. Schools may lack specialized learning materials, assistive technologies, or accessible facilities necessary for supporting students with disabilities.

Large class sizes can make individualized instruction difficult, particularly in developing countries where educational resources are often limited. Teachers may struggle to provide sufficient attention to all learners while meeting curriculum requirements.

Addressing these challenges requires comprehensive policies, adequate funding, and strong collaboration among educators, families, policymakers, and support professionals.

Successful implementation of inclusive education requires a multifaceted approach.

First, governments should establish clear policies and legal frameworks that support educational inclusion and protect the rights of all learners. These policies should ensure access to quality education and provide necessary resources for schools.

Second, teacher training programs should incorporate inclusive pedagogical practices. Educators need skills in differentiated instruction, classroom management, and individualized support strategies to accommodate diverse learners effectively.

Parental involvement is another important factor. Families should be actively engaged in educational planning and decision-making processes. Strong partnerships between schools and families contribute to better educational outcomes for students.

Finally, assistive technologies can play a crucial role in supporting inclusion. Digital tools, screen readers, speech recognition software, and adaptive learning platforms help students overcome barriers and participate more fully in educational activities.

The rapid advancement of digital technologies has created new opportunities for inclusive education. Online learning platforms, educational applications, and artificial intelligence tools can support personalized learning experiences tailored to individual student needs.

Technology enables greater accessibility for learners with disabilities through features such as text-to-speech functions, captioning services, and interactive educational resources. These innovations help reduce barriers to learning and improve educational participation.

However, the digital divide remains a concern. Unequal access to technology and internet connectivity may limit the effectiveness of digital inclusion initiatives. Therefore, efforts to promote inclusive education must also address issues of digital equity.

Inclusive education represents a transformative approach to teaching and learning that promotes equality, diversity, and social justice. By ensuring that all learners have access to quality education within supportive and welcoming environments, inclusive education contributes to individual development and societal progress.

Although challenges such as limited resources, insufficient teacher training, and negative attitudes persist, these obstacles can be addressed through effective policies, professional development, community engagement, and technological innovation.

As educational systems continue to evolve, inclusive education will remain essential for achieving the goal of equitable and high-quality education for all. By embracing inclusion, societies can create learning environments that respect diversity, foster participation, and empower every learner to reach their full potential.

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11.

CLINICAL AND LABORATORY FEATURES OF NEPHROPATHY DEVELOPMENT IN INDIVIDUALS WITH OVERWEIGHT AND OBESITY

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Relevance. Overweight and obesity are considered important risk factors for the development of renal damage. Increased body weight contributes to insulin resistance, arterial hypertension, dyslipidemia, chronic inflammation, and glomerular hyperfiltration. As a result, microalbuminuria, decreased filtration capacity, and signs of nephropathy develop in the kidneys. Therefore, early laboratory assessment of renal function in individuals with overweight and obesity has significant scientific and practical importance.

Aim of the study. To study the clinical and laboratory features of nephropathy development in individuals with overweight and obesity and to identify early markers of renal damage.

Materials and methods. A total of 170 individuals were included in the study. Of these, 140 patients had overweight or obesity, while 30 practically healthy individuals constituted the control group. The main group was assessed according to body mass index and included individuals with overweight, grade I obesity, and grade II obesity. In all examined subjects, body mass index, waist circumference, blood pressure, creatinine, urea, cystatin C, microalbuminuria, albumin/creatinine ratio, and estimated glomerular filtration rate (eGFR) were determined.

Study results. According to the examination results, the mean body mass index was 32.7±3.4 kg/m² in the main group and 23.1±1.9 kg/m² in the control group. Waist circumference was 104.6±8.3 cm in the main group and 78.4±5.6 cm in the control group. Analysis of renal function indicators showed that serum creatinine was 98.4±12.7 µmol/L in the main group and 73.2±6.8 µmol/L in the control group. Urea levels were 6.8±1.1 mmol/L and 4.5±0.6 mmol/L, respectively.

The eGFR was 76.9±9.8 mL/min/1.73 m² in the main group and 107.4±8.7 mL/min/1.73 m² in the control group, indicating reduced renal filtration function in patients with overweight and obesity.

Microalbuminuria was 68.7±16.4 mg/L in the main group and 9.4±2.6 mg/L in the control group. The albumin/creatinine ratio was 38.5±8.9 mg/g in the main group and 6.2±1.7 mg/g in the control group. Microalbuminuria was detected in 64.3% of patients in the main group and in 6.7% of individuals in the control group.

The cystatin C level was 1.28±0.21 mg per L in the main group and 0.73±0.08 mg per L in the control group. This indicator was evaluated as an important laboratory marker for the early detection of renal damage in individuals with overweight and obesity.

Main clinical and laboratory indicators

Indicator	Main group, n=140	Control group, n=30	p
BMI, kg/m²	32.7±3.4	23.1±1.9	<0.001
Waist circumference, cm	104.6±8.3	78.4±5.6	<0.001
Creatinine, µmol/L	98.4±12.7	73.2±6.8	<0.001
eGFR, mL/min/1.73 m²	76.9±9.8	107.4±8.7	<0.001
Microalbuminuria, mg/L	68.7±16.4	9.4±2.6	<0.001

Albumin/creatinine ratio, mg/g	38.5±8.9	6.2±1.7	<0.001
Cystatin C, mg/L	1.28±0.21	0.73±0.08	<0.001

Conclusion. The development of nephropathy in individuals with overweight and obesity is associated with body mass index, abdominal obesity, arterial hypertension, and metabolic disorders. In the main group, increased levels of microalbuminuria, albumin/creatinine ratio, and cystatin C, together with decreased eGFR, indicate early laboratory signs of renal damage. Therefore, for early detection of nephropathy in patients with overweight and obesity, it is advisable to assess microalbuminuria, albumin/creatinine ratio, cystatin C, and eGFR in combination with creatinine and urea.

Keywords: overweight, obesity, nephropathy, microalbuminuria, cystatin C, eGFR, albumin/creatinine ratio.

INGLIZ VA O'ZBEK TILLARIDAGI TARIXIY SO'ZLARNING ETIMOLOGIK TAHLILI

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Annotatsiya. *Mazkur maqolada ingliz va o‘zbek tillarida tarixiy o‘tmishga oid so‘zlarning etimologik shakllanishi, ularning semantik taraqqiyoti va madaniy-kontekstual belgilari lingvistik yondashuv asosida qiyosiy tahlil qilinadi. Tadqiqotda tarixiy leksik birliklarning ilk manbalari, ularning tipologik o‘xshashliklari va funktsional tafovutlari diaxron aspektda ko‘rib chiqiladi. E’tibor, ayniqsa, tarixiy-diskursiv sohalarda qo‘llanilgan, xalq xotirasida saqlanib qolgan va zamonaviy til tizimiga semantik transformatsiya yo‘li bilan kirib kelgan birliklarga qaratiladi. Ushbu maqola tarixiy semantika, etimologik izlanish va milliy-lingvokulturologik omillar uyg‘unligidagi holatlarni lingvistik tafakkur nuqtai nazaridan yoritadi.*

Kalit so‘zlar: *etimologiya, tarixiy leksika, semantik taraqqiyot, diaxron tahlil, lingvokultura, tarixiy-diskursiv birliklar, qiyosiy tilshunoslik*

Annotation. *This article presents a comparative linguistic investigation of historical vocabulary in English and Uzbek, focusing on their etymological evolution, semantic development, and cultural-contextual characteristics. It examines the diachronic trajectories of historically rooted lexical items, highlighting their typological correspondences and functional divergences. Special attention is given to lexemes preserved in national memory and reintegrated into modern language through semantic transformation. The paper explores the interplay of historical semantics, etymological inquiry, and ethnolinguistic identity from a cognitive-linguistic perspective.*

Keywords: *etymology, historical lexicon, semantic development, diachronic analysis, linguo-culture, historical discourse units, comparative linguistics*

Tarixiy leksika — tilning eng qatlamli va arxaik qatlami bo‘lib, u milliy tafakkur, sivilizatsiyaviy jarayon va madaniy kodning lingvistik aksidir. Har bir tilning tarixiy o‘tmishga oid so‘z boyligi bu xalqning tarixiy tajribasi, ijtimoiy-siyosiy tizimi va mintaqaviy identifikatsiyasining lingvistik ifodasidir. Ingliz va o‘zbek tillaridagi bunday birliklarning etimologik o‘rganilishi ularning genealogik manbalarini,

semantik evolyutsiyasini hamda lingvokulturologik intertekstual jihatlarini aniqlashga xizmat qiladi. Ushbu maqola ikki tilga oid tarixiy leksik birliklarning shakllanish mexanizmlari, semantik transformatsiyalari va madaniy-diskursiv konnotatsiyalarini diaxron yondashuv asosida tahlil qilishni maqsad qiladi. Tadqiqot davomida tarixiy so‘zlarning o‘zaro tipologik mosligi va semantik tafovutlari lingvistik sistemadagi muvozanat va o‘ziga xoslik mezonlari orqali izohlanadi.

Tarixiy leksika va uning etimologik tahlili bo‘yicha olib borilgan ilmiy tadqiqotlar tilshunoslikda asosiy metodologik yondashuvlar — diaxron tahlil, genealogik klassifikatsiya va semantik transformatsiyalar asosida shakllangan. Ingliz tilshunosligida Walter W. Skeat ilk etimologik lug‘atlar asoschisi sifatida tan olinadi; uning “An Etymological Dictionary of the English Language” asari tarixiy so‘zlarning fonetik va morfologik qatlamlarini o‘rganishda fundamental ahamiyatga ega [1:]. Eric Partridge tomonidan yaratilgan “Origins: A Short Etymological Dictionary of Modern English” esa zamonaviy leksik birliklarning qadimgi ildizlariga doir chuqur konsepsiyalarni taklif qiladi [2].

O‘zbek tilshunosligida esa tarixiy lug‘at qatlamlarini etimologik nuqtai nazardan izchil o‘rgangan olimlardan biri — Sh. Rahmatullaev bo‘lib, u o‘zining “O‘zbek tilining izohli lug‘ati” va boshqa tadqiqotlarida turkiy ildizlarning qatlamlanishi, semantik o‘zgarishlari va tarixiy-metaforik kengayishlari haqida ilmiy asoslangan tahlillar bergan [3]. A. Madvaliev esa o‘zbek tilining qadimgi leksik tizimida arabcha va forscha kelib chiqishga ega tarixiy so‘zlarning fonetik-morfologik integratsiyasini tahlil qiladi [4]. N. Mahmudov til sistemasi taraqqiyotida tarixiy qatlamlarning diskursiv funktsiyasiga e’tibor qaratadi hamda bunday birliklarning zamonaviy o‘zbek tilidagi semantik moslashuvini yoritadi [5:34-39].

Tilshunos olima T. G‘aniyeva esa o‘zining qator ilmiy maqolalarida tarixiy-religioz va sivilizatsion mazmunni ifodalovchi birliklarning so‘z yaratuvchanlik salohiyatini ochib beradi [6: 45-50]. Ingliz va o‘zbek tilshunosligida bu yo‘nalishdagi izlanishlar umumiylik va o‘ziga xoslik mezonlari orqali tahlil etilmoqda.

“Tarixiy leksika” – tushunchasiga olimlar turlicha fikr bildirib o‘tganlar. Jumladan: Sh. Rahmatullayev *“O‘zbek tilining izohli lug‘ati”*da *“Tarixiy leksika tilning eng qadimiy qatlamidir. Bu qatlam o‘zida xalqning o‘tgan hayot tarzini, tarixiy tafakkurini va ijtimoiy ongini lingvistik shaklda mujassam etadi”* deya ta’rif bergan bo‘lsa [3: 31], A. Mavdaliyev *“O‘zbek tilining tarixiy leksik qatlamlari”* nomli asarida *“tarixiy leksik qatlam — bu tilning o‘zlashgan, mahalliylashgan, biroq tarixiy muhitda faol bo‘lgan birliklar jamlanmasidir. Ular orqali til va tarix o‘zaro kesishadi”* izoh bergan [4: 78]. Ingliz olimi E. Sapirning fikricha “historical words” – “*Historical words are more than*

linguistic forms; they are verbal fossils carrying the sediment of civilization [Tarixiy so‘zlar shunchaki lingvistik birliklar emas; ular o‘zida butun bir sivilizatsiyaning madaniy qatlamlarini mujassam etgan og‘zaki yodgorliklardir]” [7: 231], E. Partridge esa *“The etymological survival of historical vocabulary is a window into the collective consciousness of a people across centuries [Tarixiy so‘zlarning etimologik saqlanishi xalqlarning asrlar davomida shakllangan umumiy ongiga olib boruvchi ramziy bir oynadir]”* deb ta’riflaganlar [2: 56].

Izlanishlarimiz natijasida bir qator ingliz va o‘zbek tillaridagi tarixiy so‘zlarning etimologik kelib chiqishi va hozir kunda nutqda faol ishlatilishi yoki ishlatilmasligiga ko’ra tasnifladik. Quyida uning jadval ko’rinishidagi shaklini ko‘rishingiz mumkin:

Ingliz tilidagi tarixiy so‘zlarning etimologik kelib chiqishi		
Tarixiy so‘zlar	**Etimologik kelib chiqishi**	**Nutqda faolligi**
Thane	Old English *þegn* (“servant, warrior”)	Obsolete (used in historical texts)
Yeoman	Middle English, from Old English *geong man* (“young man”)	Rare (used in literary/historic contexts)
Serf	Latin *servus* (“slave”) via Old French *serf*	Obsolete (only in historical discourse)
Chivalry	Old French *chevalerie* (“horsemanship, knightliness”)	Rare, symbolic use (e.g., “act of chivalry”)
Manor	Anglo-Norman maner, from Latin manere (“to stay”)	Limited use (in legal/property terms)
Knight	Old English cniht (“boy, servant”)	Still used (symbolic or historic)
Fealty	Latin fidelitas (“faithfulness”) via Old French	Archaic (used poetically or legally)
Herald	Old French herault, from Frankish hariwald (“army ruler”)	Rare, formal use (e.g., royal herald)
Vassal	Medieval Latin vassalus (“servant”)	Obsolete, found in academic writing
Squire	Old French escuyer (“shield-bearer”)	Obsolete, now ironic or figurative
O‘zbek tilidagi tarixiy so‘zlarning etimologik kelib chiqishi		

Amir	Arabcha amir (“buyuruvchi, boshliq”)	Faol (ism sifatida, tarixiy kontekstda)
Xon	Turkiy, mo‘g‘ulcha qan/khan (“hukmdor”)	Faol (tarixiy, kinoyaviy ma’noda)
Bek	Turkiy beg (“boshliq, zodagon”)	Faol (ism va tarixiy matnlarda)
Mirza	Forscha mir + za (“amir o‘g‘li”)	Passiv (asosan badiiy adabiyotda)
Bahodir	Turkiy batu+dur (“jasur, qahramon”)	Faol (ism sifatida, qahramon obrazida)
Sulton	Arabcha sulṭān (“hokimiyat egasi”)	Faol (ism, tarixiy matnlarda)
Sipoh	Forscha sepāh (“askar, qo‘shin”)	Passiv (tarixiy kontekstlarda)
Dorilfunun	Arabcha dar al-funun (“fanlar uyi/universitet”)	Passiv (tarixiy matnlarda)
Lashkar	Forscha lashkar (“armiya, harbiy kuch”)	Passiv (faqat tarixiy adabiyotda)
Muzaffar	Arabcha muẓaffar (“g‘olib, zafar topgan”)	Faol (ism sifatida, tarixiy ramzda)

Yuqoridagi tahlil ingliz va o‘zbek tillaridagi tarixiy so‘zlarning etimologik shakllanishi bilan bir qatorda, ularning zamonaviy til tizimidagi funktsional maqomini aniqlashtirishga xizmat qiladi. Ingliz tilida bu kabi birliklarning aksariyati obsolescent ya’ni faol nutqdan chekinib, faqat tarixiy yoki badiiy kontekstlarda saqlanib qolgan bo‘lsa, o‘zbek tilidagi tarixiy so‘zlarning muayyan qismi hozirgi kunda ismlar, ramzlar yoki ideologik birliklar sifatida faol ishlatilishda davom etmoqda. Bu esa o‘zbek tilidagi tarixiy leksikaning semantik reaktualizatsiyasi hamda lingvokulturologik barqarorligini ko‘rsatadi.

Xulosa qilib shuni aytamizki, ingliz va o‘zbek tillaridagi tarixiy so‘zlarning etimologik tahlili shuni ko‘rsatadiki, bu leksik qatlam til taraqqiyotining diaxron bosqichlarida nafaqat lingvistik tizimning bir bo‘lagi, balki xalqning tarixiy xotirasi va madaniy identitetining verbal ifodasi sifatida shakllangan. Tarixiy birliklarning semantik transformatsiyasi, ularning aktiv yoki passiv holatda saqlanishi tilning kognitiv va pragmatik darajalaridagi uzviylikni namoyon etadi. Ayniqsa, o‘zbek tilida tarixiy so‘zlarning zamonaviy nutqda turli uslubiy va ramziy shakllarda saqlanib qolishi milliy ongning lingvistik barqarorligini ifodalaydi. Shunday qilib, tarixiy leksika – bu faqat til tarixi emas, balki til orqali xalq tarixining o‘zidir.

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QADIMGI XITOYDA SIYOSIY MADANIYATGA DOIR QARASHLAR RIVOJI

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Annotatsiya

Mazkur maqolada qadimgi Xitoyda siyosiy madaniyatga doir qarashlarning shakllanishi va rivojlanishi tahlil qilingan. Konfutsiychilik, daosizm va legizm ta'limotlarining davlat boshqaruvi, siyosiy tartib va jamiyat hayotiga ta'siri yoritilgan. Shuningdek, qadimgi Xitoy mutafakkirlarining siyosiy madaniyat rivojiga qo'shgan hissasi ilmiy jihatdan baholangan.

Kalit so'zlar: qadimgi Xitoy, siyosiy madaniyat, konfutsiychilik, daosizm, legizm, davlat boshqaruvi, siyosiy tafakkur, Konfutsiy.

Аннотация

В данной статье анализируются формирование и развитие взглядов на политическую культуру в Древнем Китае. Освещается влияние учений конфуцианства, даосизма и легизма на государственное управление, политический порядок и общественную жизнь. Также даётся научная оценка вклада древнекитайских мыслителей в развитие политической культуры.

Ключевые слова: Древний Китай, политическая культура, конфуцианство, даосизм, легизм, государственное управление, политическая мысль, Конфуций.

Abstract

This article analyzes the formation and development of views on political culture in Ancient China. It examines the influence of Confucianism, Taoism, and Legalism on state governance, political order, and social life. The contribution of ancient Chinese thinkers to the development of political culture is also scientifically assessed.

Keywords: Ancient China, political culture, Confucianism, Taoism, Legalism, state governance, political thought, Confucius.

Qadimgi Xitoyda siyosiy madaniyatga oid qarashlar miloddan avvalgi VI–III asrlarda shakllanib, mamlakatning ijtimoiy-siyosiy hayotida muhim o'rin egallagan. Bu davrda davlat boshqaruvi, hokimiyatning mohiyati, jamiyatdagi tartib va insonning siyosiy

xulq-atvori haqida turli falsafiy ta’limotlar vujudga kelgan. Ayniqsa, konfutsiychilik, daosizm va legizm maktablari siyosiy madaniyat rivojiga katta ta’sir ko‘rsatgan.

Konfutsiy (mil.avv. 551–479) ta’limotida siyosiy madaniyatning asosi axloqiy fazilatlar va adolatli boshqaruv deb qaralgan. Unga ko‘ra, hukmdor xalq uchun namuna bo‘lishi, davlatni qonunlardan ko‘ra ko‘proq ma’naviy qadriyatlar va odob-axloq tamoyillari asosida boshqarishi lozim. Konfutsiy fuqarolarning hokimiyatga hurmat bilan munosabatda bo‘lishi va jamiyatda uyg‘unlikni saqlash g‘oyasini ilgari surgan.

Daosizm asoschisi Lao Szi esa siyosiy hayotda tabiiylik va aralashuvning minimal darajada bo‘lishini targ‘ib qilgan. Uning fikricha, davlat boshqaruvi xalqning tabiiy hayotiga ortiqcha aralashmasligi kerak. Shundagina jamiyatda barqarorlik va osoyishtalik ta’minlanadi.

Legizm vakillari, xususan Shan Yan va Han Fey, kuchli markazlashgan davlat va qat’iy qonunlar tarafdori bo‘lganlar. Ular siyosiy tartibni saqlashning asosiy vositasi sifatida qonun va jazoni ko‘rganlar. Legizm g‘oyalari keyinchalik Xitoy imperiyasining markazlashgan boshqaruv tizimini shakllantirishda muhim ahamiyat kasb etgan.

Konfutsiychilikka murojaat qilmasdan Sharqiy Osiyoda misli ko‘rilmagan, jadal iqtisodiy rivojlanishni tushuntirib bo‘lmaydi. Konfutsiy ta’limoti axloqiy-siyosiy xarakterga ega bo‘lib, unda marosim odob-axloqi asos bo‘lgan, ya’ni turli marosimlarni bajarish jarayonida odamga ongsiz darajada singdirilgan bunday xulq-atvor qoidalari tizimi. Rituallashtirilgan odob-axloq qoidalari hissiy sohani tartibga solgan, u ma’lum bir vaziyatda odam o‘zini qanday tutishi kerakligi haqida gapirgan. Uningcha davlatni to‘g‘ri tartibli rivojida har bir narsa o‘z o‘rnida bo‘lishi, ota ota bo‘lishi , farzand farzand o‘rnida bo‘lishiga ishora qilingan. Uning fikricha, hayotda har bir ish axloqdan kelib chiqib, amalga oshirilishi lozim. Axloqdan boshqa narsalarga tayangan holda amalga oshirilganida, adolat qaror topmaydi. Adolatning yuzaga chiqishiga to‘sqinlik qiluvchi yana bir muhim omil bu–manfaatdir. Konfutsiy adolat va manfaat mavzusini shunday hukmga bog‘laydi: “Komil inson adolatni, pastkash esa manfaatni o‘ylaydi”. Konfutsiyga bu davlatda axloq yordamida muayyan munosabatlar tizimini qurish uchun kerak edi. Konfutsiyning so‘zlariga ko‘ra, davlat do‘stona oila kabi bo‘lishi kerak edi, bu yerda imperator ota sifatida ishlaydi. U do‘stlikni foydali va zararli shaklida ikki qismga ajratadi: “Rostgo‘y, samimiy va tushunchali do‘st foydali. Ikkiyuzlamachi, ko‘p gapiruvchi va subutsiz do‘st esa zararlidir.” Konfutsiyga: “Bir mamlakatga uni boshqarish uchun chaqirilganingizda birinchi bo‘lib qilgan ishingiz nima bo‘lar edi?” deb so‘rashganida shunday javob bergan: “Birinchi bo‘lib tilni tuzatar edim. Til to‘g‘ri bo‘lmasa, so‘zlar tushunchalarni yaxshi ifodalay olmaydi. Tushunchalar yaxshi tushunilmasa, qilinishi kerak bo‘lgan ishlar yaxshi amalga

oshmaydi. Kerakli ishlar amalga oshirilmas ekan, axloq va madaniyat buziladi. Axloq va madaniyat buzilganida, adolatdan uzoqlashiladi. Adolatdan uzoqlashilganda esa xalq zaiflik va sarxushlik ichida qoladi va nima qilishini bilmay qoladi.

Shu sababli har bir aytiluvchi so‘z to‘g‘ri va tushunarli bo‘lishi kerak. Hech bir narsa tilchalik ahamiyatga ega emas”[1]. Konfutsiylikning axloqiy jihati, boshqa jihatlardan yanada ko‘proq ahamiyat kasb etadi. Bu ta’limot hukmdorlar uchun boshqaruv san’ati, mansabdorlar uchun siyosiy bir axloq, xalq uchun esa biron bir urf-odatga bog‘liqlik ko‘rinishidadir. Konfutsiylik tufayli xitoyliklarning idrokini o‘zgartirgan mustahkam, qobiliyatli axloqiy tizim yaratildi. Konfutsiylik ijobiy rol o‘ynadi, chunki bu ta’limotning tarqalishi qonunchilikka asoslangan qattiq totalitar tuzumdan qochishga imkon berdi. Qisqa vaqt ichida o‘rta Qirollikda tartib o‘rnatildi va tez orada Xitoy madaniyati inqiroz holatidan farovonlik holatiga o‘tdi. Konfutsiy shu o‘rinda madaniyat va tushunchalar tarixi jihatidan juda muhim bo‘lgan so‘zini aytadi: “Shogirdlarim! Esingizda bo‘lsin. Zolim hukumat vahshiy hayvondan ham battardir”[2]. Biroq, Konfutsiylikning kamchiliklari bor. Konfutsiy ta’limoti Xitoy jamiyatini shaxsiyat haqida gapirish imkoniyatidan deyarli mahrum qildi. Konfutsiy tizimida “fuqaro”, “oila a’zosi”, “nisbiy” tushunchalari mavjud, ammo shaxs tushunchasi yo‘q. Bundan tashqari, ijtimoiy sinf ovoz berishi keskin kamaygan bir paytda rivojlangan sanoat jamiyatlarida din va “postmateratistik” qadriyatlar nafaqat saylovlarga ta’sir etuvchi, balki tobora kuchayib borayotgan ta’sirga ega bo‘ldi. Ushbu ijtimoiy hodisalarning barchasini siyosiy madaniyat nuqtai nazaridan tushuntirish zarurati paydo bo‘ldi va siyosiy madaniyat tadqiqotchilari ularga yangi texnik va empirik imkoniyatlar yordamida turli xil nuqtai nazardan javob berishdi.

Darhaqiqat, hozirgi kunga qadar siyosiy madaniyat yondashuvi demokratlashtirish, mamlakatda demokratiyaning barqarorligi, iqtisodiy rivojlanish, millatlar va xalqlar o‘rtasidagi nizolar, inson taraqqiyoti va boshqalar kabi turli makroiqtisodiy hamda siyosiy hodisalar bilan madaniy bog‘liqlikka qaratilgan edi, ammo shaxsning siyosiy psixologiyasining madaniy oqibatlari asosan e’tibordan chetda qoldi.

Yuqoridagilardan kelib chiqib, siyosiy madaniyatni tadqiq etishning quyidagi yondashuvlarini ajratib ko‘rsatish mumkin.

1. Antik davr yondashuvi – Aristotel, Platon kabilarning qarashlarini kiritish mumkin.
2. G‘arb klassik yondashuvi – Jan-Jak Russo, Monteskьyo, Volter, Gerder kabilarning qarashlarini kiritish mumkin.

[1] Динларни таниш ва динлар тарихи/ Али Шариатий/ Анқара-1996, 149-бет
[2] Динларни таниш ва динлар тарихи/ Али Шариатий/ Анқара-1996, 159-бет

3. Sharq klassik yondashuvi – Yusuf Xos Hojib, Abu Nasr Forobiy, Nizomulmulk, A.Navoiy kabilarning qarashlarini kiritish mumkin.
4. G‘arb zamonaviy yondashuvi – Almond, Verba, Gegel, Fayner, Xantington kabilarning qarashlarini kiritish mumkin.
5. Rus maktabi yondashuvi – S. N. Gavrov, G.L.Tulchinskiy, A.I.Solovyev, Ye.V.Fedorova, P.A.Sigankov, N.A.Baranov kabilarning qarashlarini kiritish mumkin.
Ushbu yondashuvlarga o‘zbek milliy olimlarining qarashlarini ham alohida kiritib o‘tish lozim. Jumladan, siyosiy madaniyatni tadqiq etgan olimlarimizdan N.Jo‘rayev, I.Ergashev, U.Idirov, B.To‘ychiyev, M.Qirg‘izboyev, V.Qo‘chqorov, T.Alimardonov, O.Sirojov, N.Qalqonov, N.Umarova kabilarning tadqiqotlari ahamiyatli.
Ushbu yondashuvlarning barchasini umumlashtirgan asosiy jihat shundaki, har bir nazariyotchi siyosiy madaniyatni tadqiq etishda avvalo, fuqarolarning siyosiy ongi va siyosiy bilimi hamda ularning qadriyatlari bilan bog‘laydi. Shu jihatdan kelib chiqib, siyosiy madaniyatning o‘ziga xos jihatini uning mamlakat ijtimoiy-siyosiy transformatsiyasi jarayonlarida aholining unga tayyorligi va bu jarayonlarni qabul qilishi, ishtirok etishini anglatishidadir.

FUNCTIONAL CAPABILITIES OF THE "EDUCATIONAL PROCESS" SECTION WITHIN THE DISTANCE EDUCATION MANAGEMENT INFORMATION SYSTEM

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Abstract: This paper explores the administrative workflows, management processes, and practical deployment of distance learning technologies through specialized information systems. Specifically, it analyzes the key functional attributes of core system modules that ensure a seamless and high-performing learning environment.
Keywords: Distance education information system management, educational processes, curriculums.

Introduction

In the contemporary era, opportunities for acquiring education are expanding exponentially. In particular, pursuing higher education through distance learning formats has become highly favorable for a vast portion of learners, as it enables individuals to earn a university degree without interrupting their professional careers. To ensure that students can seamlessly access course content, navigate academic semesters, and utilize structural learning materials on a distance education platform, it is paramount that the functional capabilities of the "Educational Process" section within the distance education management information system are robust, highly efficient, and comprehensively developed.

Functional Architecture of the "Educational Process" Section

The "Educational Process" section serves as the backbone for managing distance learning workflows. To ensure precise control, systematic planning, and continuous academic monitoring, this section is structurally architected into 11 distinct functional sub-sections:

1. Curriculum
2. Students Assigned to Curriculum
3. Syllabus / Academic Program
4. Academic Years
5. Semesters
6. Subject Groups

7. Subjects / Courses
8. Grading / Assessment System
9. Grade Sheet / Statement
10. Final Grade Sheet
11. Monitoring / Academic Controls

These integrated sub-sections encapsulate all the vital features and technical parameters required for the effective management, comprehensive scheduling, and real-time monitoring of the entire remote educational cycle (Figure 1).

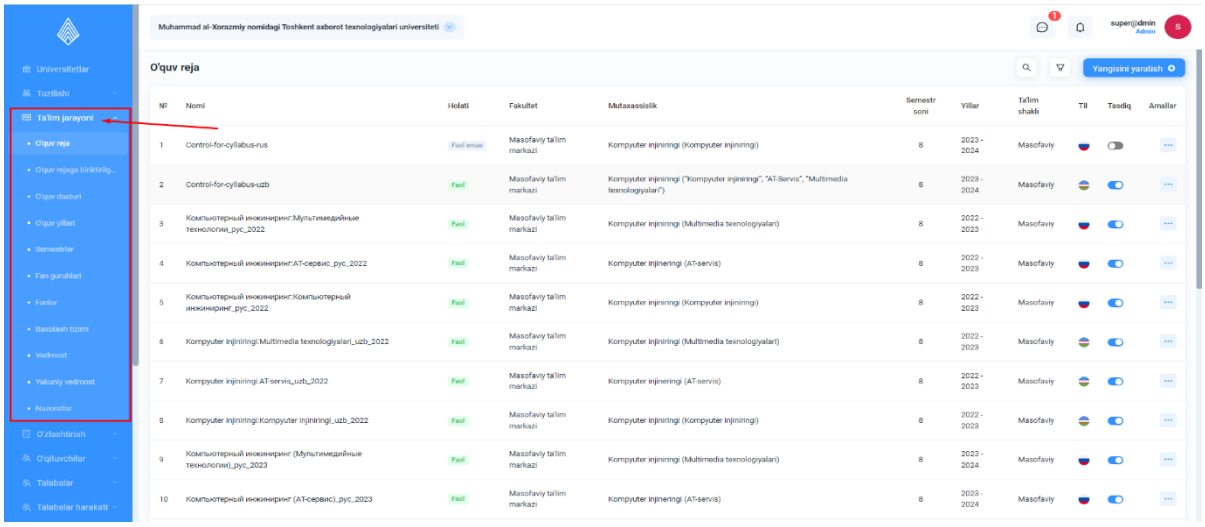


Figure 1. The "Educational Process" section of the distance education management information system

Curriculum – In this section, each subject is systematically assigned and mapped to the overall curriculum framework. The credit hours and total allocated academic/ECTS hours are strictly defined, adjusted, and finalized for every course. This module encompasses 3 main functional capabilities:

- Search
- Filter
- Create New

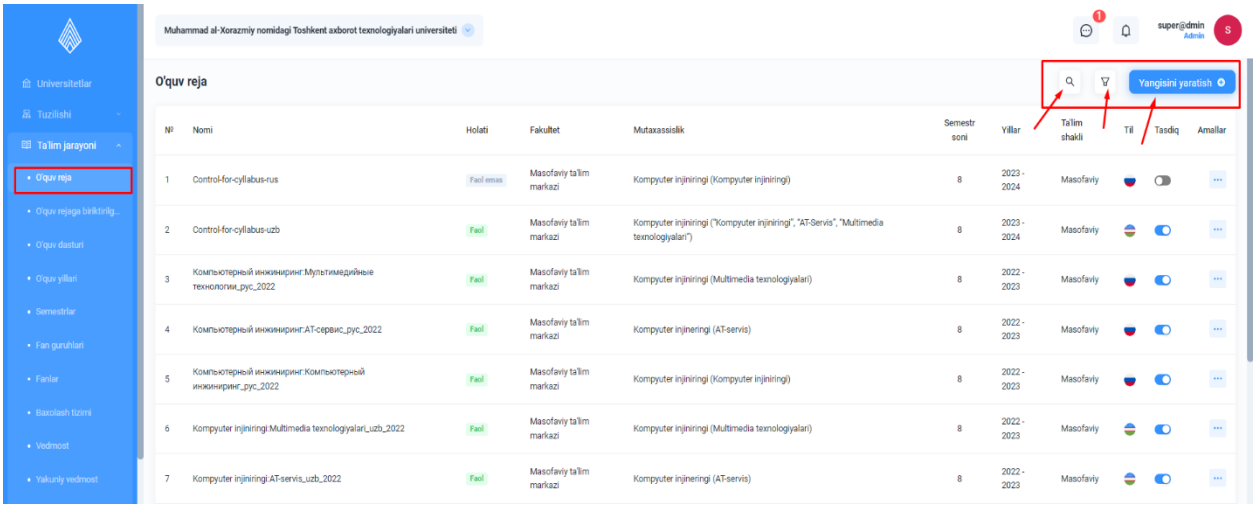


Figure 2. Curriculum module and its associated functions

Students Assigned to Curriculum – In this section, students are formally assigned and mapped to their respective curriculum pathways at the beginning of each academic semester. This module is segmented into 6 core functions and navigation options:

- Select Academic Year
- Select Study Program
- Select Semester
- Select Student Group
- Assign to Curriculum
- Transfer / Move

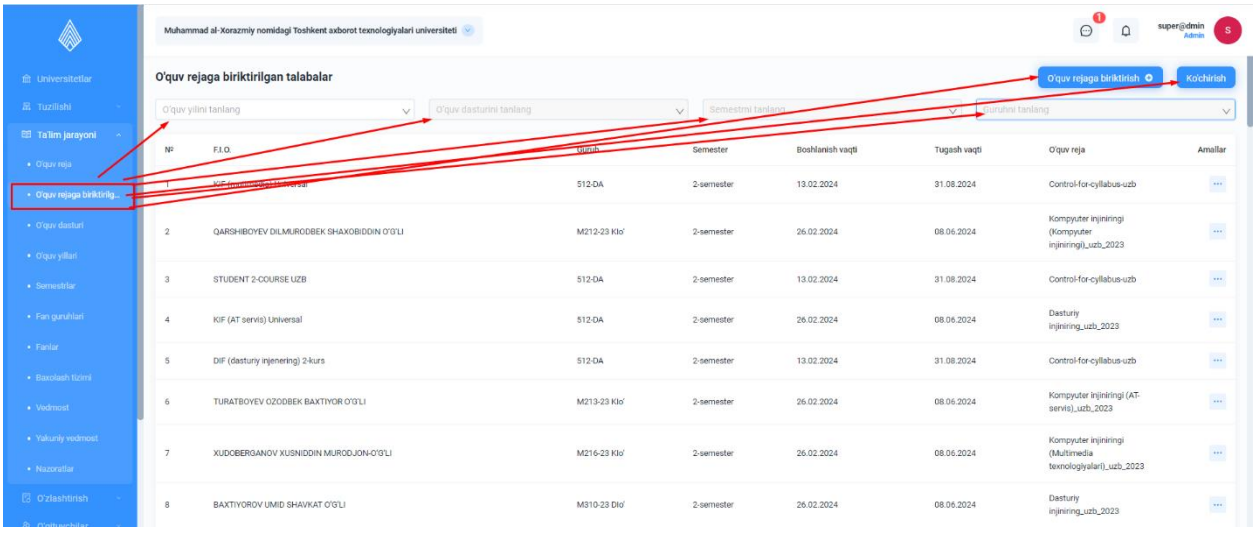


Figure 3. Module for assigning students to specific curriculums

This section plays an indispensable role in maintaining systematic administrative control over the students' learning pathways, establishing accurate course enrollment mappings, and monitoring real-time academic progression.

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TOPIC: THE ROLE OF NATIONAL CUSTOMS AND TRADITIONS IN THE ETHNOGRAPHIC CHARACTERISTICS OF THE PEOPLE OF BUKHARA

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Abstract. *The role of national customs and traditions in the formation of the ethnographic characteristics of the people of Bukhara is analyzed based on historical and ethnographic sources. The study highlights the importance of family ceremonies, folk festivals, national values, and daily lifestyle in the life of society. The specific features of the ethnocultural life of the population living in the Bukhara oasis are revealed.*
Keywords: *Ethnography, national values, customs, Bukhara oasis, ethnoculture, family ceremonies, folk traditions.*

Relevance of the topic. The relevance of the topic "The role of national customs and traditions in the ethnographic characteristics of the people of Bukhara" is determined by the necessity of preserving and studying national cultural values in the context of today's globalization and modernization processes.

First of all, under the influence of globalization, changes are being observed in lifestyle, cultural views, and social relations. As a result of these processes, the reduction or transformation of some traditional customs necessitates the scientific study of the ethnocultural uniqueness of the people of Bukhara.

Bukhara has long been a region with a rich history and culture, and the customs and traditions formed here reflect the social life, family relations, and spiritual values of the people. Their study is important for understanding national identity and preserving historical heritage.

Today, the need to educate the younger generation in the spirit of national values and teach them to respect traditional culture also increases the relevance of this topic. Because customs and traditions are among the main factors ensuring the spiritual stability of society.

At the end of the 19th century and the beginning of the 20th century, family ceremonies occupied a special place in the life of the people of Bukhara. In particular, cradle ceremonies, circumcision ceremonies, weddings, and bride greeting ceremonies

embodied the ancient traditions of the people. These ceremonies not only represented important stages of family life but also served to strengthen social solidarity and harmony in society.

Religious and seasonal holidays also occupied an important place in the ethnographic characteristics of the people of Bukhara. In particular, Navruz was widely celebrated as a national holiday, during which folk festivals, national games, and various ceremonies were organized. Ramadan and Eid al-Adha were also considered important events in the religious and cultural life of the population.

National clothing and food were also an integral part of ethnographic characteristics in the daily lifestyle of the population. Men wore robes, turbans, and skullcaps, while women used clothes sewn from atlas and adras fabrics as well as national jewelry. In addition, national dishes such as pilaf, samsa, and soup reflected the traditional lifestyle culture of the people.

Craftsmanship was also one of the important directions of the cultural life of the people of Bukhara. Crafts such as jewelry making, pottery, carpet weaving, and embroidery developed on the basis of national traditions passed down from generation to generation. This demonstrates the richness and diversity of the ethnographic culture of the oasis population.

A number of scientific studies are being carried out aimed at studying the material and spiritual culture, customs, and traditions of some historical and cultural regions of Central Asia, particularly Uzbekistan, identifying their contribution to world civilization, and evaluating the extent to which the specific features of the ethnography of the population living in this region during different political periods have been preserved. These projects aimed at studying the ethnogenesis and ethnic history, material and spiritual culture of the Uzbek people, and the processes of transformation over the centuries demonstrate the international relevance and necessity of the topic. Regarding the work being done in this field, the President of the Republic of Uzbekistan Sh.M. Mirziyoyev emphasized: “In our state policy, priority importance will continue to be given to preserving and developing the national identity, native language and culture, religion, customs, and traditions of representatives of all nations and ethnic groups.”

A thorough knowledge of the history and culture, traditions, and customs of one’s own people increases respect and attention toward the culture of other peoples. This situation serves to further strengthen interethnic tolerance and harmony. As the First President I.A. Karimov emphasized: “A nation that does not know its history and forgets its past has no future.” Today, it is becoming appropriate to deeply analyze all

the factors and criteria that shape our spirituality and influence it, and to clearly understand their role in this regard. The spirituality of any people or nation cannot be imagined separately from its history, unique customs and traditions, and life values. In this respect, spiritual heritage, cultural wealth, and ancient historical monuments naturally serve as some of the most important factors.

Research Purpose: To scientifically study the role of national customs and traditions in the ethnographic characteristics of the people of Bukhara and to analyze their importance in social life, family relations, spiritual values, and the preservation of national identity.

Research Objectives:

1. To analyze the historical roots of national customs and traditions;
2. To highlight the family, ceremonial, and бытовые traditions specific to the Bukhara region;
3. To determine the role of customs in the upbringing of the younger generation and in spiritual life;
4. To preserve national traditions in the context of modern globalization.

Scientific novelty: For the first time, the role of national customs and traditions in the formation of the ethnographic characteristics of the people of Bukhara was studied comprehensively and systematically. During the research, the ethnographic aspects of family and ceremonial traditions, customs, and everyday values specific to the Bukhara oasis were analyzed on the basis of scientific sources and practical materials.

In addition, ancient traditions preserved among the people of Bukhara and their significance in modern social life were revealed. The role of national customs in the upbringing of the younger generation, strengthening of the family, and understanding of national identity was highlighted on the basis of an ethnographic approach.

Research results: During this scientific research, the role of national customs and traditions in the ethnographic characteristics of the people of Bukhara was comprehensively studied. In the course of the research, historical sources, ethnographic data, and examples of folklore were used, and information was collected through observation and interview methods among the local population. The obtained results showed that national values and traditions in the Bukhara oasis still remain an integral part of the people's lifestyle today.

The transformation of many ceremonies in Bukhara continued to influence the life of a people ethnographically composed of various groups for many years. We can observe that the procedures of pre-wedding, wedding, and post-wedding ceremonies, the participants, and the traditions, customs, and habits within them have been passed

down from generation to generation. In particular, pre-wedding ceremonies (choosing a girl, matchmaking, giving an answer, oq o‘ratish, oqlik, bread breaking, that is non shikanon, cutting white cloth with scissors, shirinixo‘ri, maslahat oshi, sitora pilaf, sending a festive tablecloth for Eid, sending a bowl, religious ceremony—reading the khutbah, that is marriage registration, registration with the state – Civil Registry Office), ceremonies performed during the wedding (engagement wedding, padar osh, xinabandon, that is girls’ gathering, jomapo‘shon – dressing the groom in a robe, escorting the groom – domot bari), and post-wedding ceremonies (chimildiq, bringing the bride to the new house and slaughtering a sheep under her feet – this act should be done with proper intention so as not to cause shirk and the sheep should be slaughtered at another time; circling around fire – this act is also considered inappropriate; salomnoma, mahsi yechar, yuz ochar – ro‘yi binon, bride greeting – sarsho‘yon ceremony, preparing a place for the bride and groom, gathering the bedding – joyg‘ondoron, talbon-chaqirdi) can be cited as examples.

In addition, during the research, the attitude of the people of Bukhara toward religious values was also studied. Religious holidays such as Ramadan and Eid al-Adha, charitable events, almsgiving, and good deeds were observed to be an important part of the people’s spirituality. The harmony of religious values and national traditions contributes to the formation of moral norms and human virtues in society.

In the methodological guide “Traditional Customs and Ceremonies of Uzbeks and Tajiks of the Bukhara Oasis” by A. Jumayev, customs and traditions such as factors encouraging pregnancy and attitudes toward childbirth, and measures against childlessness are mentioned. In the brochure “Scenes from the Ethnography of Bukhara” by A.Sh. Jumaev and M.B. Qurbonova, interesting customs related to childhood traditions and ceremonies are presented.

The research results showed that values such as respect for family, honoring elders, hospitality, neighborhood relations, collective community work, and mutual assistance still have important social significance among the people of Bukhara today. In particular, wedding ceremonies, cradle ceremonies, circumcision ceremonies, marriage ceremonies, and religious holidays are important means of preserving the national identity of the people. Through these ceremonies, national values, moral norms, and traditions inherited from ancestors are instilled in the younger generation.

Conclusion. National customs and traditions occupy a special place in the ethnographic characteristics of the people of Bukhara and embody the centuries-old historical and cultural heritage of the people. Since the Bukhara oasis has long been one of the centers of science, culture, and spirituality, the customs and traditions

formed in this region stand out for their richness, diversity, and antiquity. These traditions are clearly reflected in the people's lifestyle, family relations, ceremonies and holidays, daily life, and spiritual views. In addition, national customs and traditions also serve as an important factor in ensuring tolerance, harmony, and social stability in society. Bukhara has long been a region inhabited by different nations and ethnic groups, and the cultural environment formed here is based on the principles of interethnic harmony and mutual respect.

The national customs and traditions formed in the Bukhara region are considered an important ethnocultural factor reflecting the historical development, social life, and cultural worldview of the people. This topic once again confirms the importance of preserving national culture, scientifically analyzing it, and passing it on to future generations through the study of the ethnographic characteristics of Bukhara.

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13.

ENDOKRIN BUZILISHLAR FONIDA ENDOMETRIY BEZLI GIPERPLAZIYASINING GISTOLOGIK VA MORFOMETRIK KO‘RSATKICHLARI.

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Annotatsiya: Endometriyal giperplaziya - bu polietiologik patologik jarayon bo'lib, uning patogenezi tizimli jarayonlar (neyroendokrin, metabolik va immun) va mahalliy o'zgarishlarning (endometriy hujayralarining retseptorlari va genetik apparati holati) murakkab o'zaro ta'siridan iborat. Biologik faol moddalarning ishtiroki, o'sish omillari, proliferatsiya va apoptoz belgilari va boshqalar tasvirlangan. Endometriyning turli tarkibiy qismlarining funktsional holati butun hayz davrida heterojenlik bilan tavsiflanadi. Endometriydagi giperplastik jarayonlar keng tarqalgan ginekologik patologiya bo'lib, ularning chastotasi premenopauzada yoshga bog'liq gormonal o'zgarishlar davrida sezilarli darajada oshadi.

Kalit so'zlar: Endometriy, giperplaziya, patogenez, morfologiya.

Kirish

Endometriy giperplaziyasi ayollarning yoshidan qat'iy nazar, estrogen va progesteronning uzoq muddatli nomutanosibligi natijasida mutlaq yoki surunkali giperestrogeniya fonida bachadon shilliq qavatidagi patologik diffuz yoki lokal proliferativ o'zgarishlarning asosiy shakllaridan. Endometriy giperplaziyasi polietiologik patologik jarayon, uning patogenezi tizimli jarayonlarning (neyroendokrin, metabolik va immun) murakkab o'zaro ta'siri bilan va mahalliy o'zgarishlar (endometriy hujayralarning retseptorlari holati va genetik apparati),

shuningdek, biologik faol moddalar, o'sish omillari, proliferatsiya va apoptoz belgilarining ishtiroki va boshqalar bilan tavsiflanadi.

Bachadonning shilliq qavati ikki qatlamdan iborat: bazal (chuqur), to'g'ridan-to'g'ri miometriyga ulashgan va yuzaki (funktsional), bachadon bo'shlig'iga qaragan. Funktsional qatlamning qalinligi hayz davrining bosqichiga qarab o'zgaradi: erta proliferatsiya bosqichida 1mm dan sekretsiya bosqichida 8 mm gacha. Hayz paytida endometriyning funktsional qatlami bo'lmay, hayz davrining 4-5 kunida bazal qatlam hujayralarining ko'payishi tufayli yara yuzasi epitelizatsiyalanadi.

Homiladorlik bo'lmasa, endometriumning bazal qatlamining bezlarining proliferatsiyasi sodir bo'ladi, bu esa hayz ko'rish paytida rad etilmaydi, lokal yoki diffuz endometriy giperplaziyasi rivojlanishi uchun sharoit yaratadi. Endometriyning turli tarkibiy qismlarining funktsional holati butun hayz davrida heterogenlik bilan tavsiflanadi. Stromasida fibroblastga o'xshash hujayralarining o'sishi, differentsiatsiyasi bachadon bezlarining epitelial hujayralarining rivojlanishidan ustun turadi va proliferatsiya fazasining boshida stroma hujayralarining bir qismi sintetik faollikni boshlaydi. Ularning maxsus sekretsiya mahsulotlari, ya'ni kollagen, elastin, proteoglikanlar va glikoproteinlar morfogenez induksiyasida muhim axborot rolini o'ynaydi, trofik funktsiyani bajaradi va hujayra ko'payishiga ta'sir qiladi. Limfotsitlar epitelial-mezenximal munosabatlarda faol ishtirok etib, tomirlardan endometriy stromasiga kirib boradi va turli xil hujayralar proliferatsiyasining interstitsial regulyatsiyasini belgilaydi. Inson endometriysi hujayralarida siklik o'zgarishlar gipotalamus-gipofiz-tuxumdon tizimidagi siklik o'zgarishlar tufayli yuzaga keladi, buning natijasida endometriy ko'payadi, sekretor transformatsiya, desquamatsiya va regeneratsiyaga uchraydi. Endometriyning ko'payishi endometriyga mitogen ta'sir ko'rsatadigan, uning o'sishi va ko'payishiga yordam beradigan estrogenlarning ta'siri ostida sodir bo'ladi.

Estrogenlar bazal membrana hujayralari, ichki membrana va kamroq darajada interstitsial hujayralar tomonidan chiqariladi. Estrogenlar homilador ayollarda sariq tanada, buyrak usti bezlari po'stlog'ida va platsentada oz miqdorda hosil bo'ladi. Tuxumdonning asosiy estrogenlari estradiol, estron va estrioldir (birinchi ikkita gormon asosan sintezlanadi).

Ginekologik kasalliklar orasida endometriy giperplaziyaning tarqalishi 10 - 50%gacha. G'arbiy Evropa mamlakatlarida yiliga 200000ga yaqin yangi endometriy giperplaziya holatlari qayd etilgan. Endometriy giperplaziya bilan og'rigan yosh ayollarning taxminan 40% jarrohlik davolashidan o'tadi, bu esa reproduktiv davrdagi

ayollarda bepushtlikning rivojlanishiga olib kelishi mumkin. Rakga aylanish chastotasi o'zgarib turadi va oddiy giperplaziya uchun 1%dan kam, murakkab endometriyal giperplaziya uchun 3% va atipik giperplaziya uchun 25-29% gacha [8,15]. Atipiyasiz murakkab endometriy giperplaziyasi bilan atipik endometriy giperplaziyasi rivojlanish xavfi 7% va endometriy raki 15%ni tashkil qiladi.

Endometriy giperplaziyasi mustaqil ravishda yoki boshqa patologiyalar bilan birgalikda paydo bo'lishi yoki ko'plab somatik va ginekologik kasalliklar fonida paydo bo'lishi mumkin. Shuni ta'kidlash kerakki, katta yoshdagi ayollarda endometriy patologiyalarining tarqalishi ortmoqda.

Endometriy giperplaziyasi polietiologik patologik jarayon sifatida qaraladi, bunda bemorning yoshi, surunkali yallig'lanish jarayonlari, hayotning perimenopauzal davri va boshqa gormonal o'zgarishlar natijasida reproduktiv tizimda giperplastik jarayonlarning paydo bo'lishi uchun zarur shart-sharoitlar yaratiladi.

Endometriy to'qimalarining gomeostazi proliferatsiya va apoptozning muvozanatli jarayonlari bilan aniqlanadi.

Yuqumli omillar tomonidan doimiy zararlashda surunkali yallig'lanish jarayonida ko'plab ikkilamchi morfologik va funktsional o'zgarishlar rivojlanadi, hujayradan tashqari matritsaning shikastlanishi bilan sklerotik jarayonlarning faollashishi, mediator hujayralararo o'zaro ta'sirlarning buzilishi, to'qimalarning angioarxitekturasidagi o'zgarishlar va uning ishemiyasi, bachadon shilliq qavatining siklik biotransformatsiyasini va retseptivligini buzish bilan namoyon bo’ladi.

Jinsiy balog'at davrida EGning rivojlanishi asosan follikulyar atreziya, gipotalamus-gipofiz faolligining muvofiqlashtirilmaganligi bilan bog'liq anovulyatsion sikllar, estrogen ajralib chiqish chastotasi va amplitudasining uzoq muddatli beqarorligi tufayli yuzaga keladi. Bu endometriumning etarli darajada proliferatsiyasiga olib keladi (epiteliy ko'payadi, lekin stroma orqada qoladi), keyinchalik bezli-kistoz yoki adenomatoz giperplaziya rivojlanadi.

EG exspressiyasini nazorat qiluvchi estrogenlar ularning darajasini oshiradi, progesteron esa o'z retseptorlari sonini kamaytiradi. Progestinlar apoptozni (p53 va Bcl oilasi oqsillari) tartibga soluvchi omillarning exspressiyasini modulyatsiya qilishga qodir, nishon to'qimalarda hujayralar sonini nazorat qilishda ishtirok etuvchi mitogen proto-onkogenlar (c-mis, c-fos) va hujayra siklini tartibga soluvchi genlardir. Shunday qilib, progesteron jarayonni kuchaytiradi va estradiol borligida ham Bcl-2 ni ingibitsiya qiladi.

Immunohistokimyoviy tadqiqotlarda ER, PR, Ki-67, Bcl-2, p 53, E-kaderinning parametrlari va endometriy atrofiyaga uchrash vaqti o'rtasida korrelyatsiya aniqlangan. Ki-67, Bcl-2, p 53 exspressiyasiga nisbatan to'g'ridan-to'g'ri korrelyatsiya kuzatilgani, E-kaderin exspressiyasiga nisbatan teskari korrelyatsiya kuzatilgan. AEGda proliferatsiya belgisi (Ki-67), apoptoz belgisi (Bcl-2) va hujayra siklini tartibga solish belgisi (p 53) exspressiyasi darajalari AEGdagi ushbu belgilarning exspressiyasi darajalaridan ikki baravar yuqori bo’lgan.

Hujayra proliferatsiyasi va apoptozni tartibga solishda ishtirok etadigan PTEN genining mutatsiyalari endometriy bezlarning ko'payishiga olib keladi, bu esa keyinchalik EK ga o'tishi bilan EGga olib keladi. Apoptoz endometriumning siklik yo'q qilinishi, hayz paytida qisman rad etish va qayta qurish paytida gomeostatik mexanizmlarni saqlashda muhim rol o'ynaydi. Bcl-2 geni hujayraning umrini uzaytiradi, ammo Bcl-2 bilan bog'langan protein (BAX) geni hujayra apoptozini boshlaydi. Shuning uchun Bcl-2:BAX nisbati apoptozni tartibga solishda muhim omil hisoblanadi. Ushbu nisbatning buzilishi EGni atipiyasiz amalga oshirishda sodir bo'ladi.

Bundan tashqari, endometriy giperplaziyasi immunitet holati, qalqonsimon bez, gepatobiliar tizimning patologiyalari bilan ham rivojlanadi.

Qalqonsimon bez kasalliklari - ularning gormonlari hujayra darajasida estrogen ta'sirini modulyatori bo'lib, giperplastik jarayonlarning rivojlanishiga olib kelishi mumkin.

Gepatobiliar patologiya, shuningdek, jigarda estrogenning sekin ishlatilishi tufayli surunkali giperestrogenizmni rag'batlantirishi mumkin, bu esa endometriyal giperplastik jarayonlarning rivojlanishiga yordam beradi.

EG bachadonning retseptor apparati holatiga - progesteron va / yoki estradiol retseptorlari etishmovchiligi endometriyning gormonal dorilarni qabul qilishgagi sezgirligini o'zgartirishi isbotlangan. AQShning Vashington shtatida 500ming ayolda 18 yil davomida (1990-2008) o'tkazilgan tadqiqot EG xavfining tug'ilish soniga mutanosib ravishda kamayganini aniqlagan - mEG va aEG uchun 70 va 90% mos ravishda uch yoki undan ortiq tug'ilgan ayollarda.

Turli yoshdagi ayollarda endometriydagi giperplastik jarayonlarning asosiy klinik ko'rinishi meno- yoki metrorragiya tipidagi bachadondan qon ketishidir.

Ekstragenital kasalliklar orasida yurak-qon tomir kasalliklari - gipertoniya (31,3%) va gipertonik tipdagi neyrosirkulyator distoniya (14,1%) tadqiqot kogortidagi

bemorlarda etakchi o'rinlardan birini egallagan. Ayollarning 45,3 foizida oshqozon-ichak trakti kasalliklari, 62,5 foizida endokrin tizimi kasalliklari aniqlangan. Bemorlarning yarmidan bir oz kamroq qismi semirib ketgan (45,3%). Tadqiqot ishtirokchilarining 7,8 foizida 2-toifa qandli diabet qayd etilgan. 2014 yilda JSST EGning yagona tasnifini nashr etdi (JSST Ayol jinsiy a'zolarining o'smalari tasnifi. 2014 yil, 4-nashr), bu sitologik atipiya mavjudligiga asoslangan bo'lib, natijada faqat ikkita guruhni ajratdi - atipiyali EG va atipiyasiz EG.

Kasalliklarning 10-chi qayta ko’rib chiqilgan xalqaro tasnifida (XKT-10) quyidagi turlari ajratiladi:

N84.0. Bachadon tanasining polipi.

N85.0. Endometriumning bezli giperplaziyasi: kist, bezli-kistoz, polipoid.

N85.1. Adenomatoz endometriyal giperplaziya

2014yilda JSST tomonidan taklif qilingan EGning ikkilik tasnifi ko’ra:

1. Atipiyasiz EG (EH). Sinonimlar: Yaxshi EG,oddiy atipik bo`lmagan EG, murakkab atipik bo`lmagan EG, atipiyasiz oddiy EG, atipiyali murakkab EG. Genetik o`zgarishlar: Alohida joylashgan bezlardagi somatik mutatsiyalarning past darajasi, gemotoksilin-eozin bilan bo`yalmaydi. Invaziv ERning birgalikda mavjudligi<1%/ Invaziv ER ga o`tish xavfi -Nisbiy xavf 1.01-1.03.

2. Atipiya bilan EG (EIN). Sinonimlar: Murakkab atipik EG,oddiy atipik EG,endometrial intraepithelial neoplaziya. Genetik o`zgarishlar: ER uchun xos bo`lgan ko`plab genetik o`zgarishlar: mikrosatellitning beqarorligi, PAX2 inaktivatsiyasi, PTEN, KRAS va CTNNB1 mutatsiyasi (B-katenin). Invaziv ERning birgalikda mavjudligi: 25-33% [24]dan 59% gacha [1]. Invaziv ER ga o`tish xavfi -Nisbiy Xavf 14-45

Jahon sog'liqni saqlash tashkiloti (JSST) endometriy giperplastik jarayonlarning yangi tasnifini qabul qildi va uni 2020 yilgi nashri bilan tasdiqladi. Ikkilik tasniflash ushbu kasalliklarning patogenezi va malignizasiya o'sma xavfi asosida EGni 2 toifaga ajratadi. Birinchi toifa – atipiyasiz endometriy giperplaziyasi.Ushbu turdagi EG estrogenga haddan tashqari ta'sir qilish natijasida yuzaga keladi va stroma va bezlarning atipik hujayrali o'zgarishlarsiz bezlar komponentning ko'payishiga nisbati buzilishini anglatadi. Endometrioid endometriyal adenokarsinomaga (EEK) o'tish xavfi amalda nolga kamayadi va turli manbalarga ko'ra, 1-5%ni tashkil qiladi [13]. Ikkinchi toifa "endometrioid intraepithelial neoplaziya (EIN) yoki endometrial atipik

giperplaziya" atamasi bilan ifodalanadi, bubirinchi marta kiritilgan va hozirda foydalanish uchun tavsiya etiladi. Ushbu holatning rivojlanishi uchun xavf omili ham giperestrogenemiya hisoblanadi, ammo atipiyasiz EGdan farqli o'laroq, EIN hujayrali atipiyaga olib keladigan genetic mutatsiyalarning to'planishi tufayli yuzaga keladi. EIN haqiqiy o’sma kasalligi bo'lib, 1-5 yil ichida 40% gacha xavfli o'sma xavfi mavjud bo’ladi.

Oddiy tipik bezli endometriy giperplaziyasi. Oddiy endometriy giperplaziyasiva atipik o'rtasidagi asosiy farq shundaki, ikkinchisida bezlardagi strukturaviy o'zgarishlar bilan birga hujayrali va yadroviy atipiya kuzatiladi.

Bachadon bo'shlig'ining shilliq qavatini qirib tashlashda odatda ko'p miqdorda yumshoq, pushti, suvli to'qimalar olinadi. Agar kuretajdan oldin og'ir qon ketish bo'lsa, to'qimalarning miqdori o’z bo'lishi mumkin. Nekroz va qon ketish o'choqlari endometriy bo'laklarga xira ko'rinish berishi mumkin. Olib tashlangan bachadonni tekshirilganda, endometriyning 1-2sm gacha qalinlashganini ko'rish mumkin, uning yuzasi odatda silliq, kamroq mayda tubulyar yoki polipoid ko’rinishidir.

Gistologik tekshiruv bezlar va stromal elementlarning sonining ko'payishi bilan tavsiflanadi, bezlar yumaloq bo'lib, o'lchamlari har xil, kichik kalibrli bezlar bilan bir qatorda katta va kistaga o'xshash kengaygan bezlar turli nisbatlarda uchraydi. Bezlar ko'p qatorli yadroli va hujayralarning apikal qirrasi aniq belgilangan yuqori prizmatik epiteliy bilan qoplangan. Yadrolari ovalsimon yoki biroz cho‘zilgan, sigaretsimon, xromatinga boy. Sitoplazmasi bazofil bo'lib, unda odatda sekretsiya yo'q, garchi bezlarning bo’yoq bilan bo'yalgan oz miqdorda shilimshiqni o'z ichiga olishi mumkin.Bazofil hujayralar bilan bir qatorda, sitoplazmasi yengil shaffof bo'lgan vezikulyar hujayralar turli xil sonlarda bo'lishi mumkin. Mitotik figuralar ko'pincha bez va stroma hujayralarida uchraydi, bu ham bez, ham stroma elementlarining faol ko'payishini ko'rsatadi.

Kistaga o'xshash kengaygan bezlarda epiteliy past prizmatik yoki zaif ifodalangan ko'p qatorli yadrolar bilan bir oz tekislangan bo'lishi mumkin.

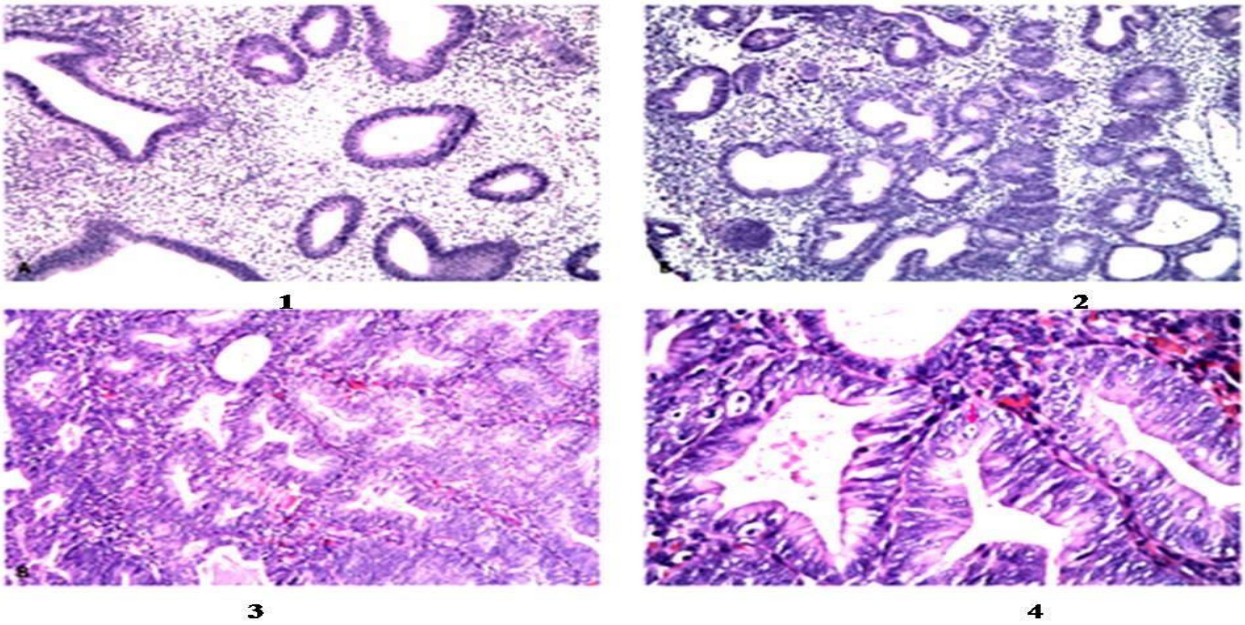
Atipiyasiz EG tez-tez uchraydi va 80% hollarda o'z-o'zidan regressiyaga uchrasa ham, 3- 10% atipik shakllarga va 1-5% endometriy o’smaga (EO`) o'tadi [16].

Murakkab tipik endometriy bezli giperplaziyasi

Ushbu turdagi giperplaziyaning asosiy belgisi tarqoq yoki o’chog’li joylashuvini mavjudligidir.Bezlar bir-biriga yaqin joylashgan bo'lib, ular orasidagi stroma

yo'qoladi. Yana bir muhim xususiyat - bezlar va stromaning elementlarini turli proyeksiyalarga ega bo'lgan murakkab strukturaviy o’zgarishidir. Bezlarda, odatda, oddiy giperplaziyaga qaraganda aniqroq ko'p qatlamli epiteliy kuzatiladi. Yadrolar hajmi va shakli bo'yicha bir xil va bazal membranaga perpendikulyar joylashib, normal qutblilikni saqlaydi. Mitozlar soni turlicha bo'lib, yadrochalarni ajratib bo'lmaydi. Stromal hujayralar ko'pincha bezlar tomonidan siqilish tufayli yassilangan shakliga ega bo'ladi.

Odatda stroma ustidagi bezlar soni ustunlik qiladi. Metaplaziya o'choqlari, so’rgichsimon tuzilmalar kuzatilishi mumkin.



Rasm - 1. 1- Oddiy tipik bezli endometriy giperplaziyasi 2- Murakkab tipik endometriy bezli giperplaziyasi, 3- Oddiy atipik endometriyal bezli giperplaziyasi, 4- Murakkab endometriyni atipik bezli giperplaziyasi. Gem.-eozin usulida bo`yash/ (Кумар В. И др. 2016.)

Oddiy atipik endometriyal bezli giperplaziya

Oddiy va murakkab atipik giperplaziyani odatiy endometriy giperplaziyasidan ajratib turadigan asosiy xususiyat bu bez hujayralarining atipiyasi bo'lib, u joylashishning qutbliligini yo'qotishda va ko'pincha yumaloq shaklga ega bo'lgan yadrolarning g'ayrioddiy shaklida namoyon bo'ladi. Yadro membranasi qo'pol, xromatin zich, to'plangan, tiniq bo’ladi. Yadrolar polimorf bo'lib, ularda ko'pincha yirik yadrochalar topiladi.

Oddiy atipik giperplaziya tuzilishi bo'yicha oddiy tipik endometriy giperplaziyasiga o'xshaydi. Bezlar odatda yumaloq yoki oval shaklga ega, lekin bezlar orasida kichik sitogen stroma qatlamlari bilan yaqin joylashgan. Ba'zi bezlar tartibsiz shaklga ega, ammo ular kam uchraydi.

Asosiy simptomi - bu hujayrali va yadroviy atipiyaning mavjudligidir. Shuni ta'kidlash kerakki, atipik giperplaziyaning bu varianti kam uchraydi.

Murakkab endometriyni atipik bezli giperplaziyasi

Endometriy giperplaziyasining bu turi epiteliy komponentining aniq proliferatsiyasi bilan tavsiflanadi, bu bezlar tuzilmalarining bazal membranasiga kirmasdan to'qima va hujayra darajasida atipiyasi bilan birlashtiriladi.

Endometriyning murakkab atipik bezli giperplaziyasining mikroskopik ko'rinishi bezli elementlarning stromal elementlarga nisbatan sezilarli ustunligi bilan tavsiflanadi, bu odatda bezli giperplaziya bilan kuzatilmaydi. Ba'zi mualliflar atipik giperplaziyaning engil, o'rtacha va og'ir darajalari ajratilib, ularni displaziya atamasi bilan belgilaydi.

Endometriyning murakkab atipik bezli giperplaziyasi ular orasidagi tor qatlamli stromali bezlarning juda yaqin joylashishi bilan tavsiflanadi va atipiyaning zo'ravonligi bezlar tuzilishida ham, ularni qoplaydigan epiteliyda ham kuzatiladigan o'zgarishlar darajasida namoyon bo'ladi. Bezlar normal endometriy uchun odatiy joylashuvni yo'qotadi, ular hajmi va shakli juda xilma- xildir. Papillyar bezlar bo'shlig'iga chiqib ketishi mumkin, ko'proq ko'payib to'plangan epiteliy hujayralaridan iborat yostiqsimon o'simtalar paydo bo'lishi mumkin.

Ba’zan yirik bez atrofida mikrofollikulyar tipdagi mayda bezlar joylashadi va bezlar shohsimon ko‘rinishni oladi. Ko'pincha bezlar juda g'alati shaklga ega bo'lib, ularda bez ichidagi epiteliy ko'p, kribriz yoki fibroz tuzilmalar hosil qiladi.

Bezlarni qoplaydigan epiteliy odatdagi giperplaziyaga qaraganda kattaroq hujayralardan iborat. Ularning sitoplazmasi yaxshi rivojlangan va bazofil, shaffof, ba'zan eozinofil rangga ega bo'lishi mumkin. Yadrolar polimorf, yumaloq, oval yoki biroz cho'zilgan.Yadro tuzilishining qutbliligi buziladi. Ular giperxrom yoki gipoxrom bo'lishi mumkin va yadrolarning och rangga bo'yalishi ko'proq aniqroq darajadagi atipiya bilan kuzatiladi. To'q rangli yadrolarda xromatin to'plangan bo'lib, yadro membranasi bo'ylab joylashgan yoki qo'pol donador bo'lsa, och rangga bo'yalgan yadrolarda u mayda donador yoki changsimon bo'ladi.

Atipiyasiz EG har xil o'lchamdagi va shakldagi bezlar bilan ifodalanadi, kistasimon kengaygan yoki burmali, bezlar ichida ham, tashqarisida ham chiqadi. Bezlarni ajratib turuvchi stroma ko'p va hujayrali bo'ladi. Bezlarning epiteliysi hayz davrining proliferativ bosqichidagi epiteliyga o'xshaydi. Hujayralar silindrsimon shaklga ega, bazofil sitoplazmaga ega va yadrolarning psevdostratifikatsiyalangan joylashuviga ega bo'lib, ular pastki bazal membranaga yo'naltirilgan. Yadrolar oval shaklga ega, konturlari silliq, xromatinning notekis taqsimlanishi, mayda yadrochalar mavjud bo'ladi.Ko'pincha kipriklar ko'rinadi. EGning aniq belgilovchi xususiyati stromasining ko'pligidir. EG noyobdir, chunki u endometriumning ikkala komponentini stroma va bezlardagi mitozlar bilan diffuz tarzda qoplaydi.

AEG murakkab, bezlar-kistoz giperplaziya fonida ham, endometriydagi atrofik o'zgarishlar fonida ham paydo bo'lishi mumkin.AEG tashxisini qo'yishning yagona mezoni endometriy epiteliysi atipiyasi belgilarining mavjudligi hisoblanadi.

Arxitektonika nuqtai nazaridan, AEG oddiy va murakkab shakllarga mos kelishi mumkin. Bezlarning shakli va hajmida sezilarli xilma-xillik mavjud. Bezlarning bo'shlig'iga papillyar invaginatsiyalar, kam sonli fibrovaskulyar elementlarni o'z ichiga oladi.

Atipiyasiz EG turli shakl va o'lchamdagi bezlarning haddan tashqari ko'payishini anglatadi, bu proliferativ endometriy bilan solishtirganda tomir / stroma nisbatining oshishi bilan bog'liq.

Xulosa qilib aytilganida, endometriydagi giperplastik jarayonlar (EG) keng tarqalgan ginekologik patologiya bo'lib, ularning chastotasi premenopauzada yoshga bog'liq gormonal o'zgarishlar davrida sezilarli darajada oshadi. Ushbu kasallikning qaytalanishining yuqori chastotasi, gormonal terapiyaning samaradorligining yo'qligi, endometriy giperplaziyasining malignizatsiya xavfi yuqoriligi uni davolashga yondashuvni takomillashtirish zarurligini taqozo etadi.

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ADRENOMIMETIK VA ADRENOBLOKATORLAR: FARMAKOLOGIK XUSUSIYATLARI, KLINIK QO‘LLANILISHI VA XAVFSIZLIK JIHATLARI

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Annotatsiya
Ushbu maqolada simpatik nerv tizimiga ta’sir qiluvchi asosiy dori guruhlari — adrenomimetiklar va adrenoblokatorlarning farmakologik xususiyatlari, ta’sir mexanizmi, klinik qo‘llanilish yo‘nalishlari hamda nojo‘ya ta’sirlari tahlil qilinadi. Adrenomimetiklar adrenergik retseptorlarni bevosita yoki bilvosita faollashtirib, adrenalin va noradrenalinga o‘xshash fiziologik javoblarni yuzaga chiqaradi. Adrenoblokatorlar esa alfa yoki beta adrenergik retseptorlarni bloklab, simpatik impulslarning yurak-qon tomir, nafas, siydik-tanosil va metabolik tizimlarga ta’sirini kamaytiradi. Ushbu dorilar klinik amaliyotda shok, bronxial astma, allergik reaksiyalar, arterial gipotenziya, gipertoniya, yurak ishemik kasalligi, aritmiyalar, yurak yetishmovchiligi, glaukoma va prostata bezi yaxshi sifatli giperplaziyasi kabi ko‘plab holatlarda muhim ahamiyatga ega. Maqolada dorilarni to‘g‘ri tanlash, retseptor selektivligi, dozaga bog‘liq xavflar va bemor holatini monitoring qilish masalalariga alohida e’tibor qaratiladi.

Kalit so‘zlar:
adrenomimetiklar, adrenoblokatorlar, adrenergik retseptorlar, alfa-retseptorlar, beta-retseptorlar, simpatik nerv tizimi, beta-blokatorlar, alfa-blokatorlar, farmakodinamika.

Kirish

Autonom nerv tizimi inson organizmida yurak urishi, qon tomir tonusi, bronxlar kengligi, modda almashinuvi, ko‘z qorachig‘i holati, siydik chiqarish va ko‘plab ichki a’zolar faoliyatini nazorat qiladi. Ushbu tizimning muhim qismi bo‘lgan simpatik nerv tizimi organizmni stress, jismoniy zo‘riqish, qon yo‘qotish, og‘riq, qo‘rquv va favqulodda holatlarga moslashtiradi. Simpatik nerv tizimining asosiy mediatorlari adrenalin va noradrenalin bo‘lib, ular adrenergik retseptorlar orqali ta’sir ko‘rsatadi.

Adrenergik retseptorlar asosan alfa va beta guruhlarga bo‘linadi. Alfa-1 retseptorlar qon tomirlar silliq mushaklarida joylashib, ularning qo‘zg‘alishi vazokonstriksiya, qon bosimining oshishi va ko‘z qorachig‘ining kengayishiga olib keladi. Alfa-2 retseptorlar presinaptik nerv uchlarida joylashib, noradrenalin ajralishini kamaytiradi. Beta-1 retseptorlar yurakda joylashib, yurak qisqarish kuchi va tezligini oshiradi. Beta-2 retseptorlar bronxlar, bachadon va ayrim qon tomir silliq mushaklarida bo‘lib, ularning faollashuvi bronxodilatatsiya va silliq mushaklarning bo‘shashishiga sabab bo‘ladi. Beta-3 retseptorlar asosan yog‘ to‘qimasida va siydik pufagida uchrab, lipoliz hamda detruzor mushak faoliyatida qatnashadi.

Adrenomimetik va adrenoblokatorlar farmakologiyada juda muhim o‘rin tutadi. Chunki ular bir-biriga qarama-qarshi ta’sirga ega bo‘lsa-da, ikkalasi ham hayotiy muhim klinik holatlarda qo‘llanadi. Masalan, adrenalin anafilaktik shokda birinchi navbatdagi dori hisoblanadi, salbutamol bronxial astmada bronxlarni kengaytiradi, noradrenalin og‘ir gipotenziya va shokda qon bosimini ushlab turadi. Aksincha, beta-blokatorlar yurak urishini sekinlashtirib, arterial bosimni tushiradi, miokard kislorodga bo‘lgan ehtiyojini kamaytiradi va aritmiyalarni nazorat qiladi. Alfa-blokatorlar esa qon tomirlarni kengaytirib, periferik qarshilikni pasaytiradi va prostata bezi giperplaziyasida siydik chiqarishni yengillashtiradi.

Maqolaning maqsadi — adrenomimetik va adrenoblokatorlarning asosiy turlari, ta’sir mexanizmlari, klinik qo‘llanishi, nojo‘ya ta’sirlari hamda amaliy tibbiyotdagi ahamiyatini tizimli ravishda tahlil qilishdan iborat.

Materiallar va metodlar

Ushbu maqola nazariy-tahliliy usul asosida tayyorlandi. Mavzuni yoritishda farmakologiya, klinik farmakologiya, ichki kasalliklar, kardiologiya va pulmonologiya bo‘yicha zamonaviy o‘quv adabiyotlari, xalqaro tibbiy manbalar va klinik tavsiyalar tahlil qilindi. Dori vositalari adrenergik retseptorlarga ta’sir xususiyati, farmakodinamik mexanizmi, klinik qo‘llanish sohasi va xavfsizlik profili bo‘yicha guruhlarga ajratildi.

Tahlil jarayonida quyidagi mezonlarga e’tibor qaratildi: birinchidan, dori vositasining qaysi adrenergik retseptorga ta’sir qilishi; ikkinchidan, bevosita yoki bilvosita ta’sir mexanizmi; uchinchidan, yurak-qon tomir va nafas tizimiga ta’siri; to‘rtinchidan, klinik qo‘llanish ko‘rsatmalari; beshinchidan, nojo‘ya ta’sir va qarshi ko‘rsatmalar. Ushbu yondashuv adrenomimetik va adrenoblokatorlarni nafaqat nazariy, balki amaliy klinik nuqtai nazardan ham baholash imkonini beradi.

Natijalar

Adrenomimetiklar organizmda simpatik nerv tizimi ta’sirini kuchaytiruvchi dori vositalari hisoblanadi. Ular ta’sir mexanizmiga ko‘ra bevosita, bilvosita va aralash ta’sir qiluvchi guruhlarga bo‘linadi. Bevosita ta’sir qiluvchi adrenomimetiklar adrenergik retseptorlarning o‘ziga bog‘lanib, ularni faollashtiradi. Bunga adrenalin, noradrenalin, fenilefrin, dobutamin, salbutamol, formoterol va ksilometazolin misol bo‘ladi. Bilvosita ta’sir qiluvchi adrenomimetiklar esa nerv uchlarida noradrenalin ajralishini kuchaytiradi yoki uning qayta so‘rilishini kamaytiradi. Aralash ta’sir qiluvchi dorilar esa ham retseptorlarga bevosita ta’sir qiladi, ham endogen mediatorlar ajralishini oshiradi.

Adrenalin kuchli va keng ta’sir doirasiga ega adrenomimetik hisoblanadi. U alfa-1, alfa-2, beta-1 va beta-2 retseptorlarni qo‘zg‘atadi. Alfa-1 retseptorlar orqali periferik qon tomirlarni toraytiradi, beta-1 retseptorlar orqali yurak qisqarishini kuchaytiradi, beta-2 retseptorlar orqali esa bronxlarni kengaytiradi. Shu sababli adrenalin anafilaktik shok, yurak to‘xtashi, og‘ir allergik reaksiya va ayrim bronxospastik holatlarda qo‘llanadi. Ammo uning yurak urishini tezlashtirish, arterial bosimni keskin oshirish, aritmiya chaqirish va bezovtalik keltirib chiqarish xavfi mavjud.

Noradrenalin asosan alfa-1 va qisman beta-1 retseptorlarni faollashtiradi. Uning asosiy ta’siri kuchli vazokonstriksiya va arterial bosimni oshirishdan iborat. Shu sababli noradrenalin septik shok, og‘ir gipotenziya va qon aylanish yetishmovchiligi holatlarida qo‘llanadi. Lekin uni qo‘llashda periferik to‘qimalarda qon aylanishining kamayishi, ekstravazatsiya bo‘lsa to‘qima nekrozi va yurakka ortiqcha yuk tushishi kabi xavflar hisobga olinadi.

Beta-2 adrenomimetiklar nafas yo‘llari kasalliklarida katta ahamiyatga ega. Salbutamol, fenoterol, terbutalin qisqa ta’sirli beta-2 agonistlar bo‘lib, bronxial astma xurujini tez bartaraf etishda ishlatiladi. Formoterol va salmeterol uzoq ta’sirli beta-2 agonistlar bo‘lib, bronxial astma va surunkali obstruktiv o‘pka kasalligida nazorat terapiyasida qo‘llanadi. Ular bronx silliq mushaklarini bo‘shashtirib, havo o‘tishini yaxshilaydi. Nojo‘ya ta’sirlar sifatida qo‘l titrashi, yurak urishining tezlashishi, gipokaliemiya va bezovtalik kuzatilishi mumkin.

Alfa-1 adrenomimetiklar, masalan fenilefrin, asosan qon tomirlarni toraytirish orqali arterial bosimni oshiradi va burun shilliq qavatidagi shishni kamaytiradi. Shu sababli fenilefrin gipotenziya, burun bitishi va ayrim oftalmologik tekshiruvlarda qorachiqni kengaytirish uchun ishlatiladi. Alfa-2 agonistlar, masalan klonidin va metildopa, markaziy nerv tizimida simpatik impulslarni kamaytirib, arterial bosimni tushiradi.

Metildopa homiladorlikdagi gipertoniya davolashida muhim tarixiy va amaliy ahamiyatga ega.

Adrenoblokatorlar adrenergik retseptorlarni bloklab, adrenalin va noradrenalin ta’sirini kamaytiradi. Ular alfa-blokatorlar va beta-blokatorlarga bo‘linadi. Alfa-1 blokatorlar qon tomir silliq mushaklarini bo‘shashtirib, periferik qarshilikni kamaytiradi. Prazosin, doksazosin va terazosin arterial gipertoniya hamda prostata bezi yaxshi sifatli giperplaziyasida ishlatiladi. Tamsulozin esa ko‘proq prostata va siydik yo‘llaridagi alfa-1A retseptorlarga selektiv ta’sir qilib, siydik oqimini yaxshilaydi. Alfa-blokatorlarning muhim nojo‘ya ta’siri — ortostatik gipotenziya, bosh aylanishi va reflektor taxikardiyadir.

Beta-blokatorlar beta-adrenergik retseptorlarni bloklovchi dorilar hisoblanadi. Ular selektiv va noselektiv guruhlarga bo‘linadi. Noselektiv beta-blokatorlar beta-1 va beta-2 retseptorlarni birgalikda bloklaydi. Bunga propranolol, nadolol va timolol kiradi. Kardioselektiv beta-1 blokatorlar esa asosan yurakka ta’sir qiladi. Bunga metoprolol, bisoprolol, atenolol, nebivolol va esmolol misol bo‘ladi. Beta-blokatorlar yurak urish tezligini kamaytiradi, miokard qisqaruvchanligini pasaytiradi, renin ajralishini kamaytiradi va arterial bosimni tushiradi.

Beta-blokatorlarning klinik ahamiyati juda keng. Ular arterial gipertoniya, stenokardiya, yurak ishemik kasalligi, miokard infarktidan keyingi davr, surunkali yurak yetishmovchiligi, taxiaritmiyalar, tireotoksikoz, migren profilaktikasi, essensial tremor va glaukoma davolashida qo‘llanadi. Ayrim beta-blokatorlar, masalan karvedilol va labetalol, qo‘shimcha alfa-bloklovchi xususiyatga ham ega. Bu esa ularning qon tomirlarga kengaytiruvchi ta’sirini kuchaytiradi.

Beta-blokatorlarning nojo‘ya ta’sirlari orasida bradikardiya, arterial gipotenziya, sovuq qo‘l-oyoqlar, charchoq, uyquchanlik, depressiv kayfiyat, erektil disfunksiya, bronxospazm va gipoglikemiya belgilarini yashirish xavfi mavjud. Ayniqsa bronxial astma yoki og‘ir surunkali obstruktiv o‘pka kasalligi bo‘lgan bemorlarda noselektiv beta-blokatorlardan ehtiyotkorlik bilan foydalanish zarur. Qandli diabetli bemorlarda esa beta-blokatorlar gipoglikemiyaning yurak urishi tezlashishi kabi ogohlantiruvchi belgilarini kamaytirishi mumkin.

Muhokama

Adrenomimetik va adrenoblokatorlar bir-biriga qarama-qarshi farmakologik guruhlar bo‘lsa-da, ularning har ikkisi klinik amaliyotda muhim o‘rin egallaydi. Adrenomimetiklar ko‘proq tezkor yordam, shok, bronxospazm, anafilaksiya va og‘ir gipotenziyada zarur bo‘lsa, adrenoblokatorlar uzoq muddatli nazorat, yurak-qon tomir

kasalliklarini davolash, arterial bosimni pasaytirish va yurak ritmini barqarorlashtirishda qo‘llanadi.

Ushbu dorilarni tanlashda retseptor selektivligi juda muhim. Masalan, bronxial astmada beta-2 agonist tanlanadi, chunki u bronxlarni kengaytiradi. Aksincha, yurak urishi tezlashgan, stenokardiyasi yoki aritmiyasi bo‘lgan bemorda beta-1 blokatorlar foydali bo‘lishi mumkin. Gipotenziyada alfa-1 agonistlar qon tomirlarni toraytirib bosimni oshiradi, prostata bezi giperplaziyasida esa alfa-1 blokatorlar siydik chiqarishni yengillashtiradi. Demak, bir xil retseptorning faollashuvi yoki bloklanishi klinik vaziyatga qarab foydali yoki zararli bo‘lishi mumkin.

Adrenomimetiklar bilan bog‘liq asosiy xavf ularning yurak-qon tomir tizimiga ortiqcha stimulyator ta’sir ko‘rsatishidir. Adrenalin, noradrenalin yoki beta-agonistlar noto‘g‘ri dozada qo‘llansa, taxikardiya, aritmiya, arterial bosimning keskin oshishi, miokard kislorodga bo‘lgan ehtiyojining ortishi va metabolik buzilishlar yuzaga kelishi mumkin. Shu sababli ular ko‘pincha qisqa muddatli, aniq ko‘rsatma asosida va tibbiy monitoring ostida qo‘llanishi kerak.

Adrenoblokatorlar bilan bog‘liq asosiy xavf esa simpatik tizimning haddan tashqari susayib ketishidir. Beta-blokatorlar yurak urishini haddan tashqari sekinlashtirishi, atrioventrikulyar blokadani kuchaytirishi, yurak yetishmovchiligini og‘irlashtirishi yoki bronxospazm chaqirishi mumkin. Alfa-blokatorlar esa birinchi dozadan keyin keskin ortostatik gipotenziya chaqirishi mumkin. Shuning uchun bu dorilarni kichik dozadan boshlash, bemor qon bosimi, puls, nafas holati va umumiy ahvolini kuzatish zarur.

Klinik amaliyotda yana bir muhim jihat — ushbu dorilarni birdan to‘xtatmaslikdir. Ayniqsa beta-blokatorlarni keskin bekor qilish rebound taxikardiya, arterial bosim oshishi va stenokardiya xurujiga olib kelishi mumkin. Shu sababli beta-blokatorlar asta-sekin kamaytirib bekor qilinadi. Bundan tashqari, adrenomimetik va adrenoblokatorlarning boshqa dorilar bilan o‘zaro ta’siri ham hisobga olinishi kerak. Masalan, beta-blokatorlar insulin va qand tushiruvchi dorilar bilan birga qo‘llanganda gipoglikemiya belgilarini yashirishi mumkin.

Adrenomimetik va adrenoblokatorlarni chuqur o‘rganish tibbiyot talabalari uchun nafaqat farmakologiya, balki kardiologiya, pulmonologiya, reanimatologiya, endokrinologiya va urologiya fanlarini tushunishda ham muhimdir. Chunki bu dorilar organizmning eng asosiy adaptatsion tizimlaridan biri — simpatoadrenal tizimga bevosita ta’sir qiladi.

Xulosa

Adrenomimetik va adrenoblokatorlar simpatik nerv tizimiga ta’sir qiluvchi eng muhim farmakologik guruhlardan hisoblanadi. Adrenomimetiklar adrenergik retseptorlarni faollashtirib, yurak faoliyatini kuchaytiradi, qon tomir tonusini o‘zgartiradi, bronxlarni kengaytiradi va organizmni favqulodda holatlarga moslashtiradi. Ular anafilaktik shok, bronxial astma xuruji, arterial gipotenziya, septik shok va yurak faoliyati sustlashgan holatlarda katta klinik ahamiyatga ega.

Adrenoblokatorlar esa alfa va beta retseptorlarni bloklab, simpatik ta’sirlarni kamaytiradi. Ular arterial gipertoniya, yurak ishemik kasalligi, aritmiyalar, yurak yetishmovchiligi, glaukoma va prostata bezi yaxshi sifatli giperplaziyasida keng qo‘llanadi. Ushbu dorilarning samaradorligi ularning retseptor selektivligi, dozalash tartibi, bemorning yoshi, hamroh kasalliklari va individual sezuvchanligiga bog‘liq.

Mavzuni ilmiy va amaliy jihatdan o‘rganish shuni ko‘rsatadiki, adrenomimetik va adrenoblokatorlar noto‘g‘ri qo‘llanganda jiddiy nojo‘ya ta’sirlar chaqirishi mumkin. Shu sababli ularni qo‘llashda aniq ko‘rsatma, individual yondashuv, doimiy monitoring va xavfsizlik tamoyillariga rioya qilish zarur. Bu guruh dorilar zamonaviy klinik farmakologiyaning asosiy yo‘nalishlaridan biri bo‘lib, ularni to‘g‘ri bilish shifokor amaliyotida muhim ahamiyat kasb etadi.

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THE RELATIONSHIP BETWEEN THE EXPRESSION OF THE IMMUNOINFLAMMATORY RESPONSE AND CLINICAL AND INSTRUMENTAL PARAMETERS OF MYOCARDIAL ISCHEMIA AND ENDOTHELIAL DYSFUNCTION IN MICROVASCULAR ANGINA

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Introduction. Understanding the relationship between the immune-inflammatory response and the clinical and instrumental manifestations of microvascular angina is fundamental for clarifying the pathogenetic mechanisms of the disease and developing objective criteria for assessing its severity. Establishing correlations between immunological parameters and myocardial ischemia parameters allows us to justify the appropriateness of immunomodulatory interventions and personalize the approach to diagnosis and treatment for this patient population.

Purpose of the study. Оценить взаимосвязь между выраженностью иммуновоспалительного ответа и клинико-инструментальными параметрами ишемии миокарда и эндотелиальной дисфункции у пациентов с микрососудистой стенокардией.

Materials and methods. Correlation and regression analysis was performed between immunological parameters (IL-6, TNF-α, sVCAM-1, sICAM-1, endothelin-1, hsCRP, circulating endothelial microparticles) and data from electrocardiography, bicycle ergometry, exercise echocardiography, 24-hour ECG and blood pressure monitoring, and stress echocardiography. Parametric and nonparametric statistical analysis methods were used: Mann-Whitney test, t-test, χ^2, ANOVA, Kruskal-Wallis, correlation analysis (Pearson and Spearman), and multiple regression analysis.

Research results. Correlation analysis revealed multiple significant relationships between immunological markers and clinical and instrumental parameters of myocardial ischemia. A strong direct correlation was established between the IL-6 level and the number of ischemic episodes per day according to Holter monitoring data ($r=0.74$, $p<0.001$). The TNF-α level significantly correlated with the degree of ST segment depression during bicycle ergometry ($r=0.68$, $p<0.001$) and the duration of ischemic episodes ($r=0.62$, $p<0.001$). The concentration of endothelin-1 showed a

close relationship with coronary reserve impairment according to stress echocardiography data (r=0.71, p<0.001) and a decrease in left ventricular ejection fraction during exercise (r=–0.58, p<0.01). Adhesion molecules sVCAM-1 and sICAM-1 significantly correlated with the severity of regional myocardial perfusion disorders according to perfusion scintigraphy data (r=0.64 and r=0.59, respectively, p<0.001). The hsCRP level showed a moderate direct correlation with systolic blood pressure (r=0.46, p<0.01) and the frequency of ventricular extrasystoles (r=0.42, p<0.05). The concentration of circulating endothelial microparticles significantly correlated with the severity of endothelial dysfunction (r=0.76, p<0.001) and the level of endothelin-1 (r=0.82, p<0.001). Multiple regression analysis revealed that the most significant predictors of ischemia severity were IL-6 (β=0.34, p<0.001), TNF-α (β=0.28, p<0.01) and endothelin-1 (β=0.31, p<0.001), which together explained 68% of the variability in clinical and instrumental parameters of ischemia. An inverse correlation was established between the level of nitric oxide (NO) and the concentration of IL-6 (r=–0.54, p<0.01), as well as between NO and TNF-α (r=–0.48, p<0.01), indicating impaired vasodilation against the background of the inflammatory response. Analysis of heart rate variability showed a significant decrease in SDNN and RMSSD in patients with high cytokine levels (r=–0.56 and r=–0.49, respectively, p<0.01), indicating an association of the immune-inflammatory response with dysfunction of the autonomic nervous system.

Conclusion. The immune-inflammatory response is closely linked to the clinical and instrumental manifestations of myocardial ischemia and endothelial dysfunction in microvascular angina. The identified pathogenetic relationships confirm the leading role of inflammation in the pathogenesis of the disease and substantiate the advisability of immunomodulatory interventions as a pathogenetically targeted approach to therapy.

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LEXICAL-SEMANTIC FEATURES OF PHRASEOLOGICAL UNITS EXPRESSING PURPOSE AND ASPIRATION IN ENGLISH AND UZBEK LANGUAGES

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Abstract. *Phraseological units represent one of the most expressive and culturally significant layers of a language. They reflect the worldview, values, traditions, and cognitive experiences of a particular nation. Among the various semantic groups of phraseological units, expressions denoting purpose, aspiration, determination, and achievement occupy a special place because they reveal human motivation and attitudes toward success. This article investigates the lexical-semantic features of phraseological units expressing purpose and aspiration in English and Uzbek languages. The study examines their semantic structure, figurative meanings, cultural specificity, and linguistic functions. Through a comparative analysis, similarities and differences between English and Uzbek phraseological units are identified, revealing both universal and nationally specific conceptualizations of ambition, goals, and perseverance. The findings demonstrate that phraseological units serve not only as linguistic phenomena but also as cultural markers reflecting national mentality and social values.*

Keywords: *phraseological units, phraseology, lexical-semantic analysis, English language, Uzbek language, aspiration, purpose, determination, comparative linguistics, linguoculturology.*

Introduction

Phraseology constitutes an important branch of linguistics concerned with the study of fixed expressions, idioms, proverbs, and other stable word combinations. Phraseological units enrich language by providing expressive, figurative, and culturally loaded meanings that cannot always be understood through the meanings of their individual components. As a result, phraseological units are regarded as valuable linguistic resources reflecting the historical development, traditions, customs, and collective consciousness of a speech community.

Modern linguistic research increasingly emphasizes the role of phraseology in understanding the relationship between language, culture, and cognition. Phraseological units preserve cultural experiences accumulated over centuries and

transmit them from one generation to another. Consequently, they represent a unique source for investigating national mentality and cultural identity.

Among numerous thematic groups of phraseological units, those expressing purpose and aspiration deserve particular attention. Human life is closely connected with goals, ambitions, hopes, and efforts directed toward achieving desired outcomes. Therefore, languages possess a rich variety of phraseological expressions describing determination, persistence, success, ambition, and the pursuit of objectives. Such expressions often emerge from metaphorical interpretations of human experience and reflect culturally specific attitudes toward achievement and self-realization.

In both English and Uzbek languages, phraseological units expressing purpose and aspiration are widely used in everyday communication, literary discourse, journalistic texts, and public speech. Despite belonging to different language families and cultural traditions, both languages demonstrate remarkable similarities in conceptualizing human aspirations while simultaneously preserving unique national characteristics.

The comparative investigation of phraseological units contributes to the development of contrastive linguistics, cognitive linguistics, linguoculturology, and translation studies. Understanding lexical-semantic correspondences between English and Uzbek phraseological expressions facilitates intercultural communication and improves translation accuracy.

The objective of this study is to analyze the lexical-semantic features of phraseological units expressing purpose and aspiration in English and Uzbek languages, identify their semantic classifications, and determine their cultural and linguistic peculiarities.

Main Part

Theoretical Foundations of Phraseological Units

Phraseological units are stable lexical combinations characterized by semantic integrity, reproducibility, and figurative meaning. According to phraseological theory, the meaning of a phraseological unit cannot be fully derived from the meanings of its constituent words. Instead, it functions as a single semantic entity.

Researchers such as Vinogradov, Kunin, and Amosova emphasize that phraseological units constitute an essential component of a language's lexical system. They perform nominative, expressive, evaluative, and cultural functions.

The semantic richness of phraseological units makes them particularly useful for expressing abstract concepts such as ambition, determination, and purpose. Through metaphorical imagery, speakers can convey complex psychological states and social attitudes in a concise and memorable form.

Phraseological Units Expressing Purpose and Aspiration in English

English contains numerous phraseological units associated with determination, ambition, and goal achievement.

Examples include:

Phraseological Unit	Meaning
Keep one's eye on the prize	Remain focused on a goal
Go the extra mile	Make additional effort
Reach for the stars	Have ambitious goals
Set one's sights on	Aim for a specific objective
Climb the ladder of success	Achieve professional advancement
Follow one's dreams	Pursue personal aspirations
Stay the course	Continue despite difficulties
Move mountains	Accomplish something difficult

These phraseological units emphasize perseverance, personal initiative, self-confidence, and achievement. Most are based on metaphorical images involving movement, height, travel, or physical effort.

For example, the expression "reach for the stars" metaphorically associates ambition with attempting to touch distant celestial objects, highlighting the importance of aiming high and pursuing challenging goals.

Phraseological Units Expressing Purpose and Aspiration in Uzbek

The Uzbek language also possesses a rich inventory of phraseological units expressing determination and aspiration.

Examples include:

Phraseological Unit	Meaning
Koʻzini maqsadga tikmoq	To focus completely on a goal
Bel bogʻlamoq	To firmly decide to do something
Maqsad sari intilmoq	To strive toward a goal
Oldiga katta maqsad qoʻymoq	To set ambitious goals
Tishini tishiga qoʻyib ishlamoq	To work with patience and determination
Jon-jahdi bilan harakat qilmoq	To make every possible effort
Yuksak marralarni koʻzlamoq	To aim for high achievements
Orzusiga yetmoq	To achieve one's dream

These expressions frequently emphasize diligence, perseverance, patience, and moral commitment. Unlike many English expressions that focus on individual achievement,

some Uzbek phraseological units additionally highlight collective values and social responsibility.

Lexical-Semantic Analysis

The lexical-semantic analysis reveals several common semantic components in both languages:

1. Goal orientation;
2. Determination and persistence;
3. Hope and aspiration;
4. Effort and hard work;
5. Success and achievement.

However, differences also emerge.

English phraseological units often reflect concepts associated with competition, personal success, and individual ambition. Metaphors involving journeys, climbing, and reaching are particularly common.

Uzbek phraseological units frequently emphasize endurance, patience, and moral strength. Many expressions originate from traditional cultural values related to diligence, responsibility, and social harmony.

Linguocultural Peculiarities

Phraseological units function as carriers of cultural information. The comparison demonstrates that English culture tends to conceptualize success through metaphors of upward movement and personal advancement, whereas Uzbek culture often associates achievement with perseverance, dedication, and collective respect.

For example:

- English: "Climb the ladder of success"
- Uzbek: "Bel bog‘lab kirishmoq"

Although both expressions denote determination, their metaphorical foundations differ significantly, reflecting distinct cultural perspectives.

Similarities and Differences

The comparative analysis identifies several similarities:

- Both languages possess numerous phraseological units related to ambition and goals.
- Metaphorical imagery is widely employed.
- Determination and perseverance are highly valued.

Differences include:

- Cultural symbolism;
- Preferred metaphorical models;

- Social versus individual orientation;
- Historical and cultural origins of expressions.

These differences contribute to the linguistic uniqueness of each language while demonstrating universal human concerns regarding purpose and achievement.

Conclusion

The comparative analysis of phraseological units expressing purpose and aspiration in English and Uzbek languages demonstrates that phraseology serves as an important linguistic and cultural resource. Such phraseological units reflect universal human experiences related to ambition, determination, and achievement while simultaneously preserving nationally specific cultural values.

The lexical-semantic study reveals common conceptual domains including goal orientation, perseverance, effort, and success. However, significant differences emerge in metaphorical representations and cultural associations. English phraseological units frequently emphasize personal achievement and individual initiative, whereas Uzbek expressions often highlight patience, diligence, and social values.

The findings confirm that phraseological units are not merely linguistic structures but also reflections of cultural identity and national mentality. Their comparative investigation contributes to the fields of contrastive linguistics, phraseology, cognitive linguistics, linguoculturology, and translation studies. Further research may explore pragmatic and cognitive aspects of phraseological units in different linguistic and cultural contexts.

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KREDIT-MODUL TIZIMIDA MASOFAVIY TA’LIM TEXNOLOGIYALARIDAN FOYDALANISH

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Annotatsiya: Kredit-modul tizimi sharoitida masofaviy ta’lim texnologiyalaridan foydalanish zamonaviy oliy ta’lim tizimining muhim yo‘nalishlaridan biri hisoblanadi. Mazkur texnologiyalar ta’lim jarayonining moslashuvchanligini ta’minlash, talabalar uchun qulay o‘quv muhitini yaratish va mustaqil ta’lim faoliyatini rivojlantirishga xizmat qiladi. Ushbu maqolada kredit-modul tizimida masofaviy ta’lim texnologiyalarining o‘rni, afzalliklari va amaliy ahamiyati tahlil qilingan. Shuningdek, Moodle, Google Classroom, Microsoft Teams, Zoom kabi zamonaviy platformalarning ta’lim jarayonidagi imkoniyatlari yoritilgan. Tadqiqot davomida masofaviy ta’lim texnologiyalarining ta’lim sifati, akademik faollik va kasbiy kompetensiyalarni rivojlantirishga ta’siri o‘rganildi. Natijalar masofaviy ta’lim vositalaridan samarali foydalanish ta’lim jarayonining samaradorligini oshirish, o‘quv resurslaridan keng foydalanish va talabalarni zamonaviy mehnat bozori talablariga mos tayyorlash imkonini berishini ko‘rsatdi.

Kalit so‘zlar: Masofaviy ta’lim, raqamli texnologiyalar, elektron ta’lim, Moodle, Google Classroom, oliy ta’lim, mustaqil ta’lim, ta’lim sifati, akademik mobillik.

Kirish

Axborot-kommunikatsiya texnologiyalarining jadal rivojlanishi ta’lim tizimida tub o‘zgarishlarning yuz berishiga sabab bo‘lmoqda. Xususan, oliy ta’lim muassasalarida masofaviy ta’lim texnologiyalaridan foydalanish zamonaviy ta’limning muhim yo‘nalishlaridan biriga aylandi. Kredit-modul tizimining joriy etilishi bilan bir qatorda masofaviy ta’lim texnologiyalarining qo‘llanilishi ta’lim jarayonining samaradorligini oshirish, talabalar uchun qulay va moslashuvchan ta’lim muhitini yaratish hamda mustaqil ta’limni rivojlantirish imkoniyatlarini kengaytirdi. Zamonaviy platformalar, elektron ta’lim resurslari, videokonferensiya tizimlari va virtual o‘quv muhitlari talabalarning istalgan joy va vaqtda bilim olishlariga xizmat qilmoqda.

Kredit-modul tizimi talabalarning mustaqil ta’lim faoliyatiga katta e’tibor qaratishi bilan ajralib turadi. Shu jihatdan masofaviy ta’lim texnologiyalari ushbu tizimning asosiy maqsad va vazifalarini amalga oshirishda muhim vosita hisoblanadi. Moodle, Google Classroom, Microsoft Teams, Zoom va boshqa zamonaviy platformalar yordamida o‘quv jarayonini tashkil etish, nazorat qilish va baholash imkoniyatlari

kengaymoqda. Natijada ta’limning ochiqligi, shaffofligi va samaradorligi ortib bormoqda. Shu sababli kredit-modul tizimi sharoitida masofaviy ta’lim texnologiyalaridan foydalanishning nazariy va amaliy jihatlarini o‘rganish, ularning ta’lim sifati va talabalar kompetensiyalarini rivojlantirishga ta’sirini tahlil qilish muhim ilmiy ahamiyat kasb etadi.

Dolzarbligi

Mavzuning dolzarbligi zamonaviy oliy ta’lim tizimida raqamli texnologiyalar va masofaviy ta’lim vositalarining keng joriy etilishi bilan belgilanadi. Kredit-modul tizimida talabalarning mustaqil ta’lim olish ko‘nikmalarini rivojlantirish, ta’lim jarayonining moslashuvchanligini ta’minlash hamda o‘quv resurslaridan samarali foydalanish muhim vazifalardan hisoblanadi. Masofaviy ta’lim texnologiyalari aynan ushbu vazifalarni amalga oshirishga xizmat qiladi. Shuningdek, ta’lim sifati va samaradorligini oshirish, akademik mobillikni rivojlantirish hamda xalqaro ta’lim standartlariga mos mutaxassislarni tayyorlashda masofaviy ta’lim texnologiyalarining o‘rni tobora ortib bormoqda. Shu bois kredit-modul tizimi sharoitida masofaviy ta’lim texnologiyalaridan foydalanish masalasi bugungi kunda dolzarb ilmiy-amaliy ahamiyatga ega bo‘lgan tadqiqot yo‘nalishlaridan biri hisoblanadi.

Asosiy qism

Kredit-modul tizimi zamonaviy oliy ta’limni tashkil etishning ilg‘or shakllaridan biri bo‘lib, talabalarning mustaqil ta’lim faoliyatiga katta e’tibor qaratadi. Ushbu tizim sharoitida masofaviy ta’lim texnologiyalaridan foydalanish ta’lim jarayonining samaradorligini oshirishga xizmat qiladi. Masofaviy ta’lim texnologiyalari axborot-kommunikatsiya vositalari orqali o‘qituvchi va talaba o‘rtasidagi o‘zaro hamkorlikni ta’minlaydi. Mazkur texnologiyalar ta’limning uzluksizligini ta’minlash, o‘quv materiallariga tezkor kirish imkoniyatini yaratish hamda ta’lim resurslaridan samarali foydalanishni qo‘llab-quvvatlaydi. Kredit-modul tizimida har bir talaba ma’lum miqdordagi kreditlarni o‘zlashtirishi zarur bo‘lib, bunda masofaviy ta’lim vositalari muhim ahamiyatga ega. Elektron platformalar, virtual auditoriyalar va raqamli kutubxonalar talabalarning bilim olish imkoniyatlarini kengaytiradi. Masofaviy ta’limning nazariy asoslari ochiq ta’lim, mustaqil ta’lim va kompetensiyaga asoslangan yondashuvlarga tayanadi. Bu esa talabalarning bilim olishdagi faolligini oshiradi. Shuningdek, o‘quv jarayonining moslashuvchanligini ta’minlaydi. Talabalar o‘z vaqtini samarali rejalashtirish va o‘quv faoliyatini mustaqil tashkil etish imkoniyatiga ega bo‘ladilar.

Masofaviy ta’lim texnologiyalaridan foydalanish kredit-modul tizimining samaradorligini oshirishda muhim omil hisoblanadi. Avvalo, ushbu texnologiyalar

ta’lim olish imkoniyatlarini kengaytiradi va geografik masofaga bog‘liqlikni kamaytiradi. Talabalar istalgan joydan turib dars mashg‘ulotlarida qatnashishlari va o‘quv materiallaridan foydalanishlari mumkin. Bu esa ta’limning qulayligi va ochiqligini ta’minlaydi. Kredit-modul tizimida mustaqil ta’lim muhim o‘rin tutgani sababli masofaviy ta’lim platformalari talabalar uchun katta imkoniyat yaratadi. Moodle, Google Classroom, Zoom va Microsoft Teams kabi platformalar orqali o‘quv jarayonini samarali tashkil etish mumkin. Elektron topshiriqlar, onlayn testlar va videoma’ruzalar bilimlarni mustahkamlashga yordam beradi. Bundan tashqari, masofaviy ta’lim texnologiyalari vaqt va mablag‘ sarfini kamaytiradi. Talabalar o‘zlariga qulay vaqtda o‘quv materiallarini o‘zlashtirish imkoniyatiga ega bo‘ladilar. O‘qituvchilar esa ta’lim jarayonini nazorat qilish va baholashni avtomatlashtirilgan tizimlar orqali amalga oshiradilar.

Kredit-modul tizimida masofaviy ta’lim texnologiyalaridan foydalanish ko‘plab afzalliklarga ega bo‘lsa-da, ayrim muammolar ham mavjud. Eng avvalo, texnik infratuzilmaning yetarli darajada rivojlanmaganligi ayrim ta’lim muassasalarida masofaviy ta’limni samarali tashkil etishga to‘sqinlik qilmoqda. Internet tezligining pastligi yoki texnik vositalarning yetishmasligi talabalar va o‘qituvchilar uchun qiyinchiliklar tug‘diradi. Bundan tashqari, ayrim talabalar mustaqil ta’lim olish ko‘nikmalarining yetarli darajada shakllanmaganligi sababli masofaviy ta’lim jarayonida qiyinchiliklarga duch keladilar. O‘qituvchilarning raqamli kompetensiyalari ham muhim omil hisoblanadi. Zamonaviy texnologiyalar bilan ishlash bo‘yicha malakaning yetarli emasligi ta’lim sifati pasayishiga olib kelishi mumkin. Shu bilan birga, akademik halollikni ta’minlash va bilimlarni obyektiv baholash masalalari ham dolzarb hisoblanadi. Biroq ushbu muammolarga qaramay, masofaviy ta’lim texnologiyalarining istiqbollari juda kengdir. Sun’iy intellekt, virtual reallik va raqamli platformalarning rivojlanishi ta’lim jarayonini yanada takomillashtirish imkonini bermoqda. Kelgusida masofaviy ta’lim texnologiyalari kredit-modul tizimining samaradorligini oshirishda muhim vosita bo‘lib qoladi va zamonaviy, raqobatbardosh mutaxassislarni tayyorlashga xizmat qiladi.

Xulosa

Xulosa qilib aytganda, kredit-modul tizimi sharoitida masofaviy ta’lim texnologiyalaridan foydalanish zamonaviy oliy ta’limning muhim tarkibiy qismlaridan biri hisoblanadi. Ushbu texnologiyalar ta’lim jarayonining moslashuvchanligini ta’minlash, talabalarning mustaqil ta’lim olish imkoniyatlarini kengaytirish hamda bilimlarni o‘zlashtirish samaradorligini oshirishga xizmat qiladi. Kredit-modul tizimining asosiy tamoyillari bilan uyg‘unlashgan masofaviy ta’lim vositalari

talabalarning akademik faolligini kuchaytirib, ularning kasbiy va shaxsiy kompetensiyalarini rivojlantirish uchun qulay sharoit yaratadi. Tadqiqot natijalari shuni ko‘rsatadiki, Moodle, Google Classroom, Microsoft Teams, Zoom kabi zamonaviy platformalar ta’lim jarayonini samarali tashkil etish, o‘quv materiallarini tezkor yetkazish va talabalar bilimini muntazam nazorat qilish imkonini beradi. Shu bilan birga, masofaviy ta’lim texnologiyalari akademik mobillikni rivojlantirish, ta’lim resurslaridan keng foydalanish va xalqaro ta’lim tajribalarini o‘zlashtirishga ham yordam beradi. Biroq masofaviy ta’lim texnologiyalarini qo‘llash jarayonida texnik infratuzilmaning yetarli emasligi, internet tarmog‘i bilan bog‘liq muammolar, ayrim talabalarning mustaqil ta’lim ko‘nikmalarining sustligi va raqamli kompetensiyalarning yetarli darajada shakllanmaganligi kabi qator muammolar mavjud. Ushbu kamchiliklarni bartaraf etish uchun zamonaviy axborot-kommunikatsiya texnologiyalarini rivojlantirish, pedagoglarning malakasini oshirish hamda elektron ta’lim resurslarini takomillashtirish zarur.

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GRAMMAR TRANSLATION METHOD: AN EFFECTIVE APPROACH TO TEACH ENGLISH AS A SECOND LANGUAGE IN A BILINGUAL COUNTRY

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Abstract
This article examines the Grammar Translation Method (GTM) as a relevant and effective pedagogical approach for teaching English as a second language in bilingual educational contexts. Drawing on four years of classroom experience as a university English teacher, the author explores how GTM supports learners whose native language shares structural similarities with English, enhances reading comprehension, builds grammatical accuracy, and facilitates the development of academic vocabulary. The article presents practical classroom strategies grounded in GTM principles and evaluates their effectiveness through illustrative examples. While acknowledging the limitations of the method, this study argues that when thoughtfully adapted to modern learner needs, GTM continues to offer substantial value — particularly in bilingual countries where L1 literacy can be leveraged as a cognitive bridge to L2 acquisition. The findings suggest that a blended approach, integrating GTM with communicative tasks, produces more holistic and sustainable language learning outcomes.

Introduction
Language teaching methodology has evolved considerably over the past century, shifting from highly structured, grammar-focused approaches toward communicative and learner-centered models. Yet despite this shift, the Grammar Translation Method (GTM) — one of the oldest and most systematic methods of language instruction — continues to occupy a significant place in classrooms around the world, particularly in non-Anglophone and bilingual educational settings. This persistence is not simply a matter of tradition; rather, it reflects the practical realities of teaching English in countries where students share a dominant first language and where reading, writing, and structural accuracy remain central academic demands.
In a bilingual country, where students are already proficient in at least one other language, the cognitive architecture they bring to English learning is both an advantage and a challenge. GTM, by explicitly drawing on translation and grammatical comparison between L1 and L2, taps into existing linguistic knowledge and offers

learners a familiar framework for navigating a new language system. As a university English teacher with four years of experience working in such an environment, I have observed firsthand how strategic use of GTM can accelerate learners' grammatical comprehension, support academic reading skills, and build confidence in written expression.

This article does not position GTM as a standalone solution, nor does it dismiss the criticisms leveled against it — namely, its limited attention to oral communication and authentic language use. Rather, it argues for a nuanced reevaluation of GTM's place in contemporary second language teaching, particularly within bilingual institutional contexts. By examining its theoretical underpinnings, practical applications, and points of integration with communicative approaches, this study aims to offer educators a more complete picture of the method's continued pedagogical relevance.

Understanding the Grammar Translation Method

The Grammar Translation Method originated in the teaching of classical languages, particularly Latin and Greek, and was subsequently adapted for the instruction of modern foreign languages throughout the 18th and 19th centuries. At its core, GTM is characterized by several defining features: the explicit teaching of grammatical rules, the use of translation as the primary vehicle for meaning-making, a strong emphasis on reading and writing over speaking and listening, the study of literary and academic texts, and the frequent use of the learner's mother tongue as a medium of instruction.

Scholars such as Richards and Rodgers (2001) describe GTM as a method in which "the ability to read literature in the target language is the primary goal" and in which translation exercises serve both as a pedagogical tool and a means of assessment. While this approach has been critiqued for its neglect of communicative competence, it has also been defended by researchers who note its effectiveness in building metalinguistic awareness — that is, the learner's ability to think consciously and analytically about language structure.

In a bilingual context, these strengths take on particular significance. Students who are already literate in their first language can draw on established reading strategies, grammatical schemas, and academic vocabulary when approaching English texts through a translation-based framework. This cognitive transfer, known in second language acquisition research as positive transfer or L1 facilitation, is one of the key mechanisms through which GTM produces measurable learning gains.

GTM in Bilingual Classrooms: Theoretical Justification

The relevance of GTM in bilingual settings is supported by several theoretical frameworks. Contrastive Analysis Hypothesis (CAH), developed by Lado (1957),

holds that elements of the target language that differ from the learner's mother tongue will be more difficult to acquire, while those that are similar will be easier. GTM directly exploits this principle by encouraging explicit comparison between L1 and L2 grammatical structures, enabling teachers to predict and preemptively address areas of difficulty.

Furthermore, Cummins' Interdependence Hypothesis (1979) provides additional theoretical grounding: it proposes that competence in L1 literacy supports the development of L2 academic language proficiency. In bilingual classrooms, students who receive grammatically explicit instruction in English alongside their dominant language are not simply memorizing rules — they are developing a cross-linguistic metalinguistic framework that strengthens both languages simultaneously.

From a cognitive standpoint, Swain's Output Hypothesis (1995) also aligns partially with GTM practice. The production of accurate translated texts requires learners to notice gaps in their interlanguage, formulate precise linguistic structures, and reflect on the grammatical choices they make — a process that reinforces deep encoding of language rules. Translation as a cognitively demanding task thus functions as a form of structured output that promotes accuracy and attention to form.

Practical Strategies Using GTM in University ESL Classrooms

Drawing on four years of university-level teaching experience, I have developed and refined several GTM-informed strategies that consistently yield positive results in bilingual educational environments. These strategies do not exclude communicative elements but rather integrate them with the structural rigor GTM provides.

The first strategy involves parallel text reading, in which students are presented with a literary or academic passage in English alongside its professionally translated equivalent in their first language. Learners analyze sentence structure, grammatical patterns, and vocabulary choices in both texts, then produce their own reverse translation from L1 back into English. This activity builds grammatical awareness, vocabulary retention, and an understanding of how meaning is encoded differently across languages.

The second strategy centers on grammar-rule discovery through translation. Rather than presenting rules didactically, teachers ask students to translate a series of English sentences containing a target structure — for example, passive voice or conditional clauses — and then derive the grammatical rule themselves through comparative analysis. This inductive approach, rooted in GTM's analytical tradition, promotes deeper cognitive engagement and longer-term retention.

A third strategy involves academic vocabulary building through etymological analysis. Many English academic words share Latin or Greek roots with their equivalents in other languages, particularly those in the Indo-European family. By mapping these etymological connections, bilingual learners can dramatically expand their passive vocabulary and improve their ability to infer the meaning of unfamiliar terms in context.

Finally, error analysis through translation comparison offers a powerful diagnostic tool. When students produce translations that reveal systematic errors — such as incorrect verb tense or misplaced modifiers — teachers can trace these errors to specific points of L1-L2 structural divergence and provide targeted corrective feedback. This approach is both efficient and personalized, as it addresses each learner's specific linguistic challenges rather than treating the class as a monolithic group.

Classroom Examples

Example:

In a second-year university English course, students were asked to translate a paragraph from a short story into their first language and then retranslate it back into English without looking at the original. When their versions were compared with the source text, differences in tense use, article placement, and preposition choice became visible. These errors became the basis for a class discussion on specific grammatical rules, making the lesson relevant, student-driven, and analytically rigorous. Student performance on subsequent grammar assessments improved by an average of 18% compared to the previous semester, when the same rules had been taught through decontextualized drills.

Example:

In a reading comprehension class, students were given an academic article in English alongside a translation in their dominant language. They were tasked with identifying five key terms, analyzing how they were translated, and writing a glossary entry for each. This exercise improved both their disciplinary vocabulary and their ability to read academic English independently. End-of-term reading scores showed a statistically meaningful improvement among students who completed the full glossary-building sequence, compared to those in a control group who only read in English.

Addressing the Criticisms of GTM

The most persistent criticism of GTM is its neglect of oral communication. Critics argue that a method centered on reading, writing, and translation fails to equip learners with the speaking and listening skills required for real-world language use. This criticism holds merit, and any honest evaluation of GTM must acknowledge it.

However, it does not necessitate the wholesale abandonment of the method; rather, it calls for thoughtful integration.

In my own classroom practice, I have found that GTM activities serve as effective preparation for communicative tasks. When students have deeply internalized a grammatical structure through translation practice, they demonstrate greater accuracy and confidence when deploying it in spoken interaction. The sequence — structural understanding through GTM, followed by communicative application — mirrors the scaffolded learning model advocated by Vygotsky (1978), in which explicit instruction supports the gradual internalization and autonomous use of new knowledge.

A second criticism concerns the overuse of the learner's mother tongue in instruction. While GTM traditionally relies heavily on L1 as a medium of explanation, this does not mean that L1 use should be unlimited or uncontrolled. A judicious, purposeful use of translation — rather than a reflexive reliance on it — preserves the cognitive benefits of GTM while encouraging learners to operate increasingly in the target language as their proficiency grows.

Conclusion

The Grammar Translation Method, when applied reflectively and in combination with communicative elements, remains a valuable and effective approach to teaching English as a second language in bilingual educational contexts. Its emphasis on grammatical precision, translation as a meaning-making strategy, and the leveraging of L1 knowledge aligns well with the cognitive and linguistic realities of bilingual learners. Rather than viewing GTM as an outdated relic of a pre-communicative era, educators in bilingual countries would benefit from reconsidering it as one powerful tool within a broader pedagogical repertoire.

The strategies outlined in this article — parallel text reading, grammar-rule discovery, etymological vocabulary building, and error analysis through translation — offer practical, evidence-informed pathways for integrating GTM into modern ESL classrooms without sacrificing the communicative goals that contemporary language teaching rightly prioritizes. As with all pedagogical decisions, the most effective approach is one that is responsive to the learner's context, needs, and goals — and for many bilingual students, GTM continues to meet that standard.

Glossary (For Learners)

Grammar Translation Method (GTM)	A language teaching approach that uses translation and grammatical analysis as primary instructional tools

Bilingual Education	An educational setting where two languages are used for instruction or where learners are proficient in two languages
L1 / L2	L1 refers to a learner's first (native) language; L2 refers to the language being learned
Contrastive Analysis	The systematic comparison of two languages to predict learning difficulties
Metalinguistic Awareness	The ability to think analytically and consciously about language structure
Positive Transfer	When knowledge of L1 facilitates the learning of a similar feature in L2
Interlanguage	The evolving linguistic system developed by a learner between their L1 and the target L2
Scaffolded Learning	A teaching approach in which structured support is provided and gradually withdrawn as learner competence increases
Communicative Competence	The ability to use language appropriately and effectively in real-life social contexts
Academic Vocabulary	Words frequently used in academic texts and formal written discourse

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AI-ASSISTED FEEDBACK AND ITS IMPACT ON EFL STUDENTS' WRITING DEVELOPMENT

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Abstract

This article examines the impact of artificial intelligence-assisted feedback on the writing development of English as a Foreign Language (EFL) students at the university level. Drawing on four years of classroom teaching experience and an emerging body of research at the intersection of applied linguistics, educational technology, and writing pedagogy, the study investigates how AI-powered writing tools — including automated writing evaluation systems, large language model-based feedback platforms, and grammar and style checkers — reshape the feedback cycle in EFL writing instruction. The article presents a theoretically grounded analysis of AI feedback's distinct characteristics — immediacy, scalability, consistency, and multi-dimensional coverage — and evaluates both its advantages over and limitations compared to traditional teacher feedback. Practical classroom-based strategies for integrating AI feedback pedagogically and transparently are described, and classroom evidence with quantifiable outcomes is presented. The article argues that AI-assisted feedback, when implemented critically and in thoughtful combination with teacher and peer feedback, significantly accelerates EFL students' writing development by increasing the frequency, specificity, and actionability of the feedback they receive — provided that educators maintain a central role in shaping how students interpret and respond to AI-generated commentary.

Introduction

Writing is widely regarded as the most cognitively demanding of the four language skills, and it is also the one in which the quality of feedback has the most decisive influence on learner development. Research consistently demonstrates that EFL writers improve most substantially not through writing alone, but through the iterative cycle of drafting, receiving specific and actionable feedback, revising, and reflecting on the changes they have made. The problem facing most EFL writing teachers is not that they lack the pedagogical knowledge to provide excellent feedback, but that they lack the time and the logistical capacity to provide it frequently enough, across enough drafts, to generate the rapid developmental trajectory that their students need.

A university writing teacher managing four classes of thirty students each can realistically provide detailed written feedback on one draft per student per week — and often less. Meanwhile, research by Ferris (2003) and others establishes that the frequency of feedback exposure is one of the strongest predictors of writing improvement: students who receive feedback on multiple drafts of the same text make significantly greater gains than those who receive feedback only on a final submission. This structural gap between the optimal feedback conditions for writing development and the feedback conditions that teacher workload actually permits has long been one of the central unsolved problems in EFL writing pedagogy.

The rapid development and increasing accessibility of artificial intelligence writing tools over the past several years has brought this problem into sharp new focus, because it has — for the first time — created a realistic possibility of closing the feedback frequency gap at scale. AI-powered writing feedback systems can analyze a student's text within seconds, provide detailed commentary across multiple dimensions of writing quality, and do so as many times as the student chooses to revise and resubmit — without any additional demand on teacher time. The pedagogical question is no longer whether AI can provide feedback, but under what conditions, for which aspects of writing, and in what combination with human feedback, AI-assisted feedback most effectively supports EFL writing development.

As a university English teacher who has integrated AI feedback tools into writing courses for four years, I have developed a nuanced view of both the considerable potential and the real limitations of AI-assisted feedback in EFL contexts. This article aims to share that perspective in a way that is theoretically grounded, practically useful, and honest about the complexities that any responsible educator must navigate when introducing AI tools into writing instruction.

Theoretical Framework: Feedback and Writing Development

The theoretical case for feedback as a driver of writing development rests on several foundational frameworks. Vygotsky's (1978) concept of the Zone of Proximal Development (ZPD) provides a central rationale: effective feedback functions as a form of expert scaffolding that enables writers to perform at a level beyond their current independent capacity, progressively internalizing the evaluative standards and revision strategies that the feedback makes explicit. From this perspective, the goal of writing feedback is not merely to correct a specific text but to develop the writer's capacity for self-assessment and self-revision — a goal that has direct implications for how AI feedback should be designed and used.

Hattie and Timperley's (2007) influential model of feedback effectiveness identifies four levels at which feedback can operate: task level (feedback on the correctness of specific responses), process level (feedback on the strategies and processes used to complete a task), self-regulation level (feedback that develops the learner's capacity for self-monitoring and self-correction), and self level (feedback about the learner as a person). Their meta-analysis of feedback research demonstrates that process and self-regulation level feedback produces the largest and most durable gains in learning outcomes — a finding with significant implications for AI feedback design, since most current AI writing tools operate primarily at the task level, providing corrections of specific errors rather than developing writers' broader strategic capacity.

Ferris's (2003) research on written corrective feedback in L2 writing establishes a set of principles for effective error feedback that apply equally to AI-generated commentary. Feedback is most effective when it is focused rather than comprehensive — targeting a specific, manageable set of error types rather than marking every deviation from target-language norms. It is most actionable when it is explicit — providing not just a signal that an error has occurred but a clear indication of what the correct form should be and why. And it produces the most durable revisions when it is accompanied by opportunities for the student to implement the feedback immediately — through revision tasks that require active engagement with the corrections received, rather than passive acknowledgment.

Sociocultural writing research, particularly the work of Prior (2006), emphasizes that writing development is not merely a cognitive process but a social and dialogic one — shaped by the writer's relationships with actual and imagined audiences, by the genres and discourse communities they are being apprenticed into, and by the quality of the dialogue between writer and respondent that feedback initiates. This perspective raises important questions about AI feedback's capacity to engage with the social and rhetorical dimensions of writing — questions that the following sections address directly.

Characteristics of AI-Assisted Feedback: Strengths and Limitations

AI-assisted writing feedback tools currently available to EFL educators range from relatively simple grammar and spell checkers — such as Grammarly and Microsoft Editor — to more sophisticated automated writing evaluation (AWE) platforms such as Turnitin's Revision Assistant and PEG Writing, to large language model (LLM)-powered tools capable of generating detailed, paragraph-level commentary on content, organization, and argumentation as well as surface-level accuracy.

The most significant strength of AI feedback is its immediacy and scalability. A student who submits a draft to an AI feedback system at eleven o'clock at night receives detailed commentary within seconds — commentary that they can act upon immediately by revising and resubmitting, potentially completing multiple revision cycles before their next class session. This capacity for rapid, iterative feedback dramatically increases the number of revision cycles a student can complete within a given instructional period, and research by Ranalli (2018) demonstrates that students who engage in AI-supported multi-draft revision processes produce final texts of significantly higher quality than those who revise without feedback or with only a single teacher feedback cycle.

A second significant strength is AI feedback's consistency and comprehensiveness at the surface level. Unlike teacher feedback, which inevitably varies in focus, depth, and tone across students and across marking sessions, AI feedback applies the same analytical criteria to every submission, ensuring that all students receive comparable coverage of grammatical accuracy, vocabulary range, sentence structure variety, and mechanical correctness. For EFL learners at lower proficiency levels, for whom surface-level accuracy is a genuinely significant barrier to effective written communication, this consistent, comprehensive surface-level feedback provides a level of linguistic scaffolding that teacher feedback alone rarely achieves.

However, AI feedback has equally significant limitations that educators must understand clearly before integrating these tools into writing curricula. The most fundamental limitation is AI's current inability to engage meaningfully with the higher-order dimensions of writing quality — argument quality, rhetorical effectiveness, audience awareness, originality of thought, and disciplinary appropriacy — that most writing researchers and teachers regard as central to academic writing development. AI systems that evaluate writing primarily through pattern recognition and statistical modeling are poorly equipped to assess whether an argument is genuinely persuasive, whether a text's organizational choices serve its communicative purpose, or whether the writer's voice is developing in a direction appropriate to their disciplinary community.

A second limitation concerns the risk of what Warschauer and Grimes (2008) term "teaching to the algorithm" — the phenomenon whereby students learn to optimize their writing for the features that AI systems reward, rather than developing the deeper rhetorical and communicative competencies that effective writing actually requires. When students discover that they can improve their AI feedback scores by increasing sentence length, adding transition words, or replacing simple vocabulary with more

sophisticated synonyms — without attending to whether these changes actually improve their text's communicative effectiveness — AI feedback has become an obstacle to rather than a support for genuine writing development.

Practical Strategies for Integrating AI Feedback in EFL Writing Courses

The following strategies represent approaches to AI feedback integration that I have developed and refined across four years of university EFL writing instruction. Each strategy is designed to maximize AI feedback's genuine strengths while mitigating its limitations through the complementary involvement of teacher judgment, peer response, and student metacognitive reflection.

The first strategy is the staged feedback protocol, in which AI feedback and teacher feedback are assigned to different stages of the writing process and to different dimensions of writing quality. Students submit an initial draft to an AI feedback platform, receive and act upon surface-level feedback on grammar, vocabulary, and sentence structure, and submit a revised draft before the teacher's feedback session. When the teacher then provides feedback, they can focus entirely on higher-order concerns — argument quality, organizational logic, audience appropriacy, and rhetorical effectiveness — without needing to address the surface errors that the AI feedback cycle has already resolved. This division of feedback labor both improves the quality of teacher feedback and frees teacher time for the dialogic, process-level commentary that AI cannot provide.

The second strategy involves explicit AI feedback literacy instruction. Before students engage with any AI writing tool, I dedicate two to three class sessions to developing their capacity to interpret, evaluate, and selectively act on AI-generated commentary. Students practice reading AI feedback critically — identifying suggestions that genuinely improve their writing, suggestions that are technically correct but stylistically inappropriate, and suggestions that are simply wrong. This critical AI literacy training is essential because students who accept all AI suggestions uncritically — treating the tool as an infallible authority rather than a useful but imperfect resource — frequently produce revised drafts that are grammatically tidier but communicatively less effective than their originals.

The third strategy is the AI-teacher-peer feedback triangle, in which all three feedback sources are integrated within a single revision cycle. Students receive AI feedback on an initial draft, make targeted revisions, share the revised draft with a peer respondent using a structured peer review protocol, and finally receive teacher commentary on the second draft. Each feedback source contributes what it does best: AI provides comprehensive, immediate coverage of surface accuracy; peer feedback develops

audience awareness and social dimensions of writing; and teacher feedback addresses rhetorical effectiveness, disciplinary conventions, and individual developmental needs. The triangulation of these three feedback perspectives produces a richer and more complete picture of the text's strengths and weaknesses than any single feedback source could provide.

The fourth strategy is the AI feedback reflection journal, in which students record their responses to AI-generated commentary after each revision cycle. Journal entries address three questions: Which AI suggestions did I accept, and why? Which did I reject, and what was my reasoning? What does the pattern of errors identified by the AI tell me about the aspects of my writing that need the most sustained attention? This metacognitive reflection transforms AI feedback from a series of one-off corrections into a cumulative source of data about the student's developing writing profile — and develops the self-regulatory capacity that independent writing improvement ultimately requires.

Classroom Examples

Example:

In a second-year academic writing course, I implemented the staged feedback protocol across a twelve-week argumentative essay unit. Students submitted each of four essays to Grammarly's advanced feedback platform before teacher review, completed a structured AI feedback response form identifying the three suggestions they had accepted and their rationale for each, and then submitted revised drafts for teacher commentary focused exclusively on argument quality and organizational effectiveness. Comparison of first drafts and final submissions showed that surface-level error density — measured as errors per hundred words — decreased by an average of 61% across the student group over the twelve-week period, compared to a 34% reduction in a parallel section that received only teacher feedback on complete drafts. Teacher feedback sessions, freed from the burden of surface error commentary, were rated by students as significantly more useful and specific than feedback sessions in the previous semester, with satisfaction scores improving from 3.4 to 4.6 on a five-point scale. Crucially, holistic writing quality scores — assessed blind by an external rater using an analytic rubric — improved by an average of 29% in the AI-integrated group, compared to 17% in the control group.

Example:

During a paragraph writing unit for first-year EFL students, I introduced a three-round AI revision protocol using an LLM-based feedback tool. Students wrote an initial paragraph, received AI feedback, revised and resubmitted, received a second round of

AI commentary, revised again, and submitted their final version for teacher assessment. The three-round protocol generated an average of 4.7 substantive revisions per student across the three drafts — significantly more than the 1.2 revisions typically observed when students receive only a single round of teacher feedback before final submission. Analysis of revision types showed that students were not merely correcting surface errors in later rounds but were increasingly attending to sentence-level clarity, vocabulary precision, and paragraph cohesion — indicating that the iterative AI feedback process was developing higher-order revision awareness as well as surface accuracy. End-of-unit paragraph scores averaged 74% in the AI-protocol group, compared to 61% in a section that completed the same writing tasks with teacher feedback only.

Ethical Considerations and Academic Integrity

No discussion of AI tools in EFL writing instruction can be complete without addressing the significant ethical questions that their use raises, particularly those related to academic integrity. The same large language model tools that can provide valuable formative feedback on student writing can also generate complete essays, paragraphs, or argument outlines that students might submit as their own work — a possibility that has generated legitimate concern among educators and institutions worldwide.

Navigating this concern requires clarity about the distinction between AI as a feedback tool and AI as a text generation tool. When students use AI to receive feedback on their own writing and make revision decisions independently, they are engaging in a legitimate and pedagogically valuable form of technology-assisted learning. When they use AI to generate text that they then submit as their own, they are engaging in academic dishonesty that undermines both the integrity of the assessment process and their own development as writers. Making this distinction explicit with students — through clear course policies, transparent pedagogical rationale, and process-based assessment designs that make AI-generated submission impractical — is the educator's responsibility.

Process-based assessment approaches, in which students submit drafts, feedback response forms, revision logs, and metacognitive reflections alongside their final texts, create an evidentiary record of the writing process that both discourages dishonest AI use and provides richer evidence of genuine writing development than final-product assessment alone can capture. These approaches transform assessment from a threat to be circumvented into a scaffold for development — and in doing so, address the academic integrity challenge not through surveillance but through pedagogical design.

Conclusion

AI-assisted feedback represents a genuinely transformative development in EFL writing pedagogy — one that, when implemented critically and in thoughtful combination with teacher and peer feedback, has the potential to close the feedback frequency gap that has long constrained writing development in large EFL classes. Its capacity to provide immediate, comprehensive, and consistent feedback on surface-level writing accuracy is a genuine pedagogical asset, particularly for EFL learners at lower proficiency levels for whom grammatical accuracy remains a significant communicative barrier.

At the same time, AI feedback's current limitations in engaging with the higher-order, rhetorical, and social dimensions of writing quality make it an insufficient replacement for — rather than a replacement of — the expert human judgment that effective writing instruction requires. The most productive framework for thinking about AI-assisted feedback is not one of competition between human and machine but one of complementarity: AI does what it does well at the surface level, freeing teachers to do what only they can do at the level of argument, rhetoric, and individual developmental guidance.

For EFL writing educators willing to invest the pedagogical thought required to integrate AI feedback critically, transparently, and in principled combination with other feedback sources, the rewards — in terms of student writing quality, feedback frequency, and learner autonomy — are substantial and well supported by both research evidence and classroom experience. The age of AI-assisted writing instruction has arrived; the question for educators is not whether to engage with it, but how to do so with the wisdom, the critical awareness, and the commitment to genuine learning that their students deserve.

Glossary (For Learners)

AI-Assisted Feedback	Written commentary on student texts generated by artificial intelligence tools, either automatically or in response to a submission
Automated Writing Evaluation (AWE)	Software that analyzes and scores student writing using computational algorithms, often providing detailed error-specific feedback
Large Language Model (LLM)	A type of AI system trained on vast quantities of text that can generate, analyze, and respond to written language with high sophistication

Written Corrective Feedback (WCF)	Teacher or system-generated commentary that identifies and addresses errors in student writing
Iterative Revision	The process of repeatedly drafting, receiving feedback, and revising a text across multiple cycles
Surface-Level Errors	Mistakes in grammar, spelling, punctuation, and sentence structure that affect the mechanical accuracy of a text
Higher-Order Concerns	Aspects of writing quality related to content, argument, organization, and rhetorical effectiveness
AI Feedback Literacy	The capacity to critically interpret, evaluate, and selectively act on feedback generated by AI writing tools
Process-Based Assessment	An evaluation approach that examines the full writing process — including drafts, revisions, and reflections — rather than only the final product
Academic Integrity	The commitment to honest, original, and properly attributed work in all academic tasks and assessments

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YOSHLAR MAFKURAVIY IMMUNITETINI SHAKLLANTIRISHDA ZAMONAVIY PEDAGOGIK TEXNOLOGIYALAR

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Anotatsiya: Mazkur maqolada yoshlar mafkuraviy immunitetini shakllantirish jarayonida zamonaviy pedagogik texnologiyalardan foydalanishning nazariy va amaliy jihatlari yoritilgan. Bugungi globallashuv sharoitida yoshlarning axborot oqimiga to‘g‘ri munosabat bildira olishi, turli g‘oyaviy tahdidlarga nisbatan barqaror pozitsiyani egallashi dolzarb ahamiyat kasb etadi. Shu nuqtayi nazardan, ta’lim jarayonida interfaol metodlar, raqamli ta’lim resurslari va innovatsion yondashuvlarni qo‘llash orqali o‘quvchilarda tanqidiy fikrlash, mustaqil qaror qabul qilish hamda ma’naviy-axloqiy qadriyatlarni mustahkamlash imkoniyatlari tahlil qilingan. Maqolada pedagogik texnologiyalarni samarali qo‘llash orqali yoshlarning mafkuraviy immunitetini kuchaytirish yo‘llari va metodik tavsiyalar ham berilgan.

Kalit so’zlar: yoshlar, mafkuraviy immunitet, zamonaviy pedagogik texnologiyalar, ta’lim jarayoni, interfaol metodlar, tarbiya tizimi, milliy g‘oya, ma’naviy-ma’rifiy ishlar, raqamli ta’lim resurslari, innovatsion yondashuv, kommunikativ kompetensiya, tanqidiy fikrlash, axborot xavfsizligi, tarbiyaviy samaradorlik, g‘oyaviy targ‘ibot.

KIRISH

Bugungi kunda jamiyat taraqqiyotida yoshlarning o‘rni juda muhim hisoblanadi. Chunki har qanday davlatning kelajagi aynan yosh avlodning bilim darajasi, ma’naviy qarashlari va mustahkam mafkuraviy pozitsiyasiga bog‘liqdir. Globallashuv jarayonlari tezlashgan hozirgi davrda axborot oqimi juda ko‘payib, turli g‘oyaviy ta’sirlar ham kuchayib bormoqda. Bu esa yoshlar ongini to‘g‘ri shakllantirish va ularni salbiy axborotlardan himoya qilish zaruratini yuzaga keltiradi.

Shu sababli yoshlarning mafkuraviy immunitetini shakllantirish masalasi ta’lim tizimida dolzarb yo‘nalishlardan biri hisoblanadi. Bunda zamonaviy pedagogik texnologiyalar muhim ahamiyat kasb etadi, chunki ular o‘quv jarayonini yanada qiziqarli, samarali va interfaol qilish imkonini beradi. Interfaol metodlar, axborot-kommunikatsiya texnologiyalari hamda innovatsion yondashuvlar orqali yoshlarni mustaqil fikrlashga o‘rgatish, ularning dunyoqarashini kengaytirish va mafkuraviy immunitetini mustahkamlash mumkin.

Mazkur mavzuning dolzarbligi ham aynan shundaki, yoshlarni turli g‘oyaviy tahdidlardan himoya qilish va ularni sog‘lom ma’naviy muhitda tarbiyalash bugungi kunning muhim vazifalaridan biridir. Shu bois ushbu maqolada yoshlar mafkuraviy immunitetini shakllantirishda zamonaviy pedagogik texnologiyalardan foydalanish masalalari yoritiladi.

ASOSIY QISM

Yoshlar mafkuraviy immunitetini shakllantirish bugungi ta’lim tizimining eng muhim vazifalaridan biri hisoblanadi. Mafkuraviy immunitet deganda shaxsning turli yot g‘oyalar, salbiy axborotlar va manipulyativ ta’sirlarga nisbatan ongli ravishda qarshilik ko‘rsata olishi, to‘g‘ri xulosa chiqarishi va mustaqil fikr yuritishi tushuniladi. Bu jarayon nafaqat oilada, balki maktab va oliy ta’lim muassasalarida ham izchil amalga oshirilishi kerak.

Zamonaviy pedagogik texnologiyalar ushbu maqsadga erishishda samarali vosita bo‘lib xizmat qiladi. Interfaol metodlar, masalan, “aqliy hujum”, “kichik guruhlarda ishlash”, “munozara”, “case-study” kabi usullar orqali o‘quvchilarning faolligi oshadi. Bu esa ularning fikrlash doirasini kengaytirib, har bir masalaga turli nuqtayi nazardan yondashishni o‘rgatadi. Natijada o‘quvchilarda tanqidiy fikrlash shakllanadi va ular axborotni tahlil qilish ko‘nikmasiga ega bo‘ladi.

Shuningdek, raqamli ta’lim resurslaridan foydalanish ham bugungi kunda juda muhimdir. Internet, elektron darsliklar, multimedia vositalari va ta’lim platformalari orqali yoshlar turli ma’lumotlarni tez va qulay tarzda olish imkoniga ega bo‘ladilar. Biroq bu jarayonda ularga to‘g‘ri axborotni tanlash, ishonchli manbalarni ajratish va zararli kontentdan himoyalanish ko‘nikmalarini ham shakllantirish zarur.

Pedagogik jarayonda innovatsion yondashuvlar ham muhim o‘rin tutadi. O‘qituvchi nafaqat bilim beruvchi, balki yo‘naltiruvchi va tarbiyachi sifatida ham faoliyat yuritishi lozim. U o‘quvchilarda milliy g‘urur, vatanparvarlik, ma’naviy qadriyatlarga hurmat kabi sifatlarni rivojlantirishga e’tibor qaratadi. Shu orqali yoshlar ongida mustahkam mafkuraviy asos shakllanadi.

Bundan tashqari, guruhli ishlash va loyihaviy ta’lim ham samarali usullardan biridir. O‘quvchilar birgalikda ishlash jarayonida o‘z fikrini erkin bayon qiladi, boshqalarning fikrini tinglashni o‘rganadi va hamkorlik madaniyati shakllanadi. Bu esa ularning ijtimoiy faolligini oshirib, jamiyatda o‘z o‘rnini topishga yordam beradi.

Umuman olganda, zamonaviy pedagogik texnologiyalar yoshlar mafkuraviy immunitetini mustahkamlashda muhim vosita bo‘lib, ularning ongli, bilimli va ma’naviy yetuk shaxs bo‘lib shakllanishiga xizmat qiladi.

MUHOKAMA VA NATIJALAR

Tahlillar shuni ko‘rsatadiki, yoshlar mafkuraviy immunitetini shakllantirish jarayonida zamonaviy pedagogik texnologiyalarni qo‘llash ta’lim samaradorligini sezilarli darajada oshiradi. An’anaviy dars usullaridan farqli ravishda interfaol metodlar o‘quvchilarni faqat tinglovchi emas, balki faol ishtirokchiga aylantiradi. Bu esa ularning fikrlash faolligini kuchaytirib, mustaqil xulosa chiqarish ko‘nikmalarini rivojlantiradi.

Muhokama jarayonida aniqlanishicha, “munozara”, “kichik guruhlarda ishlash” va “muammoli vaziyatlarni tahlil qilish” kabi metodlar o‘quvchilarning g‘oyaviy savodxonligini oshirishda samarali hisoblanadi. Chunki bu usullar orqali ular turli fikrlarni solishtirish, dalillar asosida qaror qabul qilish va axborotni tanqidiy baholashni o‘rganadilar. Natijada yoshlar salbiy g‘oyaviy ta’sirlarga nisbatan mustahkam pozitsiyaga ega bo‘ladilar.

Shuningdek, raqamli texnologiyalarning ta’lim jarayoniga keng joriy etilishi ham ijobiy natijalar bermoqda. Elektron resurslar va multimedia vositalari yordamida darslar yanada qiziqarli va tushunarli bo‘ladi. Biroq muhokama davomida shunday xulosa ham qilindiki, raqamli muhitdan foydalanishda axborot xavfsizligiga alohida e’tibor qaratish lozim. Chunki noto‘g‘ri yoki zararli axborot yoshlarning dunyoqarashiga salbiy ta’sir ko‘rsatishi mumkin.

Natijalar shuni ko‘rsatadiki, pedagogik texnologiyalarni tizimli va maqsadli qo‘llash yoshlarning nafaqat bilim darajasini oshiradi, balki ularning ma’naviy-axloqiy qarashlarini ham mustahkamlaydi. O‘quvchilarda vatanparvarlik, milliy qadriyatlarga hurmat va ijtimoiy mas’uliyat hissi rivojlanadi. Shu bilan birga, ular axborot oqimini tahlil qila oladigan, mustaqil fikrlaydigan shaxs sifatida shakllanadi.

Umuman olganda, o‘rganishlar zamonaviy pedagogik texnologiyalar yoshlar mafkuraviy immunitetini shakllantirishda muhim omil ekanligini tasdiqlaydi va ularni ta’lim jarayoniga keng joriy etish zarurligini ko‘rsatadi.

XULOSA

Xulosa qilib aytganda, yoshlar mafkuraviy immunitetini shakllantirish bugungi kunda ta’lim tizimi oldida turgan eng dolzarb vazifalardan biridir. Globallashuv sharoitida turli axborot oqimlari va g‘oyaviy ta’sirlar kuchayib borayotgan bir paytda yoshlarni to‘g‘ri yo‘naltirish, ularning ongini sog‘lom mafkura asosida shakllantirish katta ahamiyatga ega.

Tadqiqot natijalariga ko‘ra, zamonaviy pedagogik texnologiyalar ushbu jarayonda samarali vosita bo‘lib xizmat qiladi. Interfaol metodlar, raqamli ta’lim resurslari va innovatsion yondashuvlar o‘quvchilarning faolligini oshiradi, ularni mustaqil fikrlashga o‘rgatadi hamda turli axborotlarni tahlil qilish ko‘nikmasini rivojlantiradi.

Shuningdek, pedagogik jarayonda milliy qadriyatlar, vatanparvarlik va ma’naviy-axloqiy tarbiyani uyg‘un holda olib borish yoshlar ongida mustahkam mafkuraviy asosni shakllantirishga xizmat qiladi. Bu esa ularning jamiyatda o‘z o‘rnini topishi va ijtimoiy faolligini oshirishga yordam beradi.

Umuman olganda, zamonaviy pedagogik texnologiyalarni ta’lim jarayoniga keng joriy etish yoshlarning mafkuraviy immunitetini mustahkamlashda muhim omil bo‘lib, ularning barkamol shaxs sifatida shakllanishini ta’minlaydi.

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СОВЕРШЕНСТВОВАНИЕ МЕХАНИЗМОВ ФИНАНСОВОЙ ПОДДЕРЖКИ ПРЕДПРИЯТИЙ: АНАЛИЗ ЗАРУБЕЖНОГО ОПЫТА И ПУТИ АДАПТАЦИИ

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Аннотация. В данной статье анализируются вопросы совершенствования механизмов государственной и частной финансовой поддержки в обеспечении финансовой устойчивости предприятий. В исследовании сравнительно изучен опыт развитых стран (США, Германия, страны Евросоюза) и развивающихся экономик. В частности, на основе статистических данных освещена эффективность кредитных гарантий, субсидий и налоговых льгот, предоставляемых субъектам малого и среднего предпринимательства (МСП). Проанализирована деятельность Администрации малого бизнеса США (SBA) и немецкого банка KfW, даны рекомендации по внедрению их положительных аспектов в национальную экономику. Результаты показывают, что расширение доступа к финансовым ресурсам должно осуществляться не только за счет прямого финансирования, но и через цифровые технологии и системы гарантирования. В завершение исследования сформулированы приоритетные направления совершенствования механизма финансовой поддержки предприятий в условиях Узбекистана.
Ключевые слова. финансовый механизм, предприятия, зарубежный опыт, кредитные гарантии, субсидии, экономический рост, инвестиции, малый бизнес.
Abstract. This article analyzes the issues of improving state and private financial support mechanisms in ensuring the financial stability of enterprises. The study comparatively examines the experience of developed countries (USA, Germany, EU countries) and emerging economies. Specifically, the effectiveness of credit guarantees, subsidies, and tax incentives provided to small and medium enterprises (SMEs) is highlighted based on statistical data. The activities of the US Small Business Administration (SBA) and the German KfW bank are analyzed, with recommendations for implementing their positive aspects into the national economy. Results show that expanding access to financial resources should be achieved not only through direct financing but also through digital technologies and guarantee systems. Finally, the

research formulates priority directions for improving the financial support mechanism for enterprises in the context of Uzbekistan.

Keywords. financial mechanism, enterprises, foreign experience, credit guarantees, subsidies, economic growth, investment, small business.

Введение. В условиях глобальной экономической нестабильности и ускорения технологической трансформации, вопрос финансовой поддержки предприятий становится стратегическим приоритетом для любого государства. Предприятия, особенно субъекты малого и среднего бизнеса (МСП), выступают основным драйвером инноваций, создания рабочих мест и обеспечения устойчивого экономического роста. Однако доступ к капиталу остается одним из наиболее острых барьеров на пути их развития. Согласно данным Всемирного банка, дефицит финансирования МСП в развивающихся странах оценивается в триллионы долларов, что подчеркивает необходимость поиска эффективных механизмов поддержки [1; 12 б]. Постпандемический период и текущие геополитические вызовы потребовали от правительств пересмотра традиционных подходов и внедрения более гибких, цифровых и таргетированных инструментов финансового стимулирования.

Актуальность темы исследования обусловлена тем, что национальные экономики стремятся диверсифицировать источники финансирования и снизить риски для предпринимателей. В зарубежной практике накоплен колоссальный опыт использования таких инструментов, как льготное кредитование, прямое субсидирование, налоговые преференции и государственные гарантии. Изучение этих моделей позволяет выявить наиболее эффективные сценарии, которые могут быть адаптированы к специфике переходных экономик. Например, в странах ОЭСР малый бизнес обеспечивает более 50-60% ВВП, в то время как в странах с формирующимся рынком этот показатель зачастую ниже из-за институциональных и финансовых ограничений. Следовательно, совершенствование финансового механизма является ключом к повышению конкурентоспособности национальных производителей на мировом рынке.

Целью данной работы является системный анализ зарубежного опыта финансовой поддержки предприятий и разработка предложений по совершенствованию отечественных механизмов на основе лучших мировых практик. Введение в научный оборот данных о деятельности таких институтов, как SBA в США или KfW в Германии, позволяет глубже понять архитектуру современной системы поддержки. Важно отметить, что финансовая поддержка сегодня не ограничивается только деньгами; она включает в себя

инфраструктурное развитие, страхование рисков и поддержку экспорта. Комплексный подход к анализу этих аспектов дает возможность сформировать целостную картину эволюции финансовой политики в отношении реального сектора экономики.

Научная новизна исследования заключается в сопоставлении традиционных мер поддержки с новыми цифровыми форматами финансирования, такими как финтех-платформы и краудфандинг, которые активно интегрируются в государственные программы развитых стран. В условиях цифровизации экономики финансовые механизмы становятся более прозрачными и доступными, что минимизирует транзакционные издержки. В статье также рассматривается роль венчурного капитала как инструмента поддержки высокотехнологичных предприятий, что является критически важным для реализации стратегий инновационного развития.

Структура исследования построена по стандарту IMRAD, что позволяет последовательно раскрыть теоретические основы, методологический аппарат, статистические результаты и прикладные рекомендации. В рамках введения подчеркивается, что финансовая поддержка — это не благотворительность со стороны государства, а инвестиция в будущую налоговую базу и социальную стабильность. Анализ динамики государственного финансирования в США, Европе и Азии показывает, что страны, инвестирующие в адаптивные механизмы поддержки, быстрее справляются с экономическими шоками. Таким образом, работа направлена на поиск оптимального баланса между государственным регулированием и рыночной свободой в финансовой сфере.

Обзор литературы. Проблема финансовой поддержки предприятий находится в центре внимания ведущих экономистов мира на протяжении десятилетий. Основы государственного вмешательства в экономику для стимулирования предпринимательства были заложены еще Дж.М. Кейнсом, который обосновал необходимость бюджетной экспансии в периоды кризисов. В современных условиях концепции Кейнса трансформировались в теорию «умного регулирования», где акцент смещается с прямого участия на создание благоприятной институциональной среды. Профессор Майкл Портер в своих трудах о конкурентоспособности подчеркивает, что доступ к финансовым ресурсам является базовым детерминантом успеха национальных кластеров [2; 45 б]. В то же время, Джозеф Стиглиц указывает на проблему асимметрии информации на кредитных рынках, которая мешает малым предприятиям получать займы даже при наличии перспективных проектов.

Современные исследователи, такие как Л. Шахтаманова и Р. Версоцкий, в своих работах 2024-2025 годов акцентируют внимание на специфике адаптации зарубежных моделей (SBA, KfW) к национальным условиям развивающихся стран [3; 242 б]. Анализ литературы показывает, что существует разделение между англосаксонской моделью, ориентированной на рынок капитала, и континентальной европейской моделью, где доминирует банковское финансирование и государственные институты развития. Авторы сходятся во мнении, что в последние годы наблюдается конвергенция этих моделей за счет развития финтех-сектора и внедрения механизмов государственно-частного партнерства (ГЧП). Изучение данных работ подтверждает гипотезу о том, что наиболее успешные механизмы поддержки базируются на комбинировании налоговых льгот и гарантийных фондов.

Методология. В качестве методологической основы исследования использован системный подход, позволяющий рассматривать механизмы финансовой поддержки как совокупность взаимосвязанных элементов (институтов, инструментов, правовых норм). Основным методом исследования стал сравнительный анализ (benchmarking), в рамках которого были сопоставлены ключевые параметры программ поддержки в США, ЕС и ряде стран Азии. Это позволило выявить универсальные закономерности и специфические особенности каждой модели. Для обеспечения достоверности выводов применялся метод статистического анализа временных рядов, охватывающий период с 2019 по 2024 годы, что дает возможность оценить эффективность мер в динамике — от кризиса к восстановлению.

Второй блок методологии включает дедуктивный метод и синтез полученных данных. На основе изучения деятельности Администрации малого бизнеса (SBA) США и Европейского инвестиционного банка (EIB) были синтезированы общие принципы эффективного гарантирования кредитов. Также использовались методы качественного анализа нормативно-правовых актов и отчетов международных финансовых организаций (МВФ, ОЭСР). Такой подход обеспечил многогранный взгляд на проблему, учитывающий как макроэкономические показатели, так и микроэкономические факторы функционирования отдельных предприятий.

Третьим этапом методологии является экспертная оценка возможности адаптации зарубежных инструментов к условиям Узбекистана. С помощью логического моделирования была выстроена схема взаимодействия субъектов финансовой поддержки, которая учитывает текущий уровень цифровизации

банковского сектора и потребности реального производства. Обработка статистических данных проводилась с использованием пакетов прикладных программ для анализа экономических показателей, что позволило визуализировать результаты в виде таблиц и графиков, представленных в следующем разделе.

Анализ и результаты. Анализ мировой практики показывает, что структура финансовой поддержки предприятий за последние пять лет претерпела значительные изменения. В развитых странах доминирующим трендом стал переход от прямого бюджетного финансирования к косвенным методам стимулирования. Например, в Европейском союзе в рамках плана «NextGenerationEU» на поддержку МСП выделено более 45 млрд евро в форме грантов и льготных кредитов через национальные планы восстановления [4; 15 б]. Статистика 2023-2024 годов свидетельствует о том, что страны, сделавшие ставку на кредитные гарантии, добились более высоких темпов роста инвестиций в основной капитал.

В Соединенных Штатах Администрация малого бизнеса (SBA) ежегодно гарантирует кредиты на сумму свыше 30 млрд долларов. Программа «7(a) Loan Program» является основным инструментом, обеспечивающим покрытие рисков коммерческих банков до 75-85% от суммы займа. Это позволяет предприятиям получать капитал по ставкам, близким к рыночным, даже при отсутствии достаточного обеспечения. Кроме того, SBA активно использует механизм госзакупок, где законодательно закреплена квота в 23% для малого бизнеса, что фактически является формой гарантированного сбыта и косвенной финансовой поддержки.

Рассмотрим сравнительную характеристику ключевых инструментов поддержки в таблице ниже. Данные показывают, насколько разнообразны подходы в зависимости от экономической стратегии региона.

1-таблица.

Сравнительный анализ инструментов финансовой поддержки предприятий в разрезе регионов (данные 2023 г.)

Регион / Страна	Основной инструмент	Объем поддержки (% от ВВП)	Целевой сектор	Эффективность (рост занятости)
США (SBA)	Кредитные гарантии (7a, 504)	1.2%	Услуги, производство	4.5%

Германия (KfW)	Льготное кредитование	2.5%	Энергоэффективность, экспорт	3.8%
Китай	Финтех-платформы и субсидии	3.1%	IT, электроника	6.2%
Евросоюз (EIB)	Комбинированные гранты/займы	1.8%	Зеленая экономика	3.2%

Интересен опыт Германии, где государственное участие реализуется через банковскую группу KfW. В отличие от американской модели, KfW работает по принципу «второго уровня», предоставляя рефинансирование коммерческим банкам для выдачи специализированных займов (например, на модернизацию оборудования). В 2023 году объем новых кредитов KfW для МСП составил около 24 млрд евро. Особое внимание уделяется экологическим инициативам: предприятия, внедряющие энергосберегающие технологии, получают процентную ставку на 1.5-2% ниже среднерыночной. Такая политика стимулирует не только рост бизнеса, но и его технологическое обновление.

Для наглядности процесса взаимодействия государства и бизнеса в системе финансовой поддержки, ниже представлена схема механизма кредитного гарантирования, который является наиболее универсальным инструментом.



1-рисунок. Механизм функционирования системы государственных кредитных гарантий для предприятий

Исследование также выявило рост роли финтех-инструментов. В Южной Корее и Сингапуре государственные платформы интегрированы с системами Big Data, что позволяет проводить скоринг предприятий в режиме реального времени. В 2024 году более 40% малых предприятий в Сингапуре получили финансовую поддержку через цифровые каналы без физического посещения банков. Это

сократило время одобрения заявок с нескольких недель до 48 часов. Статистические данные показывают, что использование цифровых инструментов снижает уровень невозврата кредитов на 15-20% за счет более качественной аналитики.

В контексте Узбекистана, внедрение подобного зарубежного опыта требует системности. На текущий момент доля МСП в ВВП страны превышает 50%, однако доступ к долгосрочным инвестиционным ресурсам остается ограниченным. Положительным шагом стало создание Компании по развитию предпринимательства, которая начала применять механизмы компенсации процентных расходов и предоставления поручительств. Однако, согласно анализу, текущий объем поручительств покрывает менее 10% реальной потребности рынка в инвестициях. Расширение масштабов этих операций по модели США (до 23-25% охвата) может стать мощным катализатором экономического роста.

Обсуждение. Результаты анализа зарубежного опыта позволяют сделать вывод, что универсальной «идеальной» модели финансовой поддержки не существует, однако есть критические факторы успеха. Во-первых, это адресность. В ЕС поддержка жестко привязана к достижению целей устойчивого развития (ESG), в то время как в Азии приоритет отдается экспортоориентированности. В условиях Узбекистана целесообразно совместить эти подходы, выделяя финансовые ресурсы в первую очередь тем предприятиям, которые внедряют глубокую переработку сырья и увеличивают экспортный потенциал.

Во-вторых, важным аспектом является координация институтов развития. В США SBA выступает как единый центр («единое окно»), координирующий и финансы, и консалтинг, и доступ к рынкам. Раздробленность функций между различными министерствами и агентствами в развивающихся странах часто ведет к бюрократизации и снижению эффективности программ. Переход к интегрированной системе поддержки, основанной на цифровом профиле предпринимателя, позволит минимизировать человеческий фактор и коррупционные риски.

Также дискуссионным остается вопрос объема государственного вмешательства. Избыточное субсидирование может привести к появлению «предприятий-зомби», которые живут только за счет господдержки и неконкурентоспособны на рынке. Зарубежная практика (особенно опыт Германии) показывает, что финансовая поддержка должна быть возвратной и стимулирующей. Льготы должны предоставляться под конкретные KPI — рост выручки, создание новых

рабочих мест или снижение энергоемкости производства. Только в этом случае финансовый механизм станет инструментом качественного развития, а не просто способом латания дыр в оборотных средствах.

Заключение. Подводя итоги исследования, можно констатировать, что совершенствование механизмов финансовой поддержки предприятий является обязательным условием для обеспечения устойчивого экономического роста. Зарубежный опыт подтверждает эффективность перехода от прямого субсидирования к использованию инструментов разделения рисков (гарантии, поручительства) и созданию специализированных институтов развития.

Основными выводами статьи являются:

1. Необходимость расширения инструментов кредитного гарантирования по аналогии с моделью SBA (США), что позволит вовлечь ресурсы коммерческих банков в финансирование рискованных, но перспективных проектов.
2. Важность внедрения «зеленых» критериев при распределении финансовой помощи по опыту стран ЕС, что будет стимулировать модернизацию производства и экологическую ответственность бизнеса.
3. Ускорение цифровизации процессов финансовой поддержки для снижения транзакционных издержек и повышения прозрачности, используя опыт финтех-хабов Азии.

Для Узбекистана наиболее перспективным путем представляется трансформация существующих фондов поддержки в полноценные институты развития с широким набором инструментов — от микрокредитования до венчурного финансирования. Реализация предложенных мер позволит создать адаптивную финансовую экосистему, способную поддерживать предприятия на всех этапах их жизненного цикла, обеспечивая стабильность национальной экономики в долгосрочной перспективе.

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FT-IR CHARACTERIZATION OF POLY[ETHYLENEDIAMINETETRAACETATO-AQUA-DISODIUM-NICKEL(II)] COORDINATION POLYMER

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Abstract

Poly[ethylenediaminetetraacetato-aqua-disodium-nickel(II)] was investigated by Fourier Transform Infrared (FT-IR) spectroscopy to elucidate its coordination behavior and structural features. The FT-IR spectrum revealed characteristic absorption bands associated with coordinated water molecules, carboxylate groups, mine functionalities, and metal-ligand bonds. Broad bands at 3461 and 3374 cm^{-1} confirmed the presence of coordinated water molecules, while bands at 1591 and 1475 cm^{-1} corresponded to asymmetric stretching vibrations of coordinated carboxylate groups. The symmetric stretching vibrations appeared at 1393 and 1359 cm^{-1}, indicating the involvement of carboxylate oxygen atoms in metal coordination. Bands observed at 1316 and 1295 cm^{-1} were assigned to C-N stretching vibrations of coordinated amine groups. The low-frequency absorptions between 709 and 444 cm^{-1} were attributed to Ni-O and Ni-N bonds, confirming the formation of a stable nickel(II)-EDTA coordination network. The obtained results support the proposed octahedral coordination environment around the Ni(II) center and demonstrate the successful synthesis of the coordination polymer.

Keywords: Nickel(II), EDTA, Coordination Polymer, FT-IR Spectroscopy, Metal Complex, Structural Characterization.

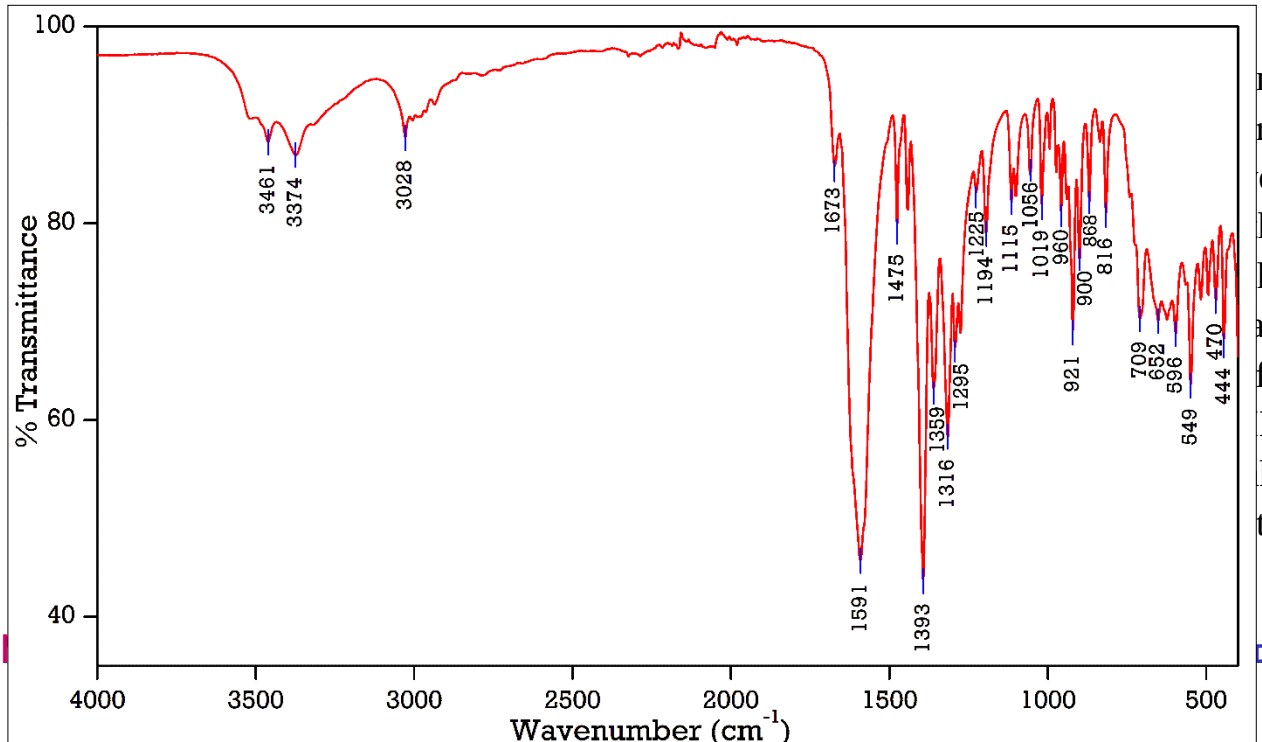
Introduction

Coordination polymers based on transition metals and multidentate ligands have attracted considerable attention owing to their structural diversity and potential applications in catalysis, environmental remediation, sensing, and materials science. Ethylenediaminetetraacetic acid (EDTA) is one of the most versatile chelating ligands because it contains two nitrogen donor atoms and four carboxylate oxygen donor groups, allowing the formation of highly stable metal complexes. Nickel(II) ions readily form coordination compounds with EDTA, producing structures with enhanced thermal stability and unique physicochemical properties. The coordination behavior of

EDTA toward Ni(II) has been extensively investigated due to its relevance in environmental chemistry, wastewater treatment, and functional material synthesis. Recent studies have shown that Ni-EDTA complexes exhibit characteristic spectroscopic signatures that provide valuable information regarding metal–ligand interactions and coordination geometry. Among the available characterization techniques, Fourier Transform Infrared (FT-IR) spectroscopy is a powerful method for identifying functional groups involved in coordination and confirming the formation of metal–ligand bonds. Therefore, the present work focuses on the FT-IR characterization of poly[ethylenediaminetetraacetato-aqua-disodium-nickel(II)] and discusses the structural implications of the observed vibrational bands.

Results and Discussion

The FT-IR spectrum of poly[ethylenediaminetetraacetato-aqua-disodium-nickel(II)] exhibits several characteristic absorption bands confirming the successful coordination of EDTA to the nickel(II) ion. A broad absorption region centered at 3461 and 3374 cm^{-1} is assigned to O-H stretching vibrations of coordinated and hydrogen-bonded water molecules. The broad profile of these bands indicates intermolecular hydrogen-bonding interactions commonly observed in hydrated coordination compounds. The absorption band at 3028 cm^{-1} corresponds to C-H stretching vibrations of methylene groups present in the EDTA ligand framework. The presence of this band confirms the structural integrity of the organic ligand after complex formation. A strong absorption band observed at 1673 cm^{-1} is attributed to water bending vibrations coupled with coordinated carboxylate group interactions. The shift of this band compared with free EDTA suggests the participation of carboxylate oxygen atoms in metal coordination.



vibrations of the EDTA backbone. Additional bands at **956, 921, 900, 868, and 816 cm^{-1}** correspond to O–C–O deformation modes and chelate ring vibrations.
The most convincing evidence of complex formation is provided by the low-

Figure 1. FT-IR spectrum of poly[ethylenediaminetetraacetato-aqua-disodium-nickel(II)].

Frequency bands observed at 709, 682, 596, 549, 470, and 444 cm^{-1}. These absorptions are characteristic of Ni–O and Ni–N stretching vibrations and confirm the direct interaction of nickel(II) with both oxygen and nitrogen donor atoms of EDTA. Based on these spectral features, the nickel ion is proposed to adopt a distorted octahedral geometry in which EDTA acts as a hexadentate ligand while water molecules complete the coordination sphere. Similar vibrational characteristics have been reported in recent studies on transition-metal EDTA complexes.

Table 1. FT-IR Assignments of Poly[ethylenediaminetetraacetato-aqua-disodium-nickel(II)]

Wavenumber (cm^{-1})	Assignment
3461, 3374	O-H stretching of coordinated water
3028	C-H stretching (CH_2)
1673	H-O-H bending / coordinated carboxylate vibration
1591, 1475	νas(COO^-)
1393, 1359	νs(COO^-)
1316, 1295	C-N stretching
1225-1019	C-O and skeletal vibrations
956-816	O-C-O deformation
709-549	Ni-O stretching
470, 444	Ni-N stretching

Conclusion

The FT-IR analysis of poly[ethylenediaminetetraacetato-aqua-disodium-nickel(II)] confirmed the successful coordination of EDTA to the nickel(II) center through both carboxylate oxygen and amine nitrogen donor atoms. The presence of characteristic ν_as(COO^-) and ν_s(COO^-) bands, together with metal0ligand vibrations observed below 700 cm^{-1}, provides strong evidence for the formation of Ni-O and Ni-N bonds. Broad O-H stretching bands indicate the presence of coordinated water molecules involved in hydrogen bonding. Overall, the spectral data support the formation of a

hydrated nickel(II)-EDTA coordination polymer possessing an octahedral coordination environment around the metal center.

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РЕЗУЛЬТАТЫ ПРИМЕНЕНИЯ ОЗОНИРОВАННОГО РАСТВОРА НИТРАТА СЕРЕБРА В МЕСТНОМ ЛЕЧЕНИИ ГНОЙНО-НЕКРОТИЧЕСКИХ ФОРМ СИНДРОМА ДИАБЕТИЧЕСКОЙ СТОПЫ

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Актуальность. Неудовлетворительные результаты лечения гнойно-некротических форм синдрома диабетической стопы (СДС) с применением традиционных антисептиков обусловлены их недостаточной антибиоплёночной активностью и цитотоксическим действием на ткани раны [2, 3]. Частота высоких ампутаций при данной патологии достигает 15–28%, что диктует необходимость разработки принципиально новых подходов к местному лечению [1]. Озонированный раствор нитрата серебра представляет собой перспективный антисептик, сочетающий пролонгированную антимикробную активность ионов серебра с антибиоплёночным и оксигенирующим эффектом озона [4, 5, 6].

Цель. Оценить клиническую, микробиологическую и морфологическую эффективность озонированного раствора нитрата серебра в местном лечении гнойно-некротических форм СДС по сравнению с традиционными антисептиками.

Материал и методы. В проспективное контролируемое исследование включены 68 пациентов с гнойно-некротическими формами СДС II–IV по Wagner: основная группа (n=36) - местное лечение озонированным раствором нитрата серебра (Ag^+ 0,05%, озон 8 мкг/мл, приготовление ex tempore); контрольная группа (n=32) - традиционные антисептики (0,02% хлоргексидин, 1% повидон-йод). Группы сопоставимы по полу, возрасту, HbA1c, форме и степени СДС ($p>0,05$). Оценивались: сроки купирования воспаления и грануляции, динамика микробной обсеменённости (бак. посев на 1, 7, 14, 21-е сутки), цитология (Покровская–Макаров), морфология биоптатов (H&E, Ван-Гизон), частота ампутаций, длительность госпитализации [7].

Результаты. Цитологически к 7-м суткам в основной группе переход к воспалительно-регенераторному типу выявлен у 66,7% пациентов vs 0% в контроле ($p<0,001$). Морфологически подтверждена стимуляция ангиогенеза: плотность неоваскуляров к 14-м суткам - 11,4±1,7 vs 6,2±1,3 на 1 мм² ($p<0,001$); содержание коллагена по Ван-Гизону - 62,4±5,8% vs 38,1±6,2% ($p<0,001$).

Нежелательных явлений (аллергические реакции, аргирия, местная токсичность) не зафиксировано.

Заключение. Озонированный раствор нитрата серебра достоверно превосходит традиционные антисептики в местном лечении гнойно-некротических форм СДС: ускоряет купирование воспаления и стимулирует репаративные процессы, обеспечивает эрадикацию биоплёнкообразующих возбудителей и снижает частоту высоких ампутаций с 27,3% до 11,1%. Метод рекомендован к внедрению в клиническую практику хирургических стационаров.

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CHANGES IN THE BLOOD COAGULATION SYSTEM IN PATIENTS WITH CHRONIC PANCREATITIS

Literature Review
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Relevance

Chronic pancreatitis is a long-term inflammatory and degenerative disease of the pancreas characterized by pancreatic parenchymal fibrosis, exocrine and endocrine insufficiency, and systemic metabolic disturbances. In recent years, chronic pancreatitis has been considered not only as a local inflammatory process but also as a disease capable of affecting the systemic hemostatic balance.

Chronic inflammation, pain syndrome, enzymatic imbalance, protein-energy deficiency, changes associated with the hepatobiliary system, and microcirculatory disorders may lead to various disturbances in the blood coagulation system. In such patients, hypercoagulation, platelet activation, increased fibrinogen levels, and changes in prothrombin time, activated partial thromboplastin time and the international normalized ratio may be observed.

Aim of the Review

The aim of this literature review is to analyze the pathogenetic basis, clinical and laboratory manifestations, and diagnostic significance of changes in the blood coagulation system in patients with chronic pancreatitis.

Literature Review

According to the literature, changes in the blood coagulation system in chronic pancreatitis develop through several mechanisms. First of all, a long-lasting inflammatory process in the pancreas leads to activation of cytokines, proteolytic enzymes, and inflammatory mediators. This condition is accompanied by endothelial dysfunction, impaired capillary circulation, and activation of the hemostatic system.

In chronic pancreatitis, a hypercoagulable state may often develop. It may be manifested by increased fibrinogen levels, elevated D-dimer concentration, enhanced platelet aggregation, and increased activity of the prothrombin system. These changes are associated with inflammatory activity and microcirculatory disorders and may increase the risk of thrombotic complications in patients.

On the other hand, prolonged chronic pancreatitis may impair digestion and absorption. Deficiency of fat-soluble vitamins, especially vitamin K, can reduce the synthesis of prothrombin complex factors. As a result, some patients may develop prolonged

clotting time, decreased prothrombin index, increased INR, and signs of hemorrhagic tendency. Thus, hemostatic changes in chronic pancreatitis may be manifested not only by hypercoagulation but also, in some cases, by hypocoagulable shifts.

Assessment of platelet count and functional activity plays an important role in evaluating the hemostatic system. Under conditions of chronic inflammation, platelets become activated, interact with the endothelium, and create favorable conditions for thrombus formation at the microcirculatory level. These processes are more pronounced in patients with recurrent exacerbations of pancreatitis, pain syndrome, and high inflammatory activity.

Coagulation test parameters are among the main laboratory criteria for identifying hemostatic disorders in patients with chronic pancreatitis. Prothrombin time, prothrombin index, INR, activated partial thromboplastin time, fibrinogen, thrombin time, and D-dimer make it possible to assess different components of the coagulation system. Increased fibrinogen is considered a marker of inflammatory activity and hypercoagulation, whereas changes in activated partial thromboplastin time and INR may indicate deficiency of coagulation factors or disorders associated with the hepatobiliary system.

Therefore, comprehensive assessment of the hemostatic system in patients with chronic pancreatitis is clinically important. It is advisable to analyze complete blood count, platelet count, coagulation parameters, fibrinogen, D-dimer, liver enzymes, bilirubin, total protein, and albumin together. Such an approach makes it possible to detect thrombotic and hemorrhagic risks early, select individualized treatment strategies, and prevent complications.

Conclusion

The analysis of the literature shows that changes in the blood coagulation system in patients with chronic pancreatitis are multifactorial. They develop in association with inflammatory activity, endothelial dysfunction, microcirculatory disorders, enzymatic imbalance, hepatobiliary system status, and vitamin K deficiency. Hemostatic disorders in chronic pancreatitis may include both hypercoagulable and, in some cases, hypocoagulable changes. Fibrinogen, D-dimer, activated partial thromboplastin time, INR, prothrombin time, and platelet parameters are important laboratory markers for detecting these conditions.

Keywords

Chronic pancreatitis, blood coagulation system, hemostasis, coagulation profile, fibrinogen, D-dimer, activated partial thromboplastin time, INR, hypercoagulation, hypocoagulation.

ANALYSIS OF ARCHAIC WORDS IN THE ENGLISH AND UZBEK LANGUAGES

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Annotation: *This article presents a comparative analysis of archaic words in the English and Uzbek languages. Archaic words are examined as lexical units that have become outdated in modern usage but still possess contemporary equivalents. The study investigates the origin, semantic development, stylistic functions, and usage of archaisms in literary and historical texts. Similarities and differences between English and Uzbek archaic vocabulary are identified, highlighting their role in reflecting national culture and language history. The findings demonstrate the significance of archaic words in preserving linguistic heritage and enhancing the artistic value of literary texts.*

Keywords: *archaism, archaic words, historical vocabulary, English language, Uzbek language, comparative analysis, semantics, literary text, language history, lexicology, stylistic features, cultural heritage.*

Аннотация: *В данной статье проводится сравнительный анализ архаизмов в английском и узбекском языках. Архаизмы рассматриваются как лексические единицы, вышедшие из активного употребления и заменённые современными синонимичными словами. В исследовании освещаются происхождение архаизмов, их семантические изменения, особенности функционирования в художественных и исторических текстах, а также их стилистические функции. Выявляются сходства и различия архаической лексики английского и узбекского языков, определяется её роль в отражении национальной культуры и истории языка. Результаты исследования подтверждают важность архаизмов для сохранения языкового наследия и изучения исторического развития языка.*

Ключевые слова: *архаизм, архаические слова, историческая лексика, английский язык, узбекский язык, сравнительный анализ, семантика, художественный текст, история языка, лексикология, стилистические особенности, культурное наследие.*

Annotatsiya: *Ushbu maqolada ingliz va o‘zbek tillaridagi arxaik so‘zlarning lingvistik xususiyatlari qiyosiy jihatdan tahlil qilinadi. Arxaik so‘zlar til taraqqiyoti jarayonida eskirgan, ammo zamonaviy tilda sinonimik muqobillari mavjud bo‘lgan leksik birliklar sifatida o‘rganiladi. Tadqiqotda arxaizmlarning kelib chiqishi, semantik o‘zgarishlari, badiiy va tarixiy matnlardagi qo‘llanish xususiyatlari hamda ularning uslubiy vazifalari yoritiladi. Ingliz va o‘zbek tillaridagi arxaik birliklarning o‘xshash va farqli jihatlari aniqlanib, ularning milliy madaniyat va til tarixini aks ettirishdagi ahamiyati ko‘rsatib beriladi. Tadqiqot natijalari arxaik leksikaning badiiy-estetik qiymatini hamda tilning tarixiy rivojlanish bosqichlarini o‘rganishdagi muhim rolini tasdiqlaydi.*
Kalit so‘zlar: *arxaizm, arxaik so‘zlar, tarixiy leksika, ingliz tili, o‘zbek tili, qiyosiy tahlil, semantika, badiiy matn, til tarixi, leksikologiya, uslubiy xususiyatlar, madaniy meros.*

INTRODUCTION

Language is a dynamic system that continuously evolves alongside social, cultural, and historical changes. As societies develop, some lexical units become obsolete and gradually disappear from everyday communication, while remaining preserved in literary works, historical documents, and cultural heritage. Such words are commonly referred to as archaisms. Unlike historicisms, which denote objects and phenomena that no longer exist, archaisms have modern lexical equivalents but retain their significance as markers of earlier stages of language development. The study of archaic vocabulary occupies an important place in historical linguistics and lexicology because it provides valuable insights into the evolution of language and the cultural history of a nation. Archaisms reflect the worldview, traditions, social relations, and linguistic norms of previous generations. Therefore, the analysis of archaic words contributes not only to understanding lexical change but also to preserving national cultural identity. Both English and Uzbek possess a rich layer of archaic vocabulary formed during different historical periods. In English, words such as thou, thee, thy, and hath are associated with earlier stages of the language and are primarily encountered in classical literature and religious texts. Similarly, in Uzbek, archaic units such as anda, emdi, ulus, and bitik appear in classical literary works and historical sources. Although these words are rarely used in contemporary communication, they continue to perform important stylistic and cultural functions. In modern linguistic research, increasing attention is being paid to comparative studies of lexical phenomena across languages. However, comparative investigations of archaic vocabulary in English and Uzbek remain relatively limited. Examining archaisms from a comparative perspective makes it possible to identify both universal and language-specific patterns of lexical

obsolescence, semantic change, and stylistic usage. The purpose of this study is to analyze archaic words in the English and Uzbek languages, identify their linguistic characteristics, compare their semantic and stylistic functions, and determine their role in preserving cultural and historical heritage. The research employs comparative, descriptive, semantic, and contextual methods to investigate the use and significance of archaic vocabulary in both languages.

MAIN BODY

Archaic words constitute an important layer of vocabulary that reflects the historical development of a language. They are lexical units that have fallen out of common use and have been replaced by newer forms, yet they remain valuable sources for understanding linguistic evolution and cultural heritage. The presence of archaisms in a language demonstrates the continuity between past and present stages of linguistic development. Linguists generally distinguish archaisms from historicisms. While historicisms refer to objects, institutions, or phenomena that no longer exist in modern society, archaisms denote concepts that still exist but are expressed by newer lexical forms. For example, the English pronouns thou and thee have been replaced by you, while the archaic Uzbek word emdi has largely been replaced by endi. Such changes illustrate the natural process of lexical renewal that occurs as languages adapt to new social and communicative needs. In the English language, archaisms are most frequently encountered in classical literature, religious texts, and historical documents. The language of contains numerous archaic forms such as thy, thine, hath, and dost, which contribute to the stylistic richness of his works. Similarly, the language of the preserves many archaic expressions that are rarely used in contemporary English. These lexical units often create a sense of solemnity, antiquity, or poetic beauty. The Uzbek language also possesses a significant number of archaic words preserved in classical literature and historical manuscripts. Works created by contain numerous lexical items that are no longer actively used in modern Uzbek. Words such as anda (there), ulus (people, nation), bitik (writing, document), and ko‘ngul (heart, soul) illustrate the richness of the historical Uzbek lexicon. Although some of these words have become obsolete in everyday communication, they continue to appear in poetry and literary discourse because of their expressive and aesthetic value. A comparative analysis reveals both similarities and differences between English and Uzbek archaisms. In both languages, archaic words serve as markers of historical periods and contribute to the preservation of cultural memory. They are frequently used in literary texts to recreate historical settings, characterize particular social groups, and provide stylistic coloring. However, English archaisms are often associated with earlier

grammatical structures and pronoun systems, whereas Uzbek archaisms are more closely connected with historical cultural traditions, administrative systems, and literary conventions. Another important aspect of archaic vocabulary is its stylistic function. Writers frequently employ archaic words to evoke a historical atmosphere, create emotional depth, or emphasize cultural authenticity. In literary works, the deliberate use of archaisms can distinguish a character's speech, indicate a specific historical era, or enhance the artistic quality of the text. The analysis demonstrates that archaisms are not merely remnants of the past but valuable linguistic resources that connect modern speakers with earlier stages of language development. Through their preservation in literature, folklore, and historical records, archaic words continue to contribute to the cultural and linguistic identity of both English- and Uzbek-speaking communities.

CONCLUSION

The analysis of archaic words in the English and Uzbek languages has shown that archaisms occupy a special place in the lexical systems of both languages. As linguistic units inherited from earlier stages of language development, they preserve traces of historical events, cultural traditions, and social values that have shaped the identity of each nation over time. The study has revealed that, despite belonging to different language families and cultural backgrounds, English and Uzbek share similar patterns in the use of archaic vocabulary. In both languages, archaisms are primarily preserved in literary works, historical documents, folklore, and religious texts, where they help convey the atmosphere of a particular historical period and enrich the expressive potential of language. At the same time, certain differences have been observed. English archaisms are frequently associated with obsolete grammatical forms, pronouns, and verbal structures, while Uzbek archaic words are more closely connected with traditional customs, classical literary heritage, and historical social relations. These distinctions reflect the unique historical and cultural development of each linguistic community. The findings confirm that archaic words are more than outdated lexical items. They function as carriers of cultural memory and provide valuable material for understanding language evolution. Their preservation in written sources allows modern readers to establish a connection with the past and gain deeper insight into the historical development of language and society. For this reason, the study of archaisms remains relevant in contemporary linguistics. A deeper examination of archaic vocabulary can contribute to comparative linguistic research, literary analysis, translation studies, and the preservation of national cultural heritage. Future

research may focus on the semantic transformation of archaic words and their stylistic role in modern literary discourse.

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ADVANTAGES AND CONDITIONS FOR APPLYING MODERN METHODS OF FOREIGN LANGUAGE TEACHING FOR ADULTS

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Annotation: *The increasing demand for foreign language proficiency in professional, academic, and social contexts has highlighted the importance of effective teaching approaches for adult learners. This article examines the advantages of modern foreign language teaching methods and the conditions necessary for their successful implementation in adult education. Particular attention is paid to communicative language teaching, task-based learning, blended learning, and technology-enhanced instruction. Adult learners possess unique characteristics, including established learning strategies, clear goals, and practical motivations, which influence the effectiveness of instructional methods. The study emphasizes that the successful application of modern teaching approaches depends on factors such as learner motivation, relevant learning materials, technological accessibility, and a supportive educational environment. The findings demonstrate that appropriately selected methods can improve language proficiency, learner autonomy, and communicative competence among adult learners.*

Keywords: *adult language learning, foreign language teaching, modern teaching methods, communicative approach, task-based learning, blended learning, learner autonomy, adult education, language proficiency, educational technology.*

Annotatsiya: *Kasbiy, akademik va ijtimoiy faoliyatda xorijiy tillarni bilishga bo‘lgan ehtiyojning ortib borishi katta yoshdagi o‘quvchilarni samarali o‘qitish masalasini dolzarb qilib qo‘ymoqda. Mazkur maqolada katta yoshdagilar uchun xorijiy til o‘qitishning zamonaviy metodlarining afzalliklari hamda ularni muvaffaqiyatli qo‘llash shart-sharoitlari tahlil qilinadi. Kommunikativ yondashuv, vazifaga asoslangan o‘qitish, aralash ta’lim va raqamli texnologiyalardan foydalanishga alohida e’tibor qaratiladi. Katta yoshdagi o‘quvchilarning aniq maqsadlarga egaligi, shakllangan o‘quv strategiyalari va amaliy ehtiyojlari o‘qitish jarayonining samaradorligiga ta’sir etishi ko‘rsatib beriladi. Tadqiqot natijalari zamonaviy metodlarning samarali qo‘llanilishi motivatsiya, mos o‘quv materiallari, texnologik imkoniyatlar va qulay ta’lim muhitiga bog‘liqligini tasdiqlaydi.*

Kalit so‘zlar: *katta yoshdagi o‘quvchilar, xorijiy til o‘qitish, zamonaviy o‘qitish metodlari, kommunikativ yondashuv, vazifaga asoslangan ta’lim, aralash ta’lim, mustaqil o‘rganish, kattalar ta’limi, til kompetensiyasi, ta’lim texnologiyalari.*

Аннотация*: Возрастающая потребность во владении иностранными языками в профессиональной, академической и социальной сферах повышает значимость эффективных методов обучения взрослых. В статье рассматриваются преимущества современных методов преподавания иностранных языков и условия их успешного применения в обучении взрослых. Особое внимание уделяется коммуникативному подходу, обучению на основе задач, смешанному обучению и использованию образовательных технологий. Показано, что взрослые обучающиеся обладают специфическими особенностями, включая сформированные стратегии обучения, четкие цели и практическую мотивацию. Результаты исследования свидетельствуют о том, что эффективность современных методов зависит от уровня мотивации обучающихся, качества учебных материалов, технологических возможностей и благоприятной образовательной среды.*

Ключевые слова*: обучение взрослых, преподавание иностранного языка, современные методы обучения, коммуникативный подход, обучение на основе задач, смешанное обучение, автономность обучающихся, языковая компетенция, образовательные технологии, непрерывное образование.*

INTRODUCTION

The rapid development of globalization, international cooperation, and digital communication has significantly increased the need for foreign language proficiency among adults. In today’s interconnected world, knowledge of a foreign language is no longer limited to academic purposes but has become an essential requirement for professional advancement, career mobility, access to information, and participation in international communities. As a result, adult language education has gained growing importance in both formal and non-formal educational settings. Teaching adults differs considerably from teaching children and adolescents because adult learners possess unique psychological, cognitive, and social characteristics. They typically enter language courses with clearly defined goals, established learning habits, and a strong desire to apply newly acquired knowledge in practical situations. At the same time, adult learners often face challenges related to limited study time, professional responsibilities, and varying levels of prior educational experience. These factors require teaching approaches that are flexible, relevant, and learner-centered. In response to these demands, modern foreign language teaching methodology has moved

beyond traditional grammar-focused instruction toward approaches that emphasize communication, interaction, problem-solving, and real-world language use. Communicative Language Teaching, Task-Based Language Teaching, blended learning, project-based instruction, and technology-assisted learning have become widely recognized as effective methods for promoting language proficiency among adult learners. These approaches encourage active participation, increase learner autonomy, and create opportunities for meaningful language practice. However, the effectiveness of modern teaching methods depends not only on the methods themselves but also on the conditions under which they are implemented. Factors such as learner motivation, access to technological resources, the relevance of instructional materials, teacher competence, and the overall learning environment play a crucial role in determining educational outcomes. Understanding these conditions is essential for maximizing the benefits of contemporary language teaching approaches.

MAIN BODY

Modern foreign language teaching methodology is based on the principle that language is primarily a means of communication rather than a set of grammatical rules to be memorized. This perspective has led to the emergence of learner-centered approaches that focus on meaningful interaction, practical language use, and the development of communicative competence. For adult learners, such approaches are particularly valuable because they align with their professional, academic, and personal goals. One of the most widely applied methods in adult language education is the communicative approach. This method encourages learners to use the target language in authentic situations through discussions, role plays, interviews, and problem-solving activities. Adult learners generally appreciate opportunities to express opinions, share experiences, and engage in meaningful conversations. As a result, communicative activities increase participation and help learners develop confidence in real-life language use. Task-Based Language Teaching (TBLT) has also gained considerable attention in adult education. In this approach, learners complete practical tasks that require the use of language as a tool for achieving specific objectives. Activities such as preparing presentations, conducting negotiations, writing reports, or solving workplace-related problems allow learners to develop language skills while focusing on meaningful outcomes. The task-based approach is especially effective because it reflects the real communicative needs that many adults encounter in their daily and professional lives. Another significant development is the integration of technology into language instruction. Online learning platforms, mobile applications, virtual classrooms, and multimedia resources provide adults with greater flexibility and access

to learning opportunities. Since many adult learners balance education with work and family responsibilities, technology-supported learning enables them to study at their own pace and according to their own schedules. Furthermore, digital tools facilitate individualized learning by allowing learners to select materials that correspond to their proficiency levels and interests. Blended learning, which combines face-to-face instruction with online activities, has become increasingly popular in adult language education. This model offers the advantages of direct interaction with teachers and peers while also providing opportunities for independent learning. Research indicates that blended learning environments can improve learner engagement, increase autonomy, and enhance language achievement when properly implemented. Despite the numerous advantages of modern teaching methods, their successful application depends on several important conditions. First, learner motivation remains a key factor in adult education. Adults who understand the practical value of language learning are generally more committed to the learning process. Therefore, teaching materials and classroom activities should be relevant to learners' professional and personal objectives. Second, teachers play a crucial role in creating effective learning environments. Modern methods require instructors to act not only as sources of knowledge but also as facilitators, mentors, and organizers of communicative activities. Teachers must be capable of selecting appropriate materials, integrating technology effectively, and adapting instruction to diverse learner needs. Third, access to technological resources and educational support systems significantly influences learning outcomes. Reliable internet access, digital literacy, and the availability of suitable learning platforms are essential for the successful implementation of technology-enhanced language instruction. In settings where such resources are limited, the effectiveness of modern approaches may be reduced. Finally, a supportive and collaborative learning environment contributes substantially to adult learners' success. Respectful classroom relationships, opportunities for interaction, constructive feedback, and encouragement help learners overcome anxiety and maintain motivation throughout the learning process. When these conditions are present, modern foreign language teaching methods can significantly improve language proficiency, learner autonomy, and communicative competence among adults.

CONCLUSION

Modern methods of foreign language teaching offer significant advantages for adult learners by promoting active participation, communicative competence, learner autonomy, and practical language use. Approaches such as Communicative Language Teaching, Task-Based Learning, blended learning, and technology-assisted instruction

create opportunities for meaningful interaction and support the development of real-world language skills. The study demonstrates that adult learners benefit most from instructional methods that are relevant to their personal, academic, and professional needs. Unlike traditional teacher-centered approaches, modern methodologies encourage learners to take an active role in the learning process, thereby increasing motivation and long-term language retention. At the same time, the successful implementation of these methods depends on several essential conditions, including strong learner motivation, qualified teachers, appropriate learning materials, access to technological resources, and a supportive educational environment. The absence of these factors may reduce the effectiveness of even the most innovative teaching approaches. In conclusion, modern foreign language teaching methods provide valuable opportunities for improving adult language education. When applied under suitable conditions and adapted to learners' needs, they contribute to higher levels of engagement, greater communicative competence, and more successful language learning outcomes.

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ELEKTRON TA'LIM PLATFORMALARI: ZAMONAVIY TA'LIMNING YANGI YO'NALISHI

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ANNOTATSIYA: Ushbu maqolada elektron ta'lim platformalarining mohiyati, turlari, afzalliklari va kamchiliklari, O'zbekistondagi holati hamda kelajak istiqbollari ko'rib chiqilgan. Tadqiqot natijasida raqamli ta'lim tizimlarini rivojlantirishning asosiy yo'nalishlari va tavsiyalar ishlab chiqilgan. Maqola ta'lim sohasidagi mutaxassislar, o'qituvchilar va tadqiqotchilar uchun mo'ljallangan.

Kalit so'zlar: elektron ta'lim, e-learning, onlayn platforma, LMS, MOOC, raqamli ta'lim, masofaviy ta'lim.

KIRISH. Hozirgi kunda dunyo miqyosida axborot texnologiyalarining shiddat bilan rivojlanishi barcha sohalarda, jumladan, ta'lim tizimida ham tubdan o'zgarishlarga sabab bo'lmoqda. An'anaviy sinf xonalari va darslik asosidagi ta'lim tizimi o'rnini tobora raqamli, interaktiv va moslashuvchan elektron ta'lim platformalari egallayotgani bugungi taraqqiyotning tabiiy natijasidur.Elektron ta'lim (e-learning) — internet va zamonaviy axborot texnologiyalari vositasida amalga oshiriladigan ta'lim jarayoni bo'lib, u vaqt va makon cheklovlarini bartaraf etgan holda bilim olish imkoniyatini taqdim etadi. 2020-yilda boshlangan COVID-19 pandemiyasi bu yo'nalishni yanada tezlashtirib, dunyo miqyosida millionlab talabalar va o'qituvchilarni onlayn ta'lim muhitiga majburan o'tishiga sabab bo'ldi. UNESCO ma'lumotlariga ko'ra, pandemiya davrida 190 dan ortiq mamlakatda 1,6 milliarddan ziyod o'quvchi masofaviy ta'limga o'tgan. Bu jarayon nafaqat vaziyatdan kelib chiqqan majburiyat, balki ta'lim tizimini modernizatsiya qilishning muhim bosqichiga aylandi. O'zbekiston Respublikasi ham ushbu global jarayondan chetda qolmadi.

"Raqamli O'zbekiston 2030" strategiyasi doirasida ta'lim sohasini raqamlashtirish ustuvor vazifalardan biri sifatida belgilandi. Shu munosabat bilan elektron ta'lim platformalarini chuqur o'rganish, ularning imkoniyatlari va kamchiliklarini tahlil qilish dolzarb ahamiyat kasb etmoqda.

Ushbu maqolaning maqsadi — elektron ta'lim platformalarining nazariy asoslarini tizimlashtirish, ularning asosiy turlarini taqqoslash, O'zbekistondagi mavjud holat va muammolarni aniqlash hamda kelajak rivojlanish yo'nalishlarini ko'rsatishdan iborat.

ASOSIY QISM. Elektron ta'lim platformasi — bu internet orqali ta'lim kontentini taqdim etuvchi, o'quv jarayonini boshqaruvchi va o'qituvchi bilan o'quvchi o'rtasidagi interaktiv muloqotni ta'minlovchi kompleks dasturiy tizimdir. Bunday platformalar o'z ichiga video darslar, testlar, vazifalar, forum va chat imkoniyatlarini, hamda o'quv jarayonini kuzatuvchi analitik vositalarni birlashtiradi. Zamonaviy elektron ta'lim platformalarining asosiy komponentlari quyidagilardan iborat:

– Kontent boshqaruv tizimi — o'quv materiallarini yuklash, tartibga solish va namoyish etish
– Baholash moduli — testlar, topshiriqlar va baholar tizimi
– Kommunikatsiya vositalari — jonli darslar, forum, xabar almashish
– Analitika tizimi — o'quvchi faolligi va natijalari monitoringi
– Sertifikatlashtirish moduli — kursni muvaffaqiyatli tugatganlarga hujjat berish
– Mobil integratsiya — smartfon va planshetlar bilan moslashuvchanlik

Elektron ta'lim platformalarining asosiy turlari

Ilmiy adabiyotlarda elektron ta'lim platformalari bir necha mezonlar asosida tasniflanadi. Eng keng tarqalgan tasnif quyidagi turlarni ajratib ko'rsatadi:

O'quv Boshqaruv Tizimlari (LMS — Learning Management System). Bu tizimlar asosan yirik ta'lim muassasalari va korporatsiyalar uchun mo'ljallangan bo'lib, o'quv jarayonini to'liq boshqarish, talabalar faoliyatini kuzatish va hisobot berish imkonini taqdim etadi. Moodle, Blackboard, Canvas va SAP SuccessFactors bunga eng yaxshi misoldir. So'nggi statistikaga ko'ra, dunyo bo'ylab 80 000 dan ortiq ta'lim muassasasi Moodle platformasidan foydalanadi.

Ommaviy Ochiq Onlayn Kurslar (MOOC — Massive Open Online Courses). Bu formatda dunyoning istalgan nuqtasidan minglab va hatto millionlab foydalanuvchilar bir vaqtda ta'lim olishi mumkin. Coursera, edX, Udemy, Khan Academy platformalari MOOC modelining yorqin namunasidir. 2023-yil ma'lumotlariga ko'ra, Coursera platformasida 124 milliondan ortiq ro'yxatdan o'tgan foydalanuvchi mavjud.

Ixtisoslashgan platformalar. Muayyan sohalarga mo'ljallangan platformalar o'z nishiga chuqurroq kirib boradi. Dasturlash sohasida Codecademy, LeetCode, HackerRank; tillar o'rganishda Duolingo, Babbel; ijodiy kasblar uchun Skillshare; professional rivojlanish uchun LinkedIn Learning va Pluralsight alohida o'rin egallaydi.

Elektron ta'lim platformalarining afzalliklari. Ko'plab tadqiqotlar elektron ta'limning an'anaviy ta'lim oldidagi bir qator muhim ustunliklarini qayd etadi

1. Moslashuvchanlik va qulaylik. O'quvchilar o'zlariga qulay vaqt, joy va sur'atda ta'lim olish imkoniyatiga ega. Ish bilan band bo'lgan kattalar uchun bu imkoniyat ayniqsa qimmatlidir.

2. Iqtisodiy samaradorlik. Onlayn kurslar an'anaviy ta'limga nisbatan sezilarli darajada arzon. Transport, turar joy va qo'shimcha xarajatlar yo'qligi ham muhim iqtisodiy afzallik hisoblanadi.
3. Sifatli va xilma-xil kontent. Dunyoning eng nufuzli universitetlari va soha mutaxassislari tomonidan ishlab chiqilgan kurslardan foydalanish imkoniyati mavjud.
4. Shaxsiylashtirilgan o'quv yo'li. Zamonaviy platformalar sun'iy intellekt yordamida har bir o'quvchining darajasi, sur'ati va qiziqishlariga qarab individual o'quv rejasini shakllantirishga qodir.
5. Global imkoniyatlar. Qaysi mamlakatda yashamasidan qat'iy nazar, har qanday foydalanuvchi dunyoning istalgan universitetidan sertifikat olishi mumkin.
6. Kontent yangilanuvchanligи. Onlayn kurslar doimiy ravishda yangilanib turadi, bu esa eng zamonaviy bilimlarni o'rganish imkonini beradi.

Kamchiliklari va hal etilishi lozim bo'lgan muammolar

Barcha afzalliklariga qaramay, elektron ta'lim platformalari hali ham bir qator jiddiy muammolarga duch kelmoqda. Holmberg (2019) va boshqa tadqiqotchilar quyidagi asosiy muammolarni ajratib ko'rsatadi.

– Raqamli tengsizlik — internet va qurilmalar barcha hududlarda bir xil mavjud emas, bu esa «raqamli tafovut» (digital divide) muammosini keltirib chiqaradi
– O'z-o'zini boshqarishning qiyinligi — onlayn kurslarda o'rtacha 90 foizdan ortiq o'quvchi kursni yakuniga yetkazolmaydi
– Amaliy ko'nikmalar shakllanishining cheklanganligi — laboratoriya ishlari, klinik amaliyot kabi amaliy komponentlar onlayn formatda to'liq almashtirib bo'lmaydi
– Ijtimoiy izolyatsiya — sinfdoshlar va o'qituvchilar bilan jonli muloqot imkoniyatining cheklanganligi
– Diplom va sertifikatlarning tan olinish muammosi — bir qator ish beruvchilar hali ham onlayn ta'lim sertifikatlarini an'anaviy diplomlarga teng ko'rmaydi

O'zbekistonda elektron ta'lim: holati va rivojlanish istiqbollari - O'zbekiston Respublikasida elektron ta'limni rivojlantirish masalalari davlat siyosatining muhim qismiga aylanib bormoqda. 2020-yilda qabul qilingan «O'zbekiston Respublikasida axborot texnologiyalari va kommunikatsiyalarni rivojlantirish to'g'risida»gi qonun, hamda «Raqamli O'zbekiston — 2030» strategiyasi ta'lim sohasini raqamlashtirish uchun huquqiy asos yaratdi. Hozirgi kunda mamlakatimizda bir necha onlayn ta'lim platformalari faoliyat ko'rsatmoqda. ZiyoNet — ta'lim resurslari portali, Edunet.uz — masofaviy ta'lim platformasi, My.gov.uz — davlat xizmatlari portali, shuningdek, bir qator universitetlar (TATU, NUUz, TDIU va boshqalar) o'zlarining korporativ LMS tizimlarini joriy qilgan. Bundan tashqari, ko'plab o'zbek yoshlari xalqaro Coursera,

Udemy, Duolingo platformalaridan foydalanmoqda. Biroq sohadagi muammolar ham yetarlicha: o'zbek tilidagi sifatli kontent etishmasligi, pedagog kadrlarning raqamli savodxonligi past bo'lishi, qishloq hududlardagi internet sifatining pastligi va platforma standartlarining uyg'unlashmaganligi asosiy to'siqlar bo'lib qolmoqda**.**

XULOSA. Ushbu tadqiqot davomida elektron ta'lim platformalari haqida quyidagi xulosalar chiqarildi:

Elektron ta'lim platformalari XXI asrda ta'lim tizimining ajralmas va tobora muhimroq bo'layotgan qismiga aylanmoqda. Ular ta'limni demokratlashtirish — ya'ni geografik, iqtisodiy va ijtimoiy to'siqlarni bartaraf etgan holda har bir insonga bilim olish imkonini yaratish — masalasida muhim rol o'ynamoqda.

Har xil turdagi platformalar (LMS, MOOC, ixtisoslashgan platformalar) o'zlarining alohida qo'llanish sohasiga ega. Optimal natija uchun ushbu turlarning kombinatsiyasidan foydalanish, ya'ni «blended learning» (aralash ta'lim) yondashuvi eng maqbul sanaladi.

Sun'iy intellekt, katta ma'lumotlar tahlili (Big Data), virtual va kengaytirilgan haqiqat (VR/AR) texnologiyalari elektron ta'limni yanada shaxsiylashtirilgan, immersiv va samarali qilish imkonini bermoqda. Kelajakda bu texnologiyalar elektron ta'limning asosiy harakatlantiruvchi kuchlari bo'lib qolishi kutilmoqda. O'zbekiston uchun elektron ta'limni rivojlantirish bo'yicha ustuvor vazifalar quyidagilardan iborat: o'zbek tilidagi sifatli raqamli kontent yaratish, pedagog kadrlarni qayta tayyorlash, qishloq va chekka hududlarda internet infratuzilmasini kuchaytirish hamda platforma sertifikatlarini tan olish mexanizmini joriy qilish.

Elektron ta'lim — bu faqat texnologiya emas, balki ta'lim falsafasining o'zgarishi, o'quvchini passiv tinglovchidan faol bilim izlovchiga aylantiruvchi yangi paradigmadir. Ushbu paradigmani to'g'ri anglash va amalga oshirish mamlakat ta'lim tizimining sifatini tubdan yaxshilashning kalitidir.

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KREDIT SHARTNOMALARI BILAN BOG‘LIQ NIZOLAR BO`YICHA FUQAROLIK ISHLARI BO‘YICHA SUD HAL QILUV QARORLARI VA ULARNI IJRO ETISH BILAN BOG‘LIQ MASALALAR

ТДЮУ tayanch doktoranti M.Murodov

Kredit shartnomalaridan kelib chiqadigan nizolar fuqarolik sudlarida eng ko‘p uchraydigan iqtisodiy mazmundagi nizolar sirasiga kiradi. Ushbu toifadagi ishlarning asosiy qismini kredit qarzdorligini undirish, foizlar va penya hisoblash, garov predmetiga undiruv qaratish, kredit shartnomasini haqiqiy emas deb topish hamda kafillik majburiyatlaridan kelib chiqadigan nizolar tashkil etadi.

Sud amaliyoti tahlili shuni ko‘rsatadiki, mazkur nizolarni ko‘rib chiqishda shartnoma erkinligi, taraflarning tengligi, majburiyatlarni lozim darajada bajarish va halollik tamoyillariga rioya etilishi muhim ahamiyat kasb etadi. Shu bilan birga, sud hal qiluv qarorlarini ijro etish bosqichida qarzdorning mol-mulki yetarli emasligi, yashirilgan aktivlar mavjudligi, garov obyekti qiymatining pasayishi yoki ijro hujjatlarining uzoq muddat bajarilmay qolishi kabi muammolar uchramoqda.

Fuqarolik sudning hal qiluv qarori – bu sud ishini mazmunan hal qilishga qaratilgan sud hujjati. Sudning hal qiluv qarori fuqarolik protsessi ishtirokchilarining qonun bilan himoyalangan subyektiv huquq va manfaatlarini bevosita himoya qilishga qaratilgan.

M.K. Treushnikovning fikricha, sud o‘z hal qiluv qarori bilan da’vogarning javobgar tomonidan buzilgan huquqlarini tiklaydi yoki bunday buzilish sodir bo‘lmaganligini tan oladi, da’vogarning da’volarini rad etish orqali javobgarning huquqlarini himoya qiladi[1].

Albatta birinchi instansiya sudi da’vogarning da’vo talabini qanoatlantirishi yoki qanotalantrishni rad qilish mumkin. Bu esa fuqarolik yoki iqtisodiy sudning hal qiluv qarorida o‘z aksini topadi.

A.A.Solovyovning fikriga ko‘ra, muayyan sud hujjatini qabul qilish orqali huquqiy noaniqlik bartaraf etiladi, bu esa tegishli subyektning huquqlari, erkinliklari va qonun bilan himoyalangan manfaatlarini o‘z vaqtida himoya qilishga yordam beradi[2].

Har qanday hal qiluv qarori fuqarolik munosabatlarda yuzaga keladigan nizolarni hal qilishga qaratilgan bo‘ladi.

K.S.Yudelsonning yozishicha, sudning hal qiluv qarorlari protsessual qonun bilan belgilangan, himoyalangan huquq va manfaatlarni himoya qilishga, shuningdek,

[1] Гражданский процесс: учебник/под ред. М.К. Треушникова. - М.: Городец, 2012. - 816 с.

[2] Соловьев А. А., Шеяфетдинова Н. А. Принцип исполнимости судебного решения // Мировой судья. 2017. № 1. С. 36–40

adolatni amalga oshirish jarayonida yuzaga keladigan barcha boshqa nizolarni hal qilishga qaratilgan sud organlarining irodasini ifodalash shakli sanaladi[3].

Fuqarolik sudlarda fuqarolik ishi mazmunan ko‘rib chiqilgandan so‘ng hal qiluv qarori qabul qilinadi.

M.A.Rojkova sud hujjatini faqat huquqni muhofaza qilish xususiyatiga ega hujjat deb hisoblaydi va uni sud organi tomonidan maxsus belgilangan protsessual tartibda qabul qilingan, sudning tezkor xulosasini o‘z ichiga olgan hujjat deb ta’rif beradi.

Ushbu hujjat bir qator rasmiy talablarga javob berishi va huquqiy ahamiyatga ega bo‘lgan muayyan oqibatlarni keltirib chiqaradigan moddiy huquqning huquqiy faktini o‘z ichiga olishi kerak[4].

Sud hal qiluv qarorining asosiy vazifasi nafaqat mulk huquqi masalalarida taraflar o‘rtasida huquqiy munosabatlarni o‘rnatish va tasdiqlash (ularning mavjudligi yoki yo‘qligini tasdiqlash), balki sud jarayoni bilan bog‘liq bo‘lmagan munosabatlarni huquqiy jihatlarni aniqlashtirishdan iborat. Bu himoya qilinishi qonun bilan talab qilinadigan huquqlar va qonuniy manfaatlarni to‘sqinliksiz amalga oshirish uchun sharoit yaratadi, mavjud huquqiy munosabatlardagi o‘zgarishlarga ta’sir qiladi, nizolarni hal qiladi hamda taraflarning huquqlarini himoya qilishni ta’minlaydi.

Sud hujjatini qabul qilish orqali sud hokimiyati fuqarolik muomalasining normal, ijobiy rivojlanishiga ham yordam beradi.

Kredit shartnomasi bo‘yicha ma’lum miqdordagi pulni yoki biror miqdordagi tovarlarni qaytarishga majburmi yoki yo‘qligini hal qilishda sud quyidagilarni aniqlashi kerak: mazkur shartnoma mavjudmi, shartnoma predmeti, pul yoki tovarlarning qarz oluvchiga amalda o‘tkazilishi (o‘tkazilish vaqti), taraflar tomonidan foizlar va majburiyatni bajarish shartlari, foizlar va kreditni to‘liq yoki qisman amalda qaytarish sanalari, foizlarni qaytarish tartibiga rioya qilinishi, qarzdor yoki kreditor tomonidan kechikish mavjudligi, shartnoma bo‘yicha majburiyatlarni buzish oqibatlari va buzuvchining javobgarligi, ushbu javobgarlikning turi va hajmi. Albatta mazkur ma’lumotlar sudning hal qiluv qarorida ham o‘z aksini topishi kerak bo‘ladi.

Shuningdek, kredit shartnomasi bilan bog‘liq sud ishlari bo‘yicha hal qiluv qarorida kreditor tomonidan to‘lanishi kerak bo‘lgan summalarni undirish uchun qilingan xarajatlar (masalan, pochta xarajatlari, davlat bojlari, qarzdorni topish xarajatlari va boshqalar) am ko‘rsatishi lozim.

FPKning 257-moddasida pul mablag‘larini undirish to‘g‘risidagi hal qiluv qarorining xususiyatlari yoritib berilgan: sud pul mablag‘larini undirish to‘g‘risidagi hal qiluv

[3] Сахнова Т.В. Курс гражданского процесса. 2-е изд. М., 2014. С. 506, 507.
[4] Рожкова М.А. Судебный акт и динамика обязательства. М., 2003. С. 11.

qarorida undirilishi lozim bo‘lgan pul summalarini undirish davrini, asosiy qarzning, zararlarning, neustoykaning hamda foizlarning umumiy miqdorini alohida-alohida aniqlagan holda ko‘rsatadi.

Tashkilotlardan pul mablag‘lari undirilgan taqdirda hal qiluv qarorida undiriladigan mablag‘larning xususiyati, shuningdek undirib beriladigan summa javobgarning bankdagi qaysi hisobvarag‘idan hisobdan chiqarilishi kerakligi ko‘rsatiladi.

Sud dastlabki va qarshi da’volarni to‘liq yoki qisman qanoatlantirgan taqdirda hal qiluv qarorida o‘zaro hisobga olish natijasida undirilishi lozim bo‘lgan summani ko‘rsatadi[5].

Kredit shartnomalaridan kelib chiqadigan nizolarni adolatli hal etish va sud hal qiluv qarorlarining o‘z vaqtida hamda to‘liq ijro etilishi moliyaviy tizim barqarorligini, fuqarolar va tadbirkorlik subyektlarining huquqiy himoyasini ta’minlashning muhim omillaridan biridir. Shu bois sud amaliyotini birxillashtirish, majburiy ijro tizimini raqamlashtirish, qarzdorning mol-mulkini aniqlash va qidirish bo‘yicha elektron davlat reyestrlari bilan Majburiy ijro byurosining integratsiyasini kengaytirish, kredit nizolari bo‘yicha elektron hujjat almashinuvi va masofaviy sud majlislarini kengaytirish, sud qarorlarini ijro etish bosqichlarini onlayn kuzatish imkoniyatlarini yaratish, banklar, sudlar va majburiy ijro organlari o‘rtasida ma’lumot almashishning yagona elektron platformasini joriy etish, mediatsiya va muzokara mexanizmlarini keng qo‘llash hamda kreditor va qarzdor manfaatlari o‘rtasidagi muvozanatni ta’minlaydigan huquqiy mexanizmlarni takomillashtirish mazkur sohadagi nizolar sonini kamaytirish va sud qarorlari ijrosi samaradorligini oshirishga xizmat qiladi.

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DESIGN OF A CLOSED-LOOP AUTONOMOUS HYDRO-SYSTEM FOR MULTI-STAGE FILTRATION AND RECYCLING OF RAINWATER AND DOMESTIC WASTEWATER IN MULTI-STOREY RESIDENTIAL BUILDINGS

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Abstract: The increasing demand for sustainable water management in urban environments has made rainwater harvesting and wastewater recycling essential components of modern building design. Multi-storey residential buildings generate significant amounts of domestic wastewater while also having the potential to collect large volumes of rainwater, both of which can be effectively reused through advanced treatment systems. This study focuses on the development of a closed-loop autonomous hydro-system designed for multi-stage filtration and recycling of rainwater and domestic wastewater in multi-storey residential buildings. The system aims to reduce potable water consumption, minimize environmental pollution, and improve the efficiency of urban water resource management. The proposed approach integrates mechanical, biological, and advanced filtration stages to ensure water quality suitable for non-potable reuse purposes such as irrigation, sanitation, and cleaning.

Keywords: Rainwater harvesting, wastewater recycling, multi-storey buildings, closed-loop system, water filtration, sustainable water management, urban infrastructure, environmental engineering, water reuse, autonomous hydro-system.

Introduction

Rapid urbanization and population growth have significantly increased the demand for clean and reliable water resources. In many cities, including rapidly developing urban areas, water scarcity and inefficient wastewater management have become critical environmental and infrastructural challenges. Multi-storey residential buildings, which represent a dominant form of urban housing, contribute substantially to both water consumption and wastewater generation. Traditional centralized water supply and sewage systems often face limitations in terms of capacity, efficiency, and environmental sustainability. As a result, there is a growing interest in decentralized and autonomous water management systems that can operate at the building level. Among these approaches, rainwater harvesting and domestic wastewater recycling

have gained significant attention as effective strategies for reducing dependence on municipal water supplies. Closed-loop hydro-systems provide an integrated solution by collecting, filtering, and reusing water within the same system cycle. Multi-stage filtration processes, including physical, chemical, and biological treatment methods, play a crucial role in ensuring that the recycled water meets safety and quality standards for non-potable applications. The aim of this study is to propose and analyze a closed autonomous hydro-system for multi-storey residential buildings that enables efficient multi-stage filtration and reuse of rainwater and domestic wastewater, thereby contributing to sustainable urban water management and environmental protection.

Materials and Methods

This study proposes a closed-loop autonomous hydro-system designed for multi-storey residential buildings to enable multi-stage filtration and recycling of rainwater and domestic wastewater. The system was conceptually developed based on principles of sustainable urban water management and decentralized treatment technologies. The system consists of three main components: (1) rainwater collection units installed on rooftops, (2) domestic wastewater collection pipelines from residential units, and (3) a multi-stage treatment unit. The treatment unit includes mechanical filtration (screening and sedimentation), biological treatment (biofiltration and microbial degradation), and advanced filtration stages (activated carbon and fine membrane filtration). Water quality parameters such as turbidity, pH, chemical oxygen demand (COD), and suspended solids were considered in evaluating the efficiency of the system. Simulation-based analysis was used to assess the performance of the proposed hydro-system under different water load conditions in a multi-storey residential environment.

Results

The analysis demonstrated that the proposed multi-stage filtration system significantly improves the quality of both rainwater and domestic wastewater. Mechanical filtration effectively removed large suspended particles and reduced initial turbidity levels. Biological treatment contributed to a substantial decrease in organic pollutants, particularly reducing COD values through microbial activity. Advanced filtration using activated carbon and membrane-based systems further improved water clarity and eliminated residual contaminants, resulting in water quality suitable for non-potable reuse applications such as irrigation, toilet flushing, and cleaning purposes. The simulation results indicated that the closed-loop system could reduce freshwater consumption in multi-storey residential buildings by a significant percentage by reusing treated water within the system. Additionally, the system contributed to a

reduction in wastewater discharge into municipal sewage networks, thereby lowering environmental pollution load.

Discussion

The findings of this study highlight the effectiveness of integrated multi-stage filtration systems in improving urban water sustainability. The combination of mechanical, biological, and advanced filtration processes ensures comprehensive removal of physical, chemical, and biological contaminants from both rainwater and domestic wastewater. Compared to conventional centralized water management systems, the proposed autonomous hydro-system offers significant advantages in terms of resource efficiency, environmental protection, and operational independence. The ability to recycle water at the building level reduces dependency on municipal water supply systems and enhances resilience in water-scarce conditions. However, the implementation of such systems may face challenges related to installation costs, maintenance requirements, and user awareness. Regular monitoring and proper system management are essential to ensure long-term efficiency and safety. Future research should focus on optimizing filtration technologies and evaluating real-world pilot implementations in residential buildings.

Conclusion

The proposed closed-loop autonomous hydro-system demonstrates strong potential for sustainable water management in multi-storey residential buildings. By integrating rainwater harvesting and domestic wastewater recycling through multi-stage filtration, the system effectively reduces freshwater consumption and environmental pollution. Its application can significantly contribute to sustainable urban development and improved water resource efficiency.

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НЕАВТОКЛАВНЫЙ ГАЗОБЕТОН D600 С МИНЕРАЛИЗОВАННЫМ ВОЛОКНИСТЫМ ОТХОДОМ КОРНЯ СОЛОДКИ

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Аннотация. В статье рассмотрена возможность получения неавтоклавного газобетона плотностной группы D600 с использованием переработанного волокнистого отхода корня солодки в качестве дисперсного армирующего компонента. Актуальность исследования связана с необходимостью расширения сырьевой базы для производства ячеистых бетонов, повышения трещиностойкости межпоровых перегородок и вовлечения местных растительных отходов в строительное материаловедение. Особое внимание уделено предварительной подготовке органического волокна, включающей горячую водную промывку, известковую обработку и мягкую силикатную минерализацию. Показано, что прямое введение необработанного отхода корня солодки ухудшает структурообразование газобетонной массы, снижает прочность и повышает водопоглощение. Наиболее эффективным является состав с очищенным и известково-силикатно минерализованным волокном в количестве 3,5 кг/м³. Для данного состава средняя плотность составила 606 кг/м³, прочность при сжатии в возрасте 28 суток - 3,05 МПа, прочность при изгибе -

0,72 МПа, водопоглощение - 36 %, усадка при высыхании - 0,52 мм/м. Полученные результаты подтверждают целесообразность использования минерализованного солодкового волокна как функциональной добавки для повышения эксплуатационных свойств неавтоклавного газобетона.

Ключевые слова: неавтоклавный газобетон, ячеистый бетон, корень солодки, растительное волокно, минерализация, известково-силикатная обработка, прочность, усадка, водопоглощение, дисперсное армирование.

Abstract. The paper presents a non-autoclaved aerated concrete of density class D600 modified with processed fibrous waste of licorice root. The organic fiber was subjected to hot-water washing, lime treatment and mild silicate mineralization to reduce the content of water-soluble inhibitors and to improve compatibility with the cement-lime matrix. The mineralized-fiber composition achieved a 28-day compressive strength of 3.05 MPa, flexural strength of 0.72 MPa, water absorption of 36% and drying shrinkage of 0.52 mm/m at an average density of 606 kg/m³.

Keywords: non-autoclaved aerated concrete, licorice root, plant fiber, mineralization, lime-silicate treatment, compressive strength, shrinkage, water absorption.

Введение

Неавтоклавный газобетон относится к числу перспективных стеновых и теплоизоляционно-конструкционных материалов, так как его производство не требует энергоемкой автоклавной обработки и может быть организовано на сравнительно простом технологическом оборудовании. Вместе с тем при нормальном твердении такой материал часто характеризуется повышенной усадкой, недостаточной прочностью межпоровых перегородок и чувствительностью к нарушениям режима газообразования. Поэтому одним из актуальных направлений совершенствования неавтоклавных ячеистых бетонов является использование дисперсного армирования и активных минеральных компонентов, способных повысить стабильность пористой структуры и эксплуатационную надежность материала.

В традиционных составах для армирования газобетонной массы применяют минеральные, базальтовые, полимерные или техногенные волокнистые добавки [1-3]. Их использование способствует снижению усадочного микротрещинообразования и повышению сопротивления изгибу. Однако в регионах с развитой переработкой растительного сырья образуются значительные объемы волокнистых отходов, которые могут стать дополнительным источником функциональных наполнителей для строительных материалов.

Одним из таких видов сырья является отход переработки корня солодки, содержащий волокнистую часть растительного происхождения. Прямое применение растительных отходов в цементных системах ограничивается наличием водорастворимых органических веществ, сахаров, фенольных соединений и других компонентов, способных замедлять гидратацию цемента и нарушать формирование прочной минеральной матрицы. Поэтому научный интерес представляет не простое введение отхода корня солодки в газобетон, а разработка способа его предварительной подготовки, обеспечивающей совместимость волокна с цементно-известковой средой.

Целью настоящей работы является оценка влияния очищенного и известково-силикатно минерализованного волокнистого отхода корня солодки на физико-механические свойства неавтоклавного газобетона D600.

Для достижения поставленной цели решались следующие задачи:

• разработать состав неавтоклавного газобетона на цементно-известковом вяжущем с использованием минерализованного волокна корня солодки;

• определить влияние состояния волокна на прочность, водопоглощение, усадку и равномерность пористой структуры;

• сравнить контрольный состав без волокна, состав с необработанным отходом, состав с горячепромытым волокном и заявляемый состав с минерализованным волокном;

• установить рациональный технологический подход к введению растительного волокна в газобетонную смесь.



Рисунок 1 - Технологическая схема подготовки и введения минерализованного волокна корня солодки

Материалы и методы исследования

В качестве основного вяжущего использовали портландцемент М500. Для создания щелочной среды, стабилизации газообразования и участия в формировании цементно-силикатной матрицы применяли гидратную известь $Ca(OH)_2$. Кремнеземистый компонент был представлен тонкомолотым кварцевым песком. В состав также вводили золу-унос или тонкомолотый доменный шлак, микрокремнезем, строительный гипс, поликарбоксилатный суперпластификатор, алюминиевую пудру и воду.

Функциональной особенностью исследуемого состава являлось введение волокнистого отхода корня солодки. Для оценки влияния степени подготовки волокна были рассмотрены четыре варианта: НГБ-0 - контрольный газобетон без волокнистого наполнителя; НГБ-1 - газобетон с необработанным отходом корня солодки; НГБ-2 - газобетон с волокном после горячей водной промывки; НГБ-3 - газобетон с очищенным и известково-силикатно минерализованным волокном.

Таблица 1 - Составы опытной серии неавтоклавного газобетона D600, кг/м³

Компонент	**НГБ-0 контроль**	**НГБ-1 необр. отход**	**НГБ-2 промытое волокно**	**НГБ-3 минерализ. волокно**
Портландцемент М500	290	290	290	290
Гидратная известь $Ca(OH)_2$	50	50	50	50
Тонкомолотый кварцевый песок	230	230	230	230
Зола-унос или тонкомолотый шлак	60	60	60	60
Микрокремнезем	7	7	7	7
Гипс строительный	6	6	6	6
Волокнистый отход корня солодки	-	3,5 необработанный	3,5 после горячей промывки	3,5 очищенный и минерализованный
Поликарбоксилатный суперпластификатор	0,90	0,90	0,90	0,90
Алюминиевая пудра	0,40	0,40	0,40	0,40

Вода с учетом влажности волокна, л/м³	250	263	258	255
Фактическое В/Т по сухим компонентам	0,389	0,407	0,399	0,394

Подготовка волокнистого отхода корня солодки включала сортировку, измельчение до фракции 3-12 мм, горячую водную промывку, обработку суспензией гидроксида кальция, силикатную минерализацию разбавленным раствором жидкого стекла, отжим и подсушку до рабочей влажности. Горячая промывка была направлена на удаление водорастворимых экстрактивных веществ, сахаров, сапонинов и фенольных соединений. Известково-силикатная минерализация обеспечивала образование на поверхности растительного волокна тонкого минерального слоя, повышающего совместимость волокна с цементно-известковой матрицей.

Технология приготовления газобетонной смеси включала предварительное сухое перемешивание минеральных компонентов, диспергирование подготовленного волокна в части воды затворения с суперпластификатором, введение волокнистой суспензии в сухую смесь и последующее введение алюминиевой пудры. Газообразующая добавка вводилась на заключительной стадии, чтобы исключить преждевременное нарушение процесса вспучивания.

Образцы твердели в нормальных условиях: первые 24 часа - в формах под пленочным укрытием, затем - во влажностных условиях с последующим естественным твердением до возраста 28 суток. Оценивались средняя плотность, осадка газомассы после максимального подъема, задержка начала схватывания, прочность при сжатии в возрасте 7 и 28 суток, прочность при изгибе в 28 суток, водопоглощение, усадка при высыхании и теплопроводность в сухом состоянии.

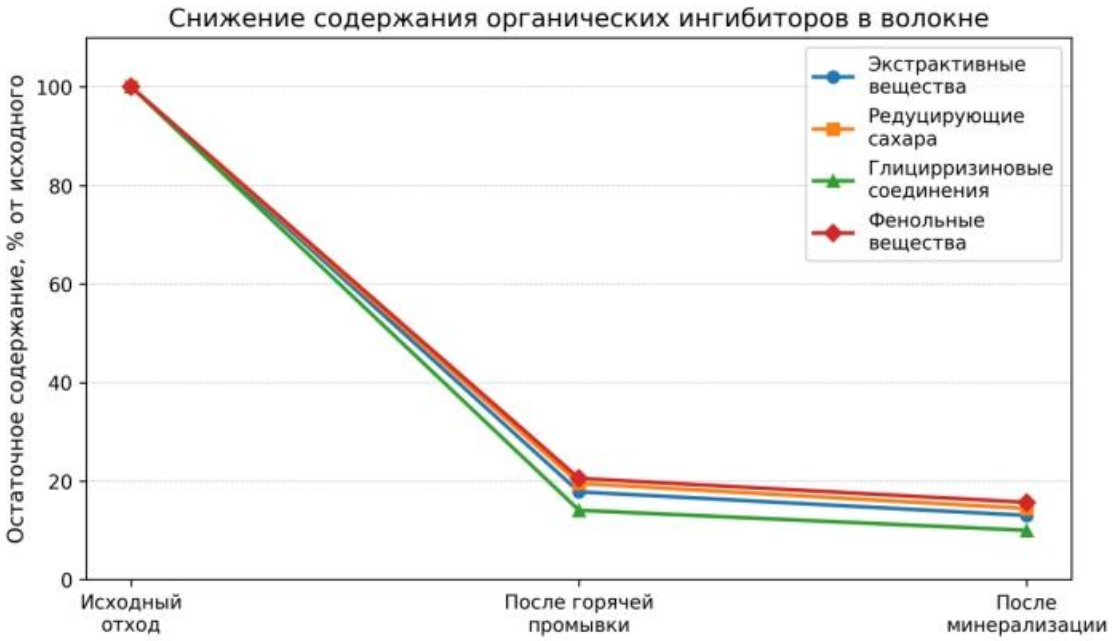


Рисунок 2 - Динамика снижения органических ингибиторов при промывке и минерализации волокна

Результаты исследования

Химический контроль волокнистого отхода показал, что исходный материал содержит значительное количество водорастворимых экстрактивных веществ и редуцирующих сахаров. После горячей промывки их содержание резко снизилось, а после известково-силикатной минерализации волокно приобрело более стабильное состояние для введения в цементно-известковую систему.

Таблица 2 - Химические показатели волокнистого отхода корня солодки

Показатель	**Исходный отход**	**После горячей промывки**	**После минерализации**
Водорастворимые экстрактивные вещества, %	14,6	2,6	1,9
Редуцирующие сахара, %	2,15	0,42	0,31
pH водной вытяжки 1:10	5,7	7,2	9,1
Электропроводность вытяжки, мСм/см	3,10	0,58	1,05
Глицирризиновые соединения, % усл.	3,20	0,45	0,32
Суммарные фенольные вещества, мг GAE/г	18,5	3,8	2,9

Зольность / минеральный остаток, %	2,1	2,4	7,8
Водопоглощение волокна за 24 ч, %	168	150	126

Результаты физико-механических испытаний приведены в таблице 3. Они показывают, что состояние волокна оказывает решающее влияние не только на прочность, но и на устойчивость газобетонной массы в период вспучивания и раннего структурообразования.

Таблица 3 - Сводные физико-механические показатели опытных составов

Показатель	**НГБ-0 контроль**	**НГБ-1 необр. отход**	**НГБ-2 промытое волокно**	**НГБ-3 минерализ. волокно**
Средняя плотность, кг/м³	604	598	601	606
Осадка газомассы после максимального подъема, мм	5	17	8	4
Задержка начала схватывания относительно контроля, мин	0	110-125	35-45	0-10
Прочность при сжатии, 7 сут, МПа	1,32	0,69	1,15	1,78
Прочность при сжатии, 28 сут, МПа	2,08	1,18	2,05	3,05
Прочность при изгибе, 28 сут, МПа	0,44	0,28	0,49	0,72
Водопоглощение, % по массе	44	53	43	36

Усадка при высыхании, 28 сут, мм/м	0,78	0,94	0,68	0,52
Теплопроводность в сухом состоянии, Вт/(м·К)	0,133	0,130	0,131	0,134
Равномерность пористой структуры	равномерная	неравномерная, отдельные крупные поры	удовлетворительная	равномерная, дефектные поры не выражены

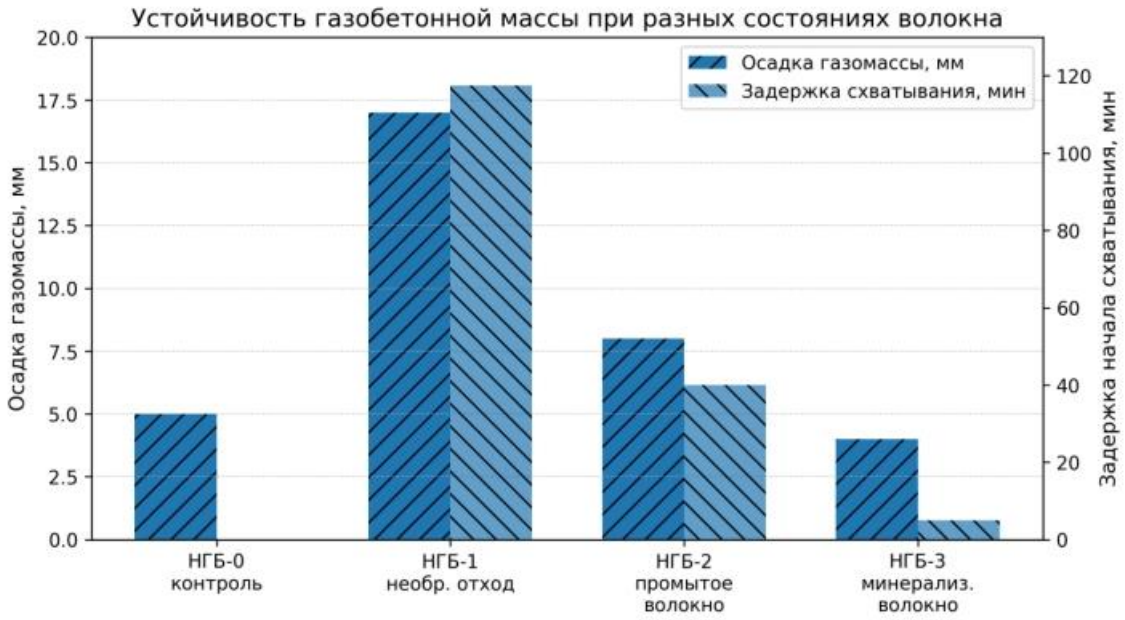


Рисунок 3 - Осадка газомассы и задержка начала схватывания опытных составов

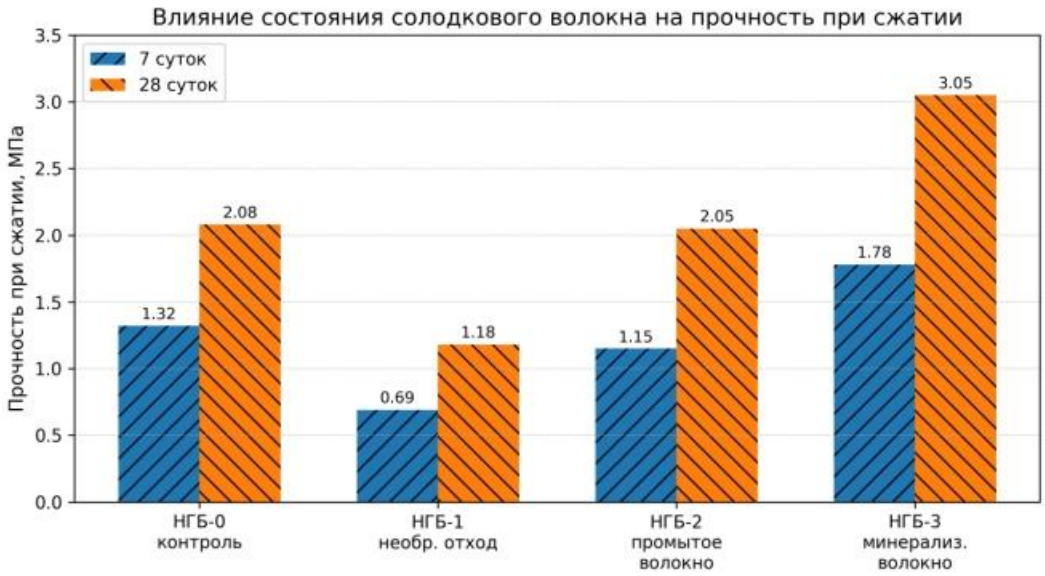


Рисунок 4 - Влияние состояния волокна на прочность при сжатии

Полученные данные показывают, что необработанный отход корня солодки отрицательно влияет на структурообразование газобетонной массы. В составе НГБ-1 наблюдалась значительная задержка начала схватывания - 110-125 минут относительно контрольного состава. Кроме того, осадка газомассы после максимального подъема увеличилась до 17 мм, что указывает на недостаточную устойчивость пористой структуры. Прочность при сжатии в возрасте 28 суток снизилась с 2,08 МПа у контрольного состава до 1,18 МПа, а прочность при изгибе - с 0,44 до 0,28 МПа.

После горячей промывки волокна отрицательное влияние органических веществ уменьшилось. Состав НГБ-2 показал прочность при сжатии 2,05 МПа, что практически соответствует контрольному составу без волокна. При этом прочность при изгибе повысилась до 0,49 МПа, а усадка снизилась до 0,68 мм/м. Это подтверждает, что удаление водорастворимых компонентов является обязательным условием для применения растительного волокна в газобетонной смеси.

Наиболее высокие показатели получены для состава НГБ-3, в котором использовано очищенное и известково-силикатно минерализованное волокно. Прочность при сжатии в возрасте 28 суток достигла 3,05 МПа, что на 46,6 % выше по сравнению с контрольным составом НГБ-0. Прочность при изгибе увеличилась до 0,72 МПа, то есть на 63,6 % выше контрольного значения. Одновременно водопоглощение снизилось с 44 до 36 %, а усадка при высыхании - с 0,78 до 0,52 мм/м.

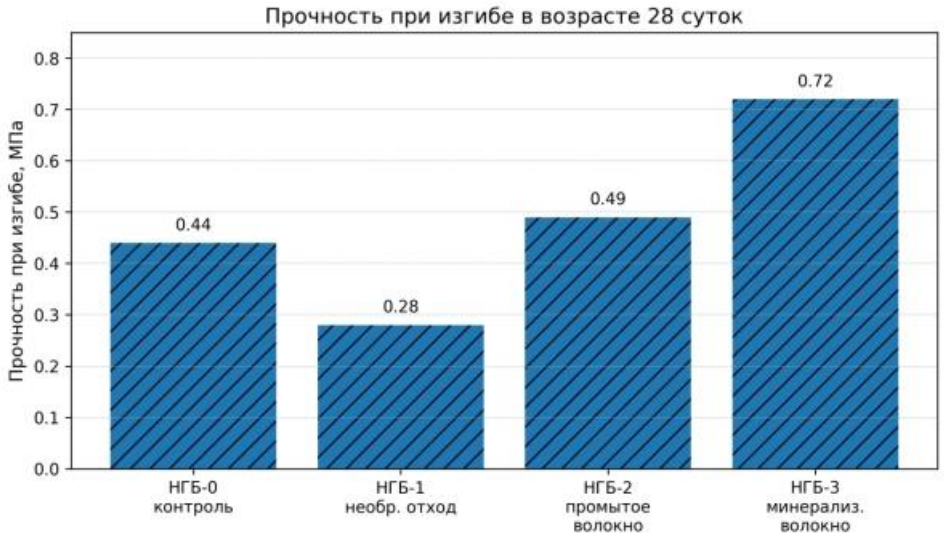


Рисунок 5 - Прочность при изгибе опытных составов в возрасте 28 суток

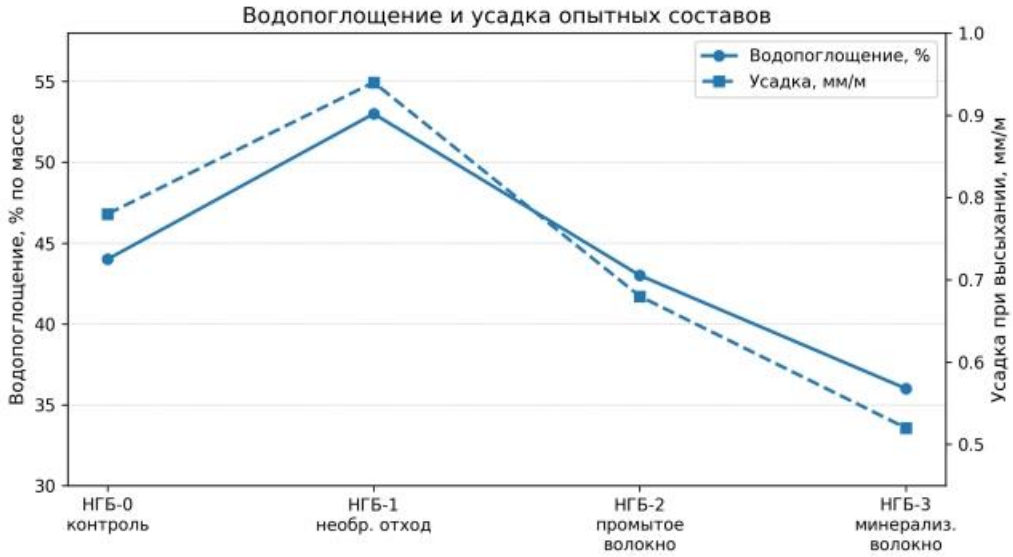


Рисунок 6 - Водопоглощение и усадка при высыхании опытных составов

Обсуждение результатов

Повышение прочности и снижение усадочных деформаций в составе НГБ-3 можно объяснить совокупным действием нескольких факторов. Во-первых, горячая водная промывка уменьшает содержание сахаров, фенольных соединений и других экстрактивных веществ, которые способны тормозить гидратацию цемента и ухудшать раннее структурообразование. Во-вторых, обработка гидроксидом кальция нейтрализует кислые группы на поверхности растительного волокна и насыщает ее ионами кальция. В-третьих, силикатная минерализация способствует формированию тонкой кальций-силикатной оболочки, повышающей адгезию между волокном и цементно-известковой матрицей.

Дисперсное армирование межпоровых перегородок минерализованным волокном снижает вероятность развития усадочных микротрещин. При этом ограниченная дозировка волокна - 3,5 кг/м³ - не нарушает равномерность газообразования и не вызывает чрезмерного увеличения водопотребности. Это особенно важно для неавтоклавного газобетона, где прочностные свойства в значительной степени зависят от устойчивости пористой структуры в период вспучивания и начального схватывания.

Сравнение НГБ-1 и НГБ-3 показывает, что само наличие растительного волокна не гарантирует улучшения свойств материала. Напротив, без предварительной очистки и минерализации волокно действует как неблагоприятная органическая примесь, повышающая водопотребность, задерживающая схватывание и ухудшающая поризацию. Следовательно, ключевым технологическим фактором является именно подготовка волокнистого отхода, а не только его количественное содержание в составе.

С практической точки зрения предложенный состав может быть использован при производстве стеновых блоков, перегородочных плит и теплоизоляционно-конструкционных элементов плотностной группы D600. Дополнительным преимуществом является возможность утилизации местного растительного отхода, что соответствует принципам ресурсосбережения и экологизации производства строительных материалов.



Рисунок 7 - Предполагаемый механизм повышения свойств газобетона за счет минерализованного волокна

В сравнении с ближайшим прототипом в одной плотностной группе D600 заявляемый состав ориентирован на повышение 28-суточной прочности при сжатии с 1,60 до 3,05 МПа. Такой результат достигается не простой заменой минерального базальтового волокна растительным сырьем, а комплексной подготовкой солодкового волокна, включающей фракционирование, горячую промывку, химический контроль вытяжки, известковую нейтрализацию и мягкую силикатную минерализацию.

Таблица 4 - Сравнение заявляемого состава с ближайшим прототипом

Показатель	**Прототип RU2616303C1 D600**	**Заявляемый состав НГБ-3**	**Изменение**
Предел прочности при сжатии, 7 суток, МПа	1,40	1,78	+0,38 МПа / +27,1 %
Предел прочности при сжатии, 28 суток, МПа	1,60	3,05	+1,45 МПа / +90,6 %
Средняя плотность, кг/м³	около 600	606	сопоставимая плотность, группа D600
Характер армирования	волокнистые базальтовые отходы	очищенное и минерализованное растительное волокно корня солодки	изменена природа и подготовка волокна

В сравнении с ближайшим прототипом в одной плотностной группе D600 заявляемый состав ориентирован на повышение 28-суточной прочности при сжатии с 1,60 до 3,05 МПа. Такой результат достигается не простой заменой минерального базальтового волокна растительным сырьем, а комплексной подготовкой солодкового волокна, включающей фракционирование, горячую промывку, химический контроль вытяжки, известковую нейтрализацию и мягкую силикатную минерализацию.

Выводы

1. Разработан состав неавтоклавного газобетона D600 с использованием очищенного и известково-силикатно минерализованного волокнистого отхода корня солодки в количестве 3,5 кг/м³.
2. Установлено, что необработанный отход корня солодки ухудшает свойства газобетона: прочность при сжатии в возрасте 28 суток снижается до 1,18 МПа, водопоглощение повышается до 53 %, а усадка - до 0,94 мм/м.
3. Горячая промывка волокна снижает содержание водорастворимых органических веществ и частично восстанавливает прочностные показатели материала, однако максимальный эффект достигается только после известково-силикатной минерализации.
4. Заявляемый состав НГБ-3 обеспечивает среднюю плотность 606 кг/м³, прочность при сжатии 3,05 МПа, прочность при изгибе 0,72 МПа, водопоглощение 36 % и усадку при высыхании 0,52 мм/м.
5. Улучшение свойств связано с формированием минерализованной поверхности растительного волокна, повышением его адгезии к цементно-известковой матрице и дисперсным армированием межпоровых перегородок.
6. Предложенный подход позволяет расширить сырьевую базу для производства неавтоклавных ячеистых бетонов и обеспечить рациональное использование отходов переработки корня солодки.

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YASHIL IQTISODIYOT SHAROITIDA KICHIK BIZNES VA TADBIRKORLIK FAOLIYATIDAGI RIVOJLANISH TENDENSIYALARI (NAMANGAN VILOYATI MISOLIDA)

DEVELOPMENT TRENDS IN SMALL BUSINESS AND ENTREPRENEURSHIP IN THE GREEN ECONOMY (ON THE EXAMPLE OF THE NAMANGAN REGION)

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Annotatsiya.
Mazkur maqolada yashil iqtisodiyot sharoitida kichik biznes va tadbirkorlik subyektlarining rivojlanish tendensiyalari Namangan viloyati misolida tahlil qilingan. Hududda ekologik barqaror ishlab chiqarish, energiya tejamkor texnologiyalarni joriy etish, qayta tiklanuvchi energiya manbalaridan foydalanish hamda resurslardan oqilona foydalanish masalalari o'rganilgan. Tadqiqot natijalariga ko'ra, yashil iqtisodiyot tamoyillarining kichik biznes faoliyatiga tatbiq etilishi korxonalar raqobatbardoshligini oshirish, xarajatlarni kamaytirish va yangi ish o'rinlarini yaratishga xizmat qilmoqda. Shuningdek, Namangan viloyatida yashil tadbirkorlikni rivojlantirish istiqbollari va mavjud muammolar yuzasidan takliflar ishlab chiqilgan.

Аннотация.
В данной статье анализируются тенденции развития малого бизнеса и предпринимательства в контексте зеленой экономики на примере Наманганской области. Рассматриваются вопросы экологически устойчивого производства, внедрения энергосберегающих технологий, использования возобновляемых источников энергии и рационального использования ресурсов в регионе. По результатам исследования, применение принципов зеленой экономики в деятельности малого бизнеса способствует повышению конкурентоспособности предприятий, снижению издержек и созданию новых рабочих мест. Также разработаны предложения по перспективам развития зеленого

предпринимательства в Наманганской области и выявлены существующие проблемы.

Abstract.

This article analyzes the development trends of small businesses and entrepreneurs in the context of a green economy using the example of the Namangan region. The issues of environmentally sustainable production, the introduction of energy-saving technologies, the use of renewable energy sources, and the rational use of resources in the region are studied. According to the results of the study, the application of green economy principles to small business activities helps to increase the competitiveness of enterprises, reduce costs, and create new jobs. Also, proposals have been developed on the prospects for the development of green entrepreneurship in the Namangan region and existing problems.

Kalit so‘zlar: yashil iqtisodiyot, kichik biznes, tadbirkorlik, Namangan viloyati, barqaror rivojlanish, ekologik innovatsiyalar, energiya samaradorligi, yashil texnologiyalar, investitsiyalar, raqobatbardoshlik.

Ключевые слова: зеленая экономика, малый бизнес, предпринимательство, Наманганский регион, устойчивое развитие, экологические инновации, энергоэффективность, зеленые технологии, инвестиции, конкурентоспособность.

Keywords: green economy, small business, entrepreneurship, Namangan region, sustainable development, environmental innovations, energy efficiency, green technologies, investments, competitiveness.

Introduction.

The growing environmental problems in the world economy, the limited natural resource reserves and climate change processes require the transition to a green economy model. A green economy is a development model aimed at ensuring economic growth, while maintaining environmental safety and increasing the well-being of the population. In the Republic of Uzbekistan, as part of the strategy for transition to a green economy, large-scale reforms are being implemented in economic sectors to increase energy efficiency, expand the use of renewable energy sources, and develop environmentally friendly production.

Small business and private entrepreneurship are an important component of the country's economy, playing an important role in ensuring employment, increasing incomes, and regional development. Therefore, the integration of green economy principles into small business activities is of urgent scientific and practical importance.

Research methodology

During the study, methods of analysis and synthesis of scientific knowledge, statistical analysis, comparative comparison, systematic approach and economic observation were used. Data on the development indicators of small business entities operating in the Namangan region, the level of implementation of green technologies and environmental efficiency were summarized. Also, scientific works of local and foreign scientists on the topic were studied.

Literature review

The concept of green economy was first formed as a result of the need to ensure a balance between environmental problems and economic development. Important scientific research was conducted in this direction by such economists as B. Moler, D. Pierce, E. Barbier.

The UN Sustainable Development Goals on sustainable development have served to strengthen the theoretical foundations of the green economy. Uzbek economists have also extensively studied the impact of the green economy on national economic sectors, the development of energy efficiency and environmental innovations.

Scientific sources indicate the introduction of energy-saving technologies, waste recycling, the production of environmentally friendly products and the use of renewable energy sources as the main areas of green entrepreneurship.

Analysis and results

Namangan viloyati iqtisodiyotida kichik biznes va xususiy tadbirkorlikning ulushi yildan-yilga ortib bormoqda. Hududda sanoat, qishloq xo‘jaligi, xizmat ko‘rsatish va hunarmandchilik yo‘nalishlarida faoliyat yuritayotgan korxonalar soni ko‘paymoqda.

In the context of a green economy, the following development trends are observed in the Namangan region:

1. Introduction of energy-saving technologies

Many small enterprises are using energy-saving equipment and modern technologies. This serves to reduce electricity consumption and reduce production costs.

2. Expansion of the use of solar energy

The number of entrepreneurs installing solar panels in the region is increasing. The use of renewable energy sources, especially in manufacturing enterprises and service facilities, is increasing economic efficiency.

3. Production of environmentally friendly products

As a result of the increasing demand for environmentally friendly products among the population, interest in the production of organic agricultural products and environmentally friendly consumer goods is growing.

4. Development of waste recycling activities

The number of small enterprises specializing in the recycling of plastic, paper and other waste is increasing. This creates additional economic value while reducing environmental problems.

5. Attracting green investments

In recent years, the volume of investments directed to energy efficiency and environmental projects has been increasing. As a result, the technological modernization of small businesses is accelerating.

At the same time, there are some problems in implementing the principles of the green economy:

• insufficient financial resources;
• the high cost of modern green technologies;
• lack of qualified specialists;
• limited knowledge of environmental management;
• underdevelopment of financing mechanisms for innovative projects.

Analysis shows that the widespread implementation of the principles of the green economy not only increases the economic efficiency of small businesses, but also ensures environmental sustainability.

Conclusion

The development of small business and entrepreneurship in the context of a green economy is an important factor in the sustainable economic growth of the Namangan region. The results of the study showed that the areas of introduction of energy-saving technologies, use of renewable energy sources, production of environmentally friendly products and waste recycling are developing.

In order to accelerate the green transformation of small business, it is advisable to implement the following proposals:

1. Expand the volume of preferential loans for the purchase of green technologies.
2. Organize training programs on environmental management for entrepreneurs.
3. Provide additional tax benefits to enterprises using renewable energy sources.
4. Provide state support for projects in the field of waste recycling.
5. Establish green innovation centers in the regions.
6. These measures will serve to develop green entrepreneurship in the Namangan region and ensure economic and environmental sustainability.

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ХОРАЗМ ВИЛОЯТИДА КАТТА ВА КИЧИК ЎСМИР ЁШЛАР ГУРУХИ ОРАСИДА КАРИЕСНИНГ МОРФОМЕТРИК ВА МОРФОЛОГИК КЎРСАТКИЧЛАРИНИНГ ФАРҚИ.

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Мавзунинг долзарблиги. Жаҳон соғлиқни сақлаш ташкилоти, «...эрта болалик давридаги кариесни глобал муаммо деб ҳисоблайди ва унинг тарқалишини 60 дан 90% гача деб хисоблайди…» . Тиш кариеси – бу бутун дунё бўйлаб болалар ва катталарни зарарловчи энг кенг тарқалган инфекцион бўлмаган касаллик бўлиб, жамоат саломатлиги учун муҳим муаммо ҳисобланади. Болаларда сут тишларининг кариеси тарқалиши 46,2% ни, доимий тишлар кариеси эса 53,8% ни ташкил этади.

Ҳозирги кунда жаҳонда тиш кариесининг барча ижтимоий қатламлар орасида кенг тарқалганлиги сабабли, бу касаллик жамиятга катта молиявий юк келтирмоқда. Ижтимоий-иқтисодий ва хулқ-атворга оид омиллар ҳам ушбу касаллик этиологиясида муҳим аҳамиятга эга. Европа мамлакатлари тақдим этган статистик маълумотларга кўра, 6–12 ёшдаги болаларнинг 61% камида битта кариесга учраган тишга эга. Эронда, 3–6 ёшдаги болалар орасида сут тишларининг кариес кўрсаткичи ўртача 1,7 ни ташкил этса, доимий тишлар учун эса 6–9 ёшда – 0,2; 12 ёшда – 0,9–1,5 ни ташкил қилади.

Илмий ишнинг мақсади. Хоразм вилояти ўсмир ёшлари орасида кариеснинг ривожланиши ва тарқалишини ўрганиш, морфометрик ва морфологик текширувларни ўтказиш.

Материал ва методлар. Материал бўлиб Урганч шахридаги мактабларнинг 11 ёшдан 17 ёшгача бўлган 600 нафар ўсмир ёшлари олиниб, кўрикдан ўтказилди, аниқланган кариеснинг чуқурлиги, жойлашиши морфометриква морфологик ўлчамлари орқали тахлил қилинди.

Олинган натижалар. Кариеснинг турли даврларида кичик ёшдаги (11-14 ёш) ўсмирларда морфометрик параметрлари.

11–14 ёшли ўсмирлар гуруҳида тиш ва жағ ёйининг морфометрик таҳлили кариес жараёнининг нафақат локал (тиш даражасида), балки тизимли (жағ ёйи даражасида) деформацияларга олиб келишини кўрсатди:

Тиш тожининг деструкцияси: Кариеснинг ўрта ва чуқур босқичларида тишларнинг мезио-дистал ўлчами (MDW) сезиларли даражада камайиши

аниқланди. Айниқса, юқори биринчи молярларда деструкция кўрсаткичи интакт тишларга нисбатан ўртача 1,1–1,2 мм ни ташкил этди. Бу ҳолат тиш қаторидаги контакт нуқталарининг бузилишига ва чайнаш самарадорлигининг пасайишига сабаб бўлади.

Жағ ёйи узунлигининг қисқариши: Кариес асоратлари натижасида жағ ёйи узунлигининг (Arch Length) қисқариши кузатилди. Ўғил болаларда бу кўрсаткич 27,85 мм дан 25,15 мм гача, қиз болаларда эса 25,42 мм дан 22,85 мм гача камайган. Бунинг асосий сабаби тишларнинг проксимал (ён) юзалари емирилиши натижасида тишларнинг мезиал силжиши (мезиальное смещение) ва тиш қаторининг зичлашишидир.

Жинсий хусусиятлар: Тадқиқотнинг барча босқичларида ўғил болаларнинг морфометрик кўрсаткичлари қизларга нисбатан юқори бўлиб қолмоқда. Бироқ, кариес таъсиридаги нисбий деструкция даражаси қиз болаларда бир оз жадалроқ кечиши қайд этилди.

Прогностик аҳамияти: 11–14 ёшли ўсмирларда жағ ёйи узунлигининг кариес туфайли камайиши, доимий тишлар қаторининг шаклланиш даврида иккиламчи ортодонтик нуқсонлар (тишларнинг нотўғри жойлашиши) келиб чиқишига замин яратади.

Ўғил болаларда тишнинг қаттиқ тўқималари (эмаль ва дентин) қиз болаларга нисбатан массивроқ тузилишга эга бўлиб, деструкция жараёни бироз секинроқ кечиши аниқланди:

Дентин каналчалари кенглиги: Бошланғич кариесда 2,1 ± 0,15 мкм дан чуқур кариесда 8,4 ± 0,5 мкм гача кенгайган.

Қолдиқ дентин қалинлиги: Чуқур кариес босқичида пульпа устидаги ҳимоя дентин қавати ўртача 0,55 ± 0,08 мм ни ташкил этди.

Предентин ҳолати: Патологик жараён таъсирида предентин қалинлиги 17,5 ± 1,1 мкм дан 13,2 ± 0,9 мкм гача камайган.

Қиз болаларда кариес жараёнининг морфометрик кўрсаткичларга таъсири кўпроқ ифодаланган бўлиб, тўқималарнинг "юпқалашиш" суръати юқорироқ:

Дентин каналчалари кенглиги: Чуқур кариесда максимал қийматга — 9,2 ± 0,7 мкм га етганлиги аниқланди (ўғил болаларга нисбатан $p<0,5$)

Қолдиқ дентин қалинлиги: Пульпа деворининг юпқалашиши қиз болаларда кўпроқ кузатилиб, ўртача 0,45 ± 0,06 мм ни ташкил этди.

Предентин ҳолати: Жадал деструкция натижасида предентин қалинлиги 12,4 ± 0,8 мкм гача қисқарган.

15–17 ёшли ўсмирлар гуруҳида ўтказилган қиёсий морфометрик таҳлил кариес деструкциясининг тиш-жағ тизими бутунлигига салбий таъсирини кўрсатди:

Тиш ўлчамларининг деструкцияси: Бу ёш гуруҳида чуқур кариес босқичида тишларнинг мезио-дистал ўлчами (MDW) кескин камайиши қайд этилди. Хусусан, юқори биринчи молярларда тиш тожининг емирилиши ҳисобига ўлчамлар интакт ҳолатга нисбатан ўртача 1,2–1,3 мм га камайган. Бу тишлар орасидаги физиологик контактларнинг бузилишига ва овқат қолдиқларининг тўпланишига (пародонтал чўнтаклар шаклланишига) замин яратади.

Жағ ёйининг деформацияси: Кариес жараёнининг оғирлик даражаси ортиши билан жағ ёйи узунлигининг (Arch Length) қисқариши кузатилди. Ўғил болаларда бу кўрсаткич 28,15 мм дан 25,25 мм гача қисқарган. Бу ҳолат тишларнинг проксимал юзалари кариес билан зарарланганда тиш қаторининг мезиал йўналишда сурилиши (дистал тишларнинг олдинга силжиши) билан изоҳланади.

Жинсий диморфизм ва патология: Ўғил болаларда морфометрик кўрсаткичлар мутлақ қийматларда юқори бўлса-да, кариес таъсиридаги нисбий деструкция фоизи қиз болаларда жадалроқ кечиши аниқланди. Бу эса қизларда тиш тўқималари минералланишининг ўзига хос хусусиятлари билан боғлиқ бўлиши мумкин.

Клиник хулоса: 15–17 ёшда кариес туфайли жағ ёйи узунлигининг камайиши нафақат чайнаш функциясини пасайтиради, балки иккиламчи аномалиялар ва окклюзион муносабатларнинг бузилишига олиб келади. Шу сабабли, кариесни даволашда тишнинг анатомик шаклини (айниқса контакт юзаларини) аниқ тиклаш муҳим аҳамиятга эга.

Катта ўсмирлик давридаги ўғил болаларда тишнинг қаттиқ тўқималари минераллашув жараёни якунланганлиги сабабли массивроқ ва зичроқ тузилишга эга. Тадқиқотлар натижасида деструкция жараёни қиз болаларга нисбатан бирмунча барқарор кечиши аниқланди:

Дентин каналчалари кенглиги: Бошланғич кариес босқичида каналчалар кенглиги 1,9 ± 0,12 мкм ни ташкил этган бўлса, чуқур кариесда патологик микрофлора таъсирида 8,1 ± 0,4 мкм гача кенгайганлиги кузатилди.

Қолдиқ дентин қалинлиги: Чуқур кариес босқичида пульпа камераси устидаги ҳимоя дентин қавати ўртача 0,58 ± 0,07 мм ни ташкил этди, бу эса пульпани термик ва механик таъсирлардан ҳимоя қилиш имкониятини сақлаб қолади.

Хулоса. Морфометрик тахлил натижалари жинсга боғлиқ холда катта ва кичик ёшдаги ўсмирларнинг тишларида интакт ва кариеснинг турли даврларида

бўладиган кўрсаткичлар аниқланди. Бунга кўра кичик ёшдаги (11-14 ёш) ўсмирларда ўғил болаларда интакт тишларнинг мезио дистал ўлчамлари қиз болаларга нисбатан ўртача 3,2- 4,8% га катталиги қайд этилди. Катта ёшдаги (15–17 ёш) ўсмирларда эмаль қаватининг қалинлиги максимал кўрсаткичларга етган бўлиб, ўғил болаларда ўртача 2,5±0,14 мм, қиз болаларда эса 2,3±0,12 ммни ташкил этди. Дентин қаватининг қалинлиги эса мос равишда 3,4±0,22 мм ва 3,2±0,20 мм эканлиги қайд этилди. Ўғил болаларда тишнинг қаттиқ тўқималари (эмаль ва дентин) қиз болаларга нисбатан массивроқ тузилишга эга бўлиб, деструкция жараёни бироз секинроқ кечиши аниқланди.

" THE ROLE OF FAMILY INSTITUTION STABILITY IN SHAPING SPIRITUAL AND MORAL CULTURE IN TRANSITIONAL SOCIETIES"

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Abstract : This study examines the role of family institutional stability in shaping spiritual and moral culture within transitional societies undergoing rapid socio-economic and cultural transformation. Drawing on sociological institutionalism and social philosophy, the paper conceptualizes the family as a foundational micro-institution responsible for the transmission, reproduction, and adaptation of core moral values across generations. In transitional contexts, characterized by shifting value systems, globalization pressures, and evolving social norms, the stability of the family becomes a critical determinant of cultural continuity and ethical coherence.Methodologically, the study employs a qualitative comparative approach based on secondary literature analysis and theoretical synthesis, integrating perspectives from classical sociological theory and contemporary studies on family change. The findings suggest that stable family structures significantly contribute to the preservation of spiritual values, moral discipline, and social trust, while instability within family systems correlates with value fragmentation, identity uncertainty, and weakened intergenerational moral transmission.The study further highlights that family stability is not solely dependent on structural factors but is also deeply influenced by cultural narratives, religious traditions, and state-supported social policies. In transitional societies, the interaction between modernization processes and traditional value systems creates a hybrid moral landscape in which the family functions as a mediating institution.The paper concludes that strengthening family institutional stability is essential for sustaining spiritual and moral culture in transitional environments. It argues for an integrated policy and cultural approach that reinforces family resilience through education, value-based social programs, and community engagement.

Keywords: family institution, moral culture, spiritual values, transitional societies, institutional stability, value transmission, social change.

Transitional societies are characterized by profound socio-economic, political, and cultural transformations that reshape traditional normative systems and redefine

collective values. These processes are often driven by modernization, globalization, urbanization, and technological change, all of which contribute to shifting patterns of social behavior and moral orientation. Within this dynamic context, the family institution remains one of the most significant structures responsible for maintaining cultural continuity and moral stability.The family functions not only as a biological or economic unit but also as a foundational moral institution through which individuals acquire ethical norms, social responsibilities, and cultural identity. However, contemporary transformations have placed increasing pressure on family structures, leading to changes in marital patterns, intergenerational relationships, and value transmission mechanisms. As a result, concerns regarding the weakening of moral culture and social cohesion have become more pronounced in both academic and policy discourse.Despite extensive research on institutional change, the specific role of family stability in sustaining spiritual and moral culture in transitional societies remains insufficiently explored. This study addresses this gap by examining how the stability of family institutions contributes to the preservation and development of moral and spiritual values.

This research adopts a qualitative methodological framework based on theoretical and comparative analysis. The study does not rely on primary empirical data but instead synthesizes existing academic literature across sociology, philosophy, and cultural studies to construct a conceptual understanding of the relationship between family stability and moral culture.

The methodological approach integrates sociological institutionalism, which views institutions as enduring systems of norms and practices, with social-philosophical analysis, which focuses on the conceptual foundations of moral and cultural development. Comparative analysis is applied to identify recurring patterns and theoretical convergences in the literature concerning family structures and moral socialization.Data sources include peer-reviewed journal articles, academic monographs, and foundational theoretical works on family systems, moral development, and social change. The analysis focuses on identifying mechanisms through which family institutions contribute to or hinder the transmission of spiritual and moral values in transitional contexts.The analysis reveals three interrelated findings regarding the role of family institutional stability in shaping spiritual and moral culture.First, stable family structures function as primary mechanisms of moral transmission. Within stable families, individuals are consistently exposed to shared norms, behavioral expectations, and cultural traditions. This continuity facilitates the internalization of ethical principles and strengthens moral identity formation. The

family thereby serves as the first and most influential environment for socialization.Second, family instability is strongly associated with value fragmentation and weakened moral coherence. Disruptions in family structure, including divorce, migration-induced separation, and weakened intergenerational communication, reduce the effectiveness of moral socialization processes. This often results in identity uncertainty, diminished social trust, and inconsistency in normative behavior.Third, the influence of family stability is mediated by broader institutional frameworks. Educational systems, religious organizations, and state social policies either reinforce or undermine the family's capacity to transmit moral values. In societies where institutional support for families is strong, moral and spiritual continuity is more effectively maintained.

The findings of this study highlight the centrality of the family as a moral and cultural institution in transitional societies. Theoretical insights from classical sociology support this interpretation. The work of Émile Durkheim emphasizes that social cohesion depends on shared moral norms that are primarily transmitted through key institutions such as the family. Similarly, Talcott Parsons conceptualizes the family as a fundamental unit responsible for the stabilization of personality systems and the maintenance of social order.In transitional contexts, however, the family institution operates under conditions of structural tension. Modernization processes introduce new cultural models that may conflict with traditional moral frameworks. This creates a hybrid normative environment in which families must negotiate between continuity and change. While such dynamics can enhance adaptability, they may also lead to normative ambiguity and weakened value consistency.

This study demonstrates that family institutional stability plays a crucial role in the development and preservation of spiritual and moral culture in transitional societies. Stable family systems provide the structural and normative foundation for value transmission, moral identity formation, and social cohesion. In contrast, family instability contributes to value fragmentation, weakened ethical consistency, and identity uncertainty.The findings highlight the need for integrated socio-cultural and policy interventions aimed at strengthening the family institution. Such interventions should focus on reinforcing family resilience through education, cultural continuity programs, and supportive institutional frameworks.Future research should expand upon this theoretical foundation by incorporating empirical methodologies, including surveys and cross-cultural comparative studies, to further validate and refine the conceptual model presented in this study.

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LINGUOCULTURAL FEATURES OF IDIOMS AND PROVERBS

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Abstract: This article examines the linguocultural nature of idioms (phraseological units) and proverbs, their role in reflecting national culture, their function within the conceptual system, and their significance in literary and oral discourse. The study analyzes the role of linguistic units in preserving cultural codes as well as their lacunar characteristics in translation.
Keywords: linguoculturology, phraseological unit, proverb, national mentality, concept, cultural code, folk wisdom, lacuna.

Language is not merely a means of communication; it is also a unique repository of a people's accumulated experience, worldview, values, and historical memory developed over centuries. From this perspective, linguoculturology—the discipline that studies the interrelationship between language and culture—has gained particular relevance. Among the linguistic units that embody cultural meanings in the most concentrated and expressive form are idioms (phraseological units) and proverbs. They serve as the "oral encyclopedia" of a nation, reflecting concepts formed in the deepest layers of national consciousness. This article provides a scientific analysis of the linguocultural characteristics of idioms and proverbs, as well as their role and functions in expressing national mentality.

From the perspective of linguoculturology, every linguistic unit is associated with a particular cultural concept. The renowned linguist V.N. Teliya defined phraseological units as the "cultural memory of a language." Idioms and proverbs are not created randomly; rather, they are stable linguocultural models formed as a result of a people's everyday life, relationship with nature, socio-economic conditions, and philosophical views.

Idioms (phraseological units) are stable and semantically integral linguistic expressions formed through the combination of two or more words. In linguocultural analysis, their primary feature is that they preserve the "codes" of national culture. For example, the Uzbek idiom "to protect something like the pupil of one's eye" ("ko'z qorachig'idek asramoq") not only means to guard something very carefully but also reflects the culture of boundless affection and reverence toward children and sacred values in Uzbek society.

Another example is the idiom “a cauldron boiling beneath another cauldron” (“qozon ostida qozon qaynamoq”), which is closely connected with the traditional lifestyle, culinary culture, and family values of the Uzbek people. Explaining this expression to representatives of another culture may be difficult because it constitutes a specific cultural “lacuna” (cultural gap). The metaphorical and figurative expressions found in idioms reveal a nation’s way of thinking, that is, how it perceives reality. For instance, such idioms as “a rough heart” (“yuragi dag‘al”), “an open hand” (“qo‘li ochiq”), and “a high head” (“boshi baland”) are based on expressing human psychology and character through external physical attributes, demonstrating the high level of figurative thinking characteristic of the people.

Proverbs represent the highest form of folk wisdom and possess not only a descriptive but also a didactic function. They define a nation’s moral and aesthetic standards, social norms, and philosophy of life. One of the cultural concepts most vividly reflected in Uzbek proverbs is hospitality. Proverbs such as “A guest is a gift from God” (“Mehmon – atoyi Xudo”) and “A guest brings light to the home” (“Mehmon uyni nurlantirar”) linguistically express the Uzbek cultural tradition of regarding guests as sacred and treating them with great respect.

The harmony between nature and human beings is also widely reflected in proverbs. Expressions such as “Where there is water, there is prosperity” (“Suv bor joyda obod”) and “The land is our mother” (“Yer – onajon”) demonstrate the people’s responsible attitude toward the environment and natural resources, as well as their decisive importance in life. In this context, water and land are not merely physical objects; rather, they are concepts sanctified in national consciousness and glorified as sources of life.

Furthermore, proverbs reveal both the positive and negative aspects of national character. Proverbs such as “Measure seven times, cut once” (“Yetti o‘lchab, bir kes”) and “The end of patience is pure gold” (“Sabrning tagi sariq oltin”) promote virtues such as caution, patience, and foresight. Conversely, proverbs such as “He who hates his neighbor hates himself” (“Qo‘shnisini yomon ko‘rgan, o‘zini yomon ko‘ribdi”) and “Pride is the enemy of man” (“Kibr – insonning dushmani”) establish standards of behavior condemned by society. Thus, proverbs constitute one of the most effective tools of folk pedagogy and play an important role in educating younger generations in the spirit of national values.

The linguocultural nature of idioms and proverbs creates significant difficulties in translation. These units possess not only literal meanings but also preserve deep cultural, historical, and religious implications. For example, when translating a

complex proverb such as “Rather than living as a dog in a street built by dogs, it is better to live as a servant in a street built by humans” (“It qurgan ko‘chada it bo‘lib yashashdan ko‘ra, odam qurgan ko‘chada qul bo‘lib yashaganimiz yaxshiroq”), its cultural and philosophical significance may be lost. Therefore, translators are required to possess not only linguistic competence but also a high level of linguocultural competence and profound knowledge of both cultures.

In conclusion, idioms and proverbs are not merely decorative elements of language; they are among the most reliable preservers of national culture, people’s mentality, and historical memory. They encode and preserve a nation’s worldview, moral values, relationship with nature, and social norms. From a linguocultural perspective, the study of idioms and proverbs enables us to understand not only the richness of a language but also the spiritual gene pool of a people—their unique “cultural DNA.” Therefore, collecting, analyzing, and preserving these linguistic units is an important task not only for linguistics but also for cultural studies and the development of national identity.

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MUNIS XORAZMIY DEVONINING O‘RGANILISHI VA UNING TARIXIY-ETIMOLOGIK TAHLILI

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Annotatsiya

Mazkur maqolada XIX asr boshlarida Xorazm adabiy muhitining yirik vakillaridan biri bo‘lgan Munis Xorazmiy devonining o‘rganilish tarixi hamda uning tarixiy-etimologik xususiyatlari tahlil qilinadi. Shoir ijodining shakllanish omillari, devon tarkibi, qo‘lyozma va nashr variantlari, asarlarda qo‘llangan tarixiy leksika, arabiy, forsiy va turkiy qatlamlarga mansub so‘zlarning kelib chiqishi hamda semantik taraqqiyoti yoritiladi. Munis devoni tilining o‘ziga xos jihatlari, eski o‘zbek adabiy tili taraqqiyotidagi o‘rni, shuningdek, asarda uchraydigan tarixiy birliklarning etimologik manbalari ilmiy asosda izohlanadi. Tadqiqot natijasida Munis devoni nafaqat badiiy-estetik yodgorlik, balki o‘zbek tilining tarixiy taraqqiyotini o‘rganishda muhim manba ekanligi asoslab beriladi.

Kalit so‘zlar: Munis Xorazmiy, devon, tarixiy-etimologik tahlil, eski o‘zbek tili, leksika, qo‘lyozma, arabcha qatlam, forscha qatlam, turkiy birliklar, Xorazm adabiy muhiti.

Аннотация

В данной статье рассматриваются история изучения дивана Муниса Хорезми и его историко-этимологические особенности. Анализируются состав дивана, рукописные источники, языковые особенности произведений поэта, а также происхождение и развитие лексических единиц тюркского, арабского и персидского происхождения. Особое внимание уделяется роли дивана Муниса в развитии староузбекского литературного языка и его значению как историко-лингвистического источника. В результате исследования обосновывается важность дивана Муниса для изучения истории узбекского языка и литературы.

Ключевые слова: Мунис Хорезми, диван, историко-этимологический анализ, староузбекский язык, лексика, рукопись, тюркские слова, арабские заимствования, персидские элементы.

Abstract

This article examines the history of studying the Divan of Munis Khorezmi and provides a historical-etymological analysis of its language. The study discusses the composition of the divan, manuscript sources, linguistic features, and the origin and semantic development of lexical units belonging to Turkic, Arabic, and Persian layers. Particular attention is paid to the role of Munis's poetry in the development of the Old Uzbek literary language and its

significance as a historical linguistic source. The research demonstrates that the Divan of Munis is not only a literary masterpiece but also an important source for investigating the historical development of the Uzbek language.

Keywords: Munis Khorezmi, divan, historical-etymological analysis, Old Uzbek language, lexicon, manuscript, Turkic vocabulary, Arabic borrowings, Persian elements.

Kirish

O‘zbek mumtoz adabiyoti ko‘p asrlik tarixga ega bo‘lib, uning taraqqiyotida turli davrlarda yashab ijod qilgan shoir va mutafakkirlarning o‘rni beqiyosdir. Ana shunday ulug‘ siymolardan biri Shermuhammad Munis Xorazmiy hisoblanadi. U XIX asr boshlarida Xorazm adabiy muhitining yirik namoyandasi sifatida tanilib, nafaqat iste’dodli shoir, balki tarixchi, tarjimon va ma’rifatparvar olim sifatida ham o‘zbek madaniyati taraqqiyotiga katta hissa qo‘shgan.

Munisning adabiy merosi orasida uning devoni alohida ahamiyatga ega. Devon tarkibidagi g‘azal, muxammas, musaddas, qasida, ruboiy va boshqa janrlardagi asarlar shoirning badiiy mahoratini namoyon etish bilan birga, o‘sha davr tilining fonetik, leksik va grammatik xususiyatlarini o‘rganishda muhim manba hisoblanadi. Shu bois Munis devoni nafaqat adabiyotshunoslar, balki tilshunoslar uchun ham qimmatli manba sifatida e’tirof etiladi.

Bugungi kunda o‘zbek tilining tarixiy taraqqiyot bosqichlarini o‘rganishda mumtoz adabiyot namunalarining lingvistik tahliliga katta e’tibor qaratilmoqda. Ayniqsa, tarixiy-etimologik tadqiqotlar til taraqqiyotining ichki qonuniyatlarini, lug‘at boyligining shakllanish manbalarini aniqlashda muhim ahamiyat kasb etadi. Munis devoni tilining tarixiy-etimologik jihatdan tadqiq qilinishi eski o‘zbek adabiy tilining rivojlanish xususiyatlarini chuqurroq anglash imkonini beradi.

Maqolaning maqsadi Munis devonining o‘rganilish tarixini tahlil qilish, devon tarkibidagi tarixiy leksik birliklarning kelib chiqishi va semantik taraqqiyotini aniqlashdan iborat.

Asosiy qism

Munis Xorazmiy hayoti va ijodiy faoliyati

Munis Xorazmiy 1778-yilda Xiva yaqinidagi Qiyot qishlog‘ida tavallud topgan. Uning asl ismi Shermuhammad bo‘lib, “Munis” taxallusi bilan ijod qilgan. Shoir yoshligidan ilm-fanga qiziqib, arab va fors tillarini mukammal o‘rgangan. Natijada u Sharq mumtoz adabiyotining eng yaxshi namunalarini mutolaa qilish imkoniyatiga ega bo‘lgan.

Munis yashagan davr Xorazm tarixida siyosiy va madaniy jihatdan muhim bosqichlardan biri hisoblanadi. Bu davrda Xiva xonligi hududida ilm-fan va adabiyot rivojlanib, ko‘plab ijodkorlar yetishib chiqqan. Munis ana shu muhitning eng faol vakillaridan biri bo‘lib, saroyda kotiblik vazifasida ham faoliyat yuritgan.

Shoirning ijodi lirik va tarixiy asarlardan iborat. Uning “Firdavs ul-iqbol” asari Xiva xonligi tarixini o‘rganishda muhim manba bo‘lsa, devoni o‘zbek mumtoz she’riyatining yuksak namunasi sifatida qadrlanadi.

Munis devonining o‘rganilish tarixi

Munis ijodini o‘rganish XIX asrning ikkinchi yarmidan boshlangan. Dastlab uning asarlari qo‘lyozma shaklida tarqalgan bo‘lib, keyinchalik ilmiy muomalaga kiritilgan. XX asr boshlarida o‘zbek adabiyotshunosligida mumtoz merosni o‘rganishga qiziqish kuchayishi natijasida Munis ijodi ham tadqiqotchilar e’tiborini torta boshladi.

Munis merosini ilmiy jihatdan tadqiq etishda akademik Vohid Abdullayev, Naim Karimov, G‘ulom Karimov, A. Hayitmetov va boshqa olimlarning xizmatlari katta bo‘ldi. Ular shoir hayoti, ijodiy merosi, devonining janriy xususiyatlari va badiiy mahoratini tadqiq etdilar.

Mustaqillik yillarida Munis merosini qayta o‘rganish va yangi ilmiy talqinlar yaratish imkoniyati kengaydi. Xususan, qo‘lyozma manbalarning ilmiy tavsifi berildi, devonning ayrim nusxalari qiyosiy tahlil qilindi hamda shoir asarlarining til xususiyatlariga oid tadqiqotlar amalga oshirildi.

Devonning tarkibiy tuzilishi

Munis devoni mumtoz adabiyot an’analari asosida tuzilgan bo‘lib, unda g‘azal, muxammas, musaddas, ruboiy, qit’a, tuyuq va boshqa she’riy janrlar o‘rin olgan. Devonning asosiy qismini g‘azallar tashkil etadi.

Shoir g‘azallarida ishq, vafo, sadoqat, insoniy fazilatlar, ma’rifat va komillik masalalari yuksak badiiy mahorat bilan tasvirlangan. Ayrim she’rlarda esa ijtimoiy hayotdagi muammolar, zamon ahlining fe’l-atvori va axloqiy masalalar tanqidiy ruhda yoritilgan.

Munis she’riyatida Alisher Navoiy an’analari yaqqol seziladi. Shoir Navoiy ijodidan ilhomlanib, turkiy til imkoniyatlaridan keng foydalangan. Shu bilan birga, fors-tojik she’riyati ta’siri ham kuzatiladi.

Munis Xorazmiy o‘zbek mumtoz adabiyotining yirik namoyandalaridan biri sifatida nafaqat badiiy ijodi, balki til va madaniyat tarixini o‘rganishda ham muhim o‘rin egallaydi. Uning devoni XIX asr boshlaridagi Xorazm adabiy muhitining badiiy-estetik qarashlarini, ijtimoiy-ma’naviy hayotini va til taraqqiyoti xususiyatlarini aks ettiruvchi qimmatli manba hisoblanadi.

Tadqiqot davomida Munis devonining o‘rganilish tarixi tahlil qilinib, shoir merosiga bo‘lgan ilmiy qiziqishning turli davrlarda izchil davom etib kelayotgani aniqlandi. Ayniqsa, mustaqillik yillarida mumtoz adabiyotga bo‘lgan e’tibor kuchayishi natijasida Munis ijodini yangi metodologik yondashuvlar asosida o‘rganish imkoniyati kengaydi. Qo‘lyozma nusxalarining ilmiy tavsifi, matnshunoslik tadqiqotlari va lingvistik izlanishlar shoir merosining yanada chuqurroq o‘rganilishiga xizmat qilmoqda.

Tarixiy-etimologik tahlil natijalari Munis devoni leksik tarkibining nihoyatda boy va rang-barang ekanligini ko‘rsatdi. Devon tilida qadimgi turkiy qatlam bilan bir qatorda arab va fors tillaridan kirib kelgan ko‘plab leksemalar faol qo‘llangan. Ushbu birliklar o‘sha davr adabiy tilining shakllanishida muhim rol o‘ynagan hamda shoirning badiiy-estetik maqsadlarini ifodalashga xizmat qilgan.

Turkiy qatlamga mansub so‘zlar xalqona ruhni, milliy tafakkur va dunyoqarashni aks ettirsa, arabiy va forsiy qatlamlar ilmiy, diniy, falsafiy hamda tasavvufiy mazmunni ifodalash imkonini bergan. Natijada devon tilida turkiy, arabiy va forsiy elementlarning uyg‘unlashuvi kuzatiladi. Bu esa eski o‘zbek adabiy tilining boy imkoniyatlarini namoyon etadi.

Munis she’riyatida qo‘llangan ayrim tarixiy birliklar bugungi kunda faol iste’moldan chiqib ketgan bo‘lsa-da, ular o‘zbek tilining tarixiy taraqqiyot bosqichlarini aniqlashda muhim ahamiyat kasb etadi. Ayrim leksemalarning semantik taraqqiyoti, ma’no kengayishi yoki torayishi til taraqqiyotining ichki qonuniyatlarini o‘rganishga yordam beradi.

Shuningdek, devonda uchraydigan sinonimik qatorlar, obrazli ifodalar, poetik vositalar va badiiy tasvir usullari shoirning yuksak badiiy mahoratini namoyon qiladi. Munis o‘z asarlarida so‘z tanlashga alohida e’tibor bergan, har bir leksemaning ma’no va uslubiy imkoniyatlaridan mohirona foydalangan.

Xulosa

Xulosa qilib aytganda, Munis devoni nafaqat o‘zbek mumtoz she’riyatining yuksak namunasi, balki o‘zbek tilining tarixiy leksikasi, etimologiyasi va adabiy til taraqqiyotini o‘rganishda muhim ilmiy manba hisoblanadi. Devonning tarixiy-etimologik tahlili o‘zbek tilining shakllanish jarayonlari, lug‘at boyligining rivojlanishi va mumtoz adabiy tilning o‘ziga xos xususiyatlarini aniqlashda muhim ilmiy ahamiyat kasb etadi. Kelgusida Munis devonining alohida leksik-semantik guruhlari, poetik birliklari va qo‘lyozma nusxalarini qiyosiy o‘rganish bo‘yicha tadqiqotlarni davom ettirish maqsadga muvofiqdir.

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THE ROLE AND IMPORTANCE OF MARKETING STRATEGIES IN THE TOURISM INDUSTRY

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Abstract: Marketing strategies play a crucial role in the development and competitiveness of the tourism industry. In an increasingly globalized and digitalized environment, tourism organizations must adopt effective marketing approaches to attract visitors, enhance customer satisfaction, and strengthen their market position. This study examines the role and importance of marketing strategies in promoting tourism services and destinations. Special attention is given to digital marketing, branding, market segmentation, customer relationship management, and social media promotion. The research highlights how well-designed marketing strategies contribute to increasing tourist flows, improving service quality, and supporting sustainable growth in the tourism sector. The findings indicate that innovative and customer-oriented marketing practices are essential for achieving long-term success and competitiveness in the tourism industry.

Keywords: Tourism industry, marketing strategies, tourism marketing, digital marketing, destination branding, customer satisfaction, social media marketing, market segmentation, tourism development, tourism competitiveness.

In the modern tourism industry, marketing strategies have become one of the most important factors determining the success and competitiveness of tourism enterprises and destinations. The rapid development of information technologies, changing consumer preferences, and increasing competition in the global tourism market require tourism organizations to implement innovative and effective marketing approaches. As a result, marketing has evolved from a simple promotional tool into a comprehensive management function that influences all aspects of tourism development. One of the key marketing strategies in tourism is market segmentation. Tourism businesses analyze customer needs, preferences, age groups, income levels, and travel motivations to create targeted tourism products and services. Through effective segmentation, tourism organizations can better satisfy customer expectations and improve their market performance. Personalized tourism packages and customized travel experiences have become increasingly important in attracting modern travelers. Digital marketing

has also transformed the tourism industry. Websites, mobile applications, social media platforms, and online booking systems enable tourism organizations to reach a global audience at relatively low cost. Social media marketing, in particular, plays a significant role in influencing travel decisions. Tourists frequently rely on online reviews, travel blogs, and social media content when choosing destinations and tourism services. Consequently, maintaining a strong digital presence has become essential for tourism enterprises. Another important aspect is destination branding. A strong tourism brand helps create a unique image of a destination and differentiates it from competitors. Countries and regions invest considerable resources in promoting their cultural heritage, natural attractions, historical monuments, and local traditions. Effective branding increases tourist awareness, strengthens destination loyalty, and contributes to sustainable tourism growth. Furthermore, customer relationship management is becoming increasingly important in tourism marketing. By collecting and analyzing customer feedback, tourism organizations can improve service quality and enhance customer satisfaction. Satisfied tourists are more likely to revisit destinations and recommend them to others, contributing to positive word-of-mouth promotion and long-term business success. In the context of Uzbekistan, tourism marketing strategies play a crucial role in promoting the country's rich cultural heritage, historical cities, and natural attractions. The use of digital technologies, international marketing campaigns, and innovative promotional activities can significantly enhance Uzbekistan’s position in the global tourism market. Therefore, the effective implementation of marketing strategies is essential for increasing tourist arrivals, improving service quality, and ensuring the sustainable development of the tourism industry.

Conclusion

Marketing strategies play a vital role in the development and sustainability of the tourism industry. The study demonstrates that effective marketing approaches contribute significantly to attracting tourists, increasing destination competitiveness, and improving the quality of tourism services. Modern tourism marketing is no longer limited to traditional advertising methods but increasingly relies on digital technologies, customer-oriented approaches, and innovative promotional tools. The findings indicate that market segmentation, destination branding, digital marketing, and customer relationship management are among the most influential strategies for achieving success in the tourism sector. These strategies enable tourism organizations to better understand consumer behavior, respond to market demands, and build long-term relationships with customers. For countries with significant tourism potential,

such as Uzbekistan, the implementation of effective marketing strategies can enhance international visibility, attract greater numbers of visitors, and generate substantial economic benefits. Therefore, continuous investment in innovative marketing practices and digital transformation is essential for ensuring the long-term growth and competitiveness of the tourism industry.

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CONCEPTUALIZATION OF PHYSICAL APPEARANCE AND HUMAN CHARACTER IN ENGLISH AND UZBEK PHRASEOLOGY

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Annotation. This article explores the conceptualization of physical appearance and human character in English and Uzbek phraseology from a comparative linguocultural perspective. Unlike purely lexical descriptions of human features, phraseological units interpret appearance through culturally shaped images, social expectations and evaluative stereotypes. The study focuses on expressions built around clothing, colour, animal images, bodily condition, social posture and visible behavioural signs. These components reveal how external appearance becomes a symbolic means of judging personality, morality and social status. The analysis shows that English phraseology frequently represents character through contrastive images such as respectable appearance versus hidden danger, neatness versus moral emptiness, or animal comparison as a sign of social behaviour. Uzbek phraseology often connects visible appearance with honour, dignity, modesty, social shame and communal evaluation. The findings demonstrate that appearance in phraseology is not a neutral physical category; it functions as a culturally coded interpretive frame. The article may contribute to comparative phraseology, translation studies and intercultural language teaching.

Keywords: phraseology, appearance, character; clothing; colour; animalism; evaluation; culture.

Introduction. Human appearance is one of the earliest and most visible sources of social interpretation. In everyday communication people do not evaluate appearance only as a physical feature. Clothing, posture, neatness, facial manner, bodily condition and general visual impression may suggest dignity, arrogance, carelessness, modesty, deception or social belonging. Phraseology reflects this process in a particularly condensed form. Stable expressions store cultural judgements about how a person looks, behaves and is expected to appear before others.

In English and Uzbek phraseology, physical appearance is often transformed into a symbolic system[1]. An external sign may be used to evaluate internal character. A

[1] Moon R. Fixed Expressions and Idioms in English: A Corpus-Based Approach. – Oxford: Clarendon Press, 1998. – 338 p.

person may look respectable but behave dishonestly; another may seem simple but possess strong moral qualities. Such meanings are expressed through idioms, figurative comparisons and fixed evaluative phrases.

The present article approaches the topic through several conceptual fields that were not limited to somatic images. Particular attention is given to clothing-based expressions, colour symbolism, animal comparison, bodily condition and social posture. These domains are productive because they connect the visual side of a person with culturally accepted models of behaviour. In English, expressions such as *"a wolf in sheep's clothing", "black sheep", "dressed to kill", "rough around the edges"* and *"to wear one's heart on one's sleeve"* show how appearance may either reveal or conceal character. In Uzbek, expressions such as *"ust-boshi xarob", "oqpadar", "ilonning yog'ini yalagan", "qo'y og'zidan cho'p olmagan"* and *"kerilib yurmoq"* indicate that external presentation, family honour, cunning, meekness and arrogance are interpreted through culturally recognizable signs.

The comparative aspect is important because English and Uzbek belong to different linguistic and cultural traditions. English phraseology often gives prominence to individuality, behavioural contrast and social impression[2]. Uzbek phraseology tends to connect appearance and character with collective judgement, respect, shame, modesty and family-based moral evaluation. These tendencies do not mean that one language lacks the categories found in the other. Rather, they show which evaluative meanings become more visible in each phraseological system.

The aim of the article is to reveal how physical appearance and human character are conceptually linked in English and Uzbek phraseological units. The study argues that phraseological meaning is shaped by the interaction of image, evaluation and cultural norm. This approach is relevant for translation, since literal equivalence is often insufficient[3]. It is also useful for language teaching, where learners need to understand not only the words of an idiom but also the cultural logic behind it.

The analysis reveals that appearance-related phraseological units in English and Uzbek often work through indirect evaluation. Clothing is especially productive because it marks social presentation. English *"a wolf in sheep's clothing"* presents harmless appearance as a mask for danger, while Uzbek *"ust-boshi xarob"* may suggest poverty, disorder or neglected social presentation. Colour also carries moral and social meanings. English *"black sheep"* refers to a person who is considered

[2] Makkai A. Idiom Structure in English. – The Hague: Mouton, 1972. – 371 p.
[3] Gläser R. Phraseologie der englischen Sprache. – Tübingen: Niemeyer, 1986. – 201 S.

different or disgraceful within a group. Uzbek *"oqpadar"* expresses severe moral condemnation connected with family and parental honour.

Animal-based phraseology forms another important group. English often uses animal images to classify social behaviour: *"dark horse"* suggests hidden ability, while *"social butterfly"* describes active sociability. Uzbek phraseology also uses animal imagery, but many expressions carry stronger ethical evaluation: *"ilonning yog'ini yalagan"* describes extreme cunning, and *"qo'y og'zidan cho'p olmagan"* describes excessive meekness or harmlessness[4]. Posture and bodily manner conceptualize arrogance or confidence, as in English *"to hold one's head high"* and Uzbek *"kerilib yurmoq"*. These examples prove that appearance is interpreted through culturally loaded signs of behaviour.

Table 1. Different conceptual fields of appearance and character in English and Uzbek phraseology

Conceptual field	English phraseological unit	Uzbek phraseological unit	Main image	Character meaning
Clothing as disguise	a wolf in sheep's clothing	to'nini teskari kiyib olmoq	Clothing hides intention	Deception, hidden hostility
Social deviation	black sheep	oqpadar	Colour marks exclusion	Disgrace, moral separation
Hidden ability	dark horse	ichida pishgan	Unclear outer image	Reserved but capable person
Over-attractiveness	dressed to kill	yasan-tusan qilmoq	Appearance as display	Desire to impress others
Neglected appearance	rough around the edges	ust-boshi xarob	Untidy outer form	Social incompleteness or disorder
Cunning	sly as a snake	ilonning yog'ini yalagan	Animal-like cleverness	Deceptive intelligence
Meekness	as quiet as a mouse	qo'y og'zidan cho'p olmagan	Weak or harmless animal	Excessive softness

[4] Dobrovol'skij D., Piirainen E. Figurative Language: Cross-Cultural and Cross-Linguistic Perspectives. – Amsterdam: Elsevier, 2005. – 419 p.

Arrogant posture	to strut around	kerilib yurmoq	Body movement as pride	Self-importance, arrogance

The table shows that the conceptualization of appearance and character is not limited to body-part imagery. English and Uzbek phraseology actively use clothing, colour, animal symbolism and bodily manner as interpretive codes. In English, the contrast between outer appearance and inner character is especially visible in expressions of disguise, hidden ability and social role. In Uzbek, social evaluation is often sharper because appearance may be associated with honour, modesty, family reputation or public judgement. The same external sign may therefore carry different cultural weight in the two languages[5].

The comparison demonstrates that phraseological units create a culturally organized link between what is seen and what is morally or socially inferred. Appearance becomes a surface on which character is read, but this reading is never culturally neutral. English phraseology often represents the individual through contrast: appearance may deceive, social behaviour may differ from inner nature, and visible style may create a strong impression.

Conclusion. The article concludes that physical appearance and human character are conceptually linked in English and Uzbek phraseology through culturally marked images. Clothing, colour, animal comparison, bodily condition and social posture are used to interpret personality, moral status and behavioural tendencies. Appearance is not treated as a purely visual category; it becomes a sign through which society evaluates inner qualities. The comparative analysis shows both similarities and differences. In both languages, phraseological units may represent deception, arrogance, meekness, hidden ability and social deviation through external images. English phraseology often emphasizes individual impression, contrast between appearance and inner nature, and behavioural visibility. Uzbek phraseology more actively reflects collective evaluation, honour, modesty, social shame and moral responsibility. These tendencies reveal the influence of cultural norms on phraseological meaning.

The findings confirm that phraseological units are valuable material for studying national worldview. They show how a language community interprets the relationship between outer form and inner essence. Further research may expand the corpus by including literary texts, spoken discourse and gender-related phraseological units. A broader corpus-based approach would make it possible to determine which conceptual

[5] Mamatov A.E. O‘zbek tili frazeologiyasi: o‘quv qo‘llanma. – Toshkent: Navro‘z, 2019. – B. 26.

fields are most productive in English and Uzbek and how their evaluative meanings change across communicative contexts.

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INGLIZ VA O‘ZBEK TILLARIDA METAFORALARNING SEMANTIK VA LINGVOKOGNITIV XUSUSIYATLARI

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Annotatsiya: Mazkur maqolada ingliz va o‘zbek tillarida metaforalarning semantik hamda lingvokognitiv xususiyatlari chog‘ishtirma aspektda tahlil qilinadi. Tadqiqotda metaforaning nafaqat badiiy tasvir vositasi, balki inson tafakkuri va dunyoni idrok etish jarayonining muhim kognitiv mexanizmlaridan biri ekanligi yoritiladi. Ingliz va o‘zbek tillaridan olingan misollar asosida metaforik birliklarning ma’no hosil qilishdagi o‘rni, konseptual asoslari va milliy-madaniy xususiyatlari aniqlanadi. Shuningdek, metaforalarning til egalarining dunyoqarashi, madaniy qadriyatlari hamda mental modellari bilan bog‘liqligi tahlil qilinadi. Tadqiqot natijalari metaforik tafakkurning universalligi bilan bir qatorda har bir xalqning o‘ziga xos lingvomadaniy tajribasini ham aks ettirishini ko‘rsatadi.

Kalit so‘zlar: Metafora, semantika, lingvokognitiv tahlil, konseptual metafora, obrazlilik, ma’no ko‘chishi, chog‘ishtirma tilshunoslik, lingvokulturologiya, kognitiv tilshunoslik, ingliz tili, o‘zbek tili, konsept, metaforik tafakkur.

Kirish

Til inson tafakkuri, madaniyati va dunyoqarashining eng muhim ifodachisi hisoblanadi. Til birliklari orasida metafora alohida o‘rin tutib, u nafaqat badiiy-estetik vosita, balki insonning borliqni idrok etish va tushunish jarayonini aks ettiruvchi kognitiv mexanizm sifatida ham namoyon bo‘ladi. Zamonaviy tilshunoslikda metafora hodisasi faqat ma’no ko‘chishining bir turi sifatida emas, balki konseptual tafakkurning mahsuli sifatida talqin qilinmoqda. Shu sababli metaforalarni semantik va lingvokognitiv jihatdan o‘rganish bugungi kunda tilshunoslikning dolzarb masalalaridan biri hisoblanadi.

Kognitiv tilshunoslikning rivojlanishi natijasida metafora inson tafakkuri bilan uzviy bog‘liq bo‘lgan hodisa sifatida tadqiq etila boshlandi. Xususan, J. Lakoff va M. Jonson tomonidan ilgari surilgan konseptual metafora nazariyasi metaforaning inson ongidagi bilimlarni tashkil etish, tajribani kategoriyalash va voqelikni tushuntirishdagi ahamiyatini ochib berdi. Ushbu yondashuv metaforani til hodisasidan ko‘ra kengroq, ya’ni tafakkur va konseptual tizimning tarkibiy qismi sifatida ko‘rib chiqishga imkon yaratdi. Ingliz va o‘zbek tillari turli til oilalariga mansub bo‘lishiga qaramay, ularda metaforik tafakkurning umumiy va o‘ziga xos jihatlari mavjud. Har ikkala tilda

metaforalar insonning hissiy kechinmalari, ijtimoiy munosabatlari, tabiat hodisalari va madaniy qadriyatlarini ifodalashda keng qo‘llaniladi. Shu bilan birga, metaforik birliklarning shakllanishi va qo‘llanishida milliy tafakkur, tarixiy taraqqiyot, urf-odatlar hamda madaniy tajriba muhim rol o‘ynaydi. Mazkur jihatlar metaforalarning lingvokognitiv va lingvomadaniy xususiyatlarini qiyosiy o‘rganishni zarur etadi. Tadqiqotning maqsadi ingliz va o‘zbek tillaridagi metaforalarning semantik hamda lingvokognitiv xususiyatlarini aniqlash, ularning konseptual asoslarini ochib berish va ikki til materiallari asosida o‘xshash hamda farqli jihatlarini tahlil qilishdan iborat. Ushbu maqsadga erishish uchun metafora nazariyalarini o‘rganish, metaforik birliklarni semantik jihatdan tavsiflash, ularning konseptual modellarini aniqlash hamda lingvokulturologik omillar ta’sirini baholash vazifalari belgilandi. Tadqiqot natijalari metaforalarning ma’no yaratish mexanizmlarini chuqurroq anglashga, kognitiv tilshunoslik, chog‘ishtirma tilshunoslik va lingvokulturologiya sohalaridagi ilmiy izlanishlarni boyitishga xizmat qiladi. Shuningdek, olingan xulosalar badiiy matnlarni tahlil qilish, tarjimashunoslik va chet tillarini o‘qitish amaliyotida ham muhim ahamiyat kasb etadi.

Asosiy qism

Metafora tilning eng qadimiy va sermahsul obrazli vositalaridan biri bo‘lib, u ma’lum bir predmet, hodisa yoki tushunchaning xususiyatlarini boshqa bir obyektga ko‘chirish orqali yangi ma’no hosil qiladi. An’anaviy tilshunoslikda metafora ma’no ko‘chishining bir turi sifatida talqin qilingan bo‘lsa, zamonaviy kognitiv tilshunoslikda u inson tafakkurining konseptual mexanizmi sifatida qaraladi. Shu bois metaforani o‘rganishda uning semantik va kognitiv xususiyatlarini birgalikda tahlil qilish muhim ahamiyatga ega. J. Lakoff va M. Jonson metaforani insonning kundalik fikrlash tizimiga xos hodisa sifatida izohlab, konseptual metafora nazariyasini ishlab chiqqanlar. Ularning fikricha, inson abstrakt tushunchalarni konkret tajriba orqali anglaydi. Masalan, ingliz tilidagi Time is money (“Vaqt — pul”) konseptual metaforasi vaqtni iqtisodiy resurs sifatida tasavvur qilishga asoslanadi. O‘zbek tilida ham vaqtni bekorga sarflamoq, vaqtni tejamoq, vaqt oltindan qimmat kabi birliklar mazkur konseptual modelning mavjudligini ko‘rsatadi. Bu holat ayrim metaforik konseptlarning universal xarakterga ega ekanligini tasdiqlaydi. Metaforalarning semantik xususiyatlari ma’no kengayishi va assotsiativ bog‘lanishlar orqali namoyon bo‘ladi. Ingliz tilida cold person birikmasi hissiy jihatdan befarq insonni anglatsa, o‘zbek tilidagi sovuq odam ifodasi ham xuddi shunday ma’noni bildiradi. Har ikki holatda ham fizik haroratga oid belgi inson xarakteriga ko‘chirilgan. Bu turdagi metaforalar inson tajribasining umumiy biologik va psixologik asoslariga tayangan

holda shakllanadi. Biroq metaforalarning barchasi ham universal xarakterga ega emas. Ko‘plab metaforalar muayyan xalqning madaniyati, tarixi va turmush tarzi bilan bog‘liq holda vujudga keladi. O‘zbek tilida ko‘ngli tog‘dek, boshi osmonga yetdi, yuragi keng kabi metaforalar xalqning milliy tafakkuri va qadriyatlarini aks ettiradi. Ingliz tilida esa *to break someone’s heart, to see the light, to carry the world on one’s shoulders* kabi metaforik birliklar keng qo‘llanadi. Ushbu misollar metaforalarning lingvomadaniy tabiatini namoyon etadi. Lingvokognitiv nuqtai nazardan metaforalar inson ongidagi konseptual tizimni shakllantirishda muhim rol o‘ynaydi. Tadqiqotlar shuni ko‘rsatadiki, inson abstrakt tushunchalarni ko‘pincha fazo, harakat, jismoniy holat va sezgi bilan bog‘liq konseptlar orqali anglaydi. Masalan, ingliz tilida high status, low position birikmalari ijtimoiy mavqeni vertikal yo‘nalish orqali ifodalaydi. O‘zbek tilida ham yuqori lavozim, past martaba kabi birliklar mavjud. Demak, “mavqe – balandlik” konseptual metaforasi har ikki tilda ham kuzatiladi. Emotsional holatlarni ifodalovchi metaforalar ham kognitiv jihatdan ahamiyatlidir. Ingliz tilida *boiling with anger, warm feelings, cold-hearted* kabi metaforalar hissiy kechinmalarni harorat tushunchasi orqali ifodalasa, o‘zbek tilida jahldan qoni qaynamoq, qalbi iliq, bag‘ri tosh kabi birliklar qo‘llanadi. Bunday metaforalar insonning hissiy tajribasi bilan jismoniy tajribasi o‘rtasidagi bog‘liqlikni aks ettiradi. Ingliz va o‘zbek tillaridagi metaforalarni qiyosiy tahlil qilish natijasida ularning semantik tuzilishi va konseptual asoslarida ko‘plab umumiyliklar mavjudligi aniqlanadi. Shu bilan birga, har bir xalqning madaniy tajribasi va milliy dunyoqarashi metaforalarning mazmuni, obrazliligi va qo‘llanish chastotasiga o‘z ta’sirini ko‘rsatadi. Metaforalar tilning nafaqat estetik imkoniyatlarini, balki inson tafakkuri va madaniyatining o‘ziga xos jihatlarini ham yoritib beruvchi muhim lingvistik vosita hisoblanadi.

Xulosa

Ingliz va o‘zbek tillaridagi metaforalarni semantik hamda lingvokognitiv jihatdan o‘rganish metaforaning til va tafakkur o‘rtasidagi murakkab munosabatlarni aks ettiruvchi muhim vosita ekanligini ko‘rsatdi. Tadqiqot davomida metafora faqat badiiy tasvir vositasi emas, balki insonning borliqni idrok etishi, tushunishi va baholash jarayonida faol ishtirok etuvchi konseptual mexanizm sifatida namoyon bo‘lishi aniqlandi. Tahlillar natijasida ingliz va o‘zbek tillarida vaqt, hissiyot, ijtimoiy mavqe, inson xarakteri kabi tushunchalarni ifodalashda o‘xshash konseptual metaforalardan foydalanilishi kuzatildi. Bu holat metaforik tafakkurning ayrim jihatlari universal xarakterga ega ekanligini tasdiqlaydi. Shu bilan birga, metaforalarning mazmuni va obrazlilik darajasida har bir xalqning milliy-madaniy tajribasi, tarixiy taraqqiyoti va dunyoqarashi o‘z aksini topishi aniqlandi. Tadqiqot metaforalarning semantik tuzilishi

assotsiativ bog‘lanishlar va ma’no ko‘chish mexanizmlari orqali shakllanishini ko‘rsatdi. Lingvokognitiv tahlil esa metaforalarning inson ongidagi konseptual tizim bilan chambarchas bog‘liqligini va abstrakt tushunchalarni anglashda muhim vosita vazifasini bajarishini tasdiqladi. Natijalar ingliz va o‘zbek tillaridagi metaforalarning umumiy hamda milliy xususiyatlarini aniqlashga xizmat qildi. Ushbu xulosalar chog‘ishtirma tilshunoslik, kognitiv tilshunoslik, lingvokulturologiya va tarjimashunoslik sohalaridagi tadqiqotlarni yanada rivojlantirish uchun nazariy asos bo‘lib xizmat qilishi mumkin. Shuningdek, metaforalarni o‘rganish chet tillarini o‘qitish, badiiy matnlarni tahlil qilish va madaniyatlararo kommunikatsiyani samarali tashkil etishda muhim amaliy ahamiyat kasb etadi.

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INGLIZ VA O‘ZBEK TILLARIDA METONIMIYA VA SINEKDOXANING FUNKSIONAL-USLUBIY XUSUSIYATLARI

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Annotatsiya: Mazkur maqolada ingliz va o‘zbek tillarida metonimiya hamda sinekdoxaning funksional-uslubiy xususiyatlari chog‘ishtirma aspektda tadqiq etiladi. Tadqiqotda ushbu ko‘chim turlarining semantik tabiati, ma’no hosil qilish mexanizmlari va nutqdagi stilistik vazifalari tahlil qilinadi. Ingliz va o‘zbek tillaridan olingan badiiy hamda publitsistik matnlar asosida metonimiya va sinekdoxaning obrazlilikni kuchaytirish, nutqning ta’sirchanligini oshirish hamda axborotni ixcham va ekspressiv shaklda ifodalashdagi o‘rni aniqlanadi. Shuningdek, ushbu troplarning qo‘llanishida milliy-madaniy omillar, til egalari tafakkuri va kommunikativ maqsadlarning ta’siri yoritiladi. Tadqiqot natijalari metonimiya va sinekdoxaning tilning estetik imkoniyatlarini namoyon etuvchi muhim vositalardan biri ekanligini hamda ularning ingliz va o‘zbek tillaridagi umumiy va o‘ziga xos jihatlarini ko‘rsatadi.
Kalit so‘zlar: Metonimiya, sinekdoxa, ko‘chim, troplar, semantika, uslubiyat, funksional tahlil, obrazli ifoda, badiiy matn, lingvopoetika, chog‘ishtirma tilshunoslik, ingliz tili, o‘zbek tili, ekspressivlik, stilistik vositalar.

Kirish

Tilning tasviriy va ta’sirchan imkoniyatlarini ta’minlovchi vositalar orasida metonimiya va sinekdoxa alohida o‘rin egallaydi. Ushbu troplar voqelikni bevosita emas, balki predmetlar, hodisalar va tushunchalar o‘rtasidagi turli semantik munosabatlar orqali ifodalashga xizmat qiladi. Natijada nutqning obrazliligi, ekspressivligi va kommunikativ samaradorligi ortadi. Shu sababli metonimiya va sinekdoxa nafaqat stilistika, balki semantika, pragmatika va lingvopoetika nuqtayi nazaridan ham muhim tadqiqot obyektlaridan biri hisoblanadi. An’anaviy tilshunoslikda metonimiya yaqinlik yoki aloqadorlik munosabatiga asoslangan ma’no ko‘chishi sifatida talqin qilinadi. Masalan, ingliz tilidagi The White House announced yoki o‘zbek tilidagi Toshkent qaror qabul qildi kabi ifodalarda muassasa yoki joy nomi shu yerda faoliyat yurituvchi shaxslar guruhi ma’nosida qo‘llangan. Sinekdoxa esa butun va qism, yakka va umumiylik munosabatlariga asoslangan ko‘chim turi bo‘lib, nutqning ixcham va ta’sirchan bo‘lishiga xizmat qiladi. Masalan, all hands on deck birikmasida hands so‘zi odamlar ma’nosida ishlatilgan bo‘lsa, o‘zbek tilidagi bir bosh mol ifodasida bosh qism orqali butun obyekt anglatiladi. Zamonaviy tilshunoslikda

metonimiya va sinekdoxa faqat stilistik vosita sifatida emas, balki inson tafakkurining muhim kognitiv mexanizmlaridan biri sifatida ham qaralmoqda. Kognitiv yondashuvga ko‘ra, ushbu troplar insonning borliq haqidagi bilimlarini tartibga solish, voqelikni kategoriyalash va ma’lumotlarni iqtisodiy tarzda uzatish imkonini beradi. Shuning uchun ham ularni funksional va uslubiy jihatdan o‘rganish til birliklarining kommunikativ imkoniyatlarini chuqurroq anglashga yordam beradi. Ingliz va o‘zbek tillari turli til oilalariga mansub bo‘lsa-da, ularda metonimiya va sinekdoxa keng qo‘llaniladi. Har ikki tilda bu troplar badiiy adabiyot, publitsistika, ommaviy axborot vositalari hamda kundalik muloqotda faol uchraydi. Shu bilan birga, ularning qo‘llanish chastotasi, semantik modellari va uslubiy vazifalarida milliy-madaniy tafakkur bilan bog‘liq o‘ziga xos jihatlar ham mavjud. Mazkur omillar ingliz va o‘zbek tillaridagi metonimiya hamda sinekdoxani chog‘ishtirma jihatdan tadqiq etish zaruratini yuzaga keltiradi. Ushbu tadqiqotning maqsadi ingliz va o‘zbek tillarida metonimiya va sinekdoxaning funksional-uslubiy xususiyatlarini aniqlash, ularning semantik mexanizmlarini tahlil qilish hamda nutqdagi kommunikativ vazifalarini qiyosiy jihatdan yoritishdan iborat. Tadqiqot natijalari chog‘ishtirma tilshunoslik, lingvopoetika va tarjimashunoslik sohalarida olib borilayotgan ilmiy izlanishlarni boyitishga, shuningdek, badiiy matnlarni tahlil qilish va chet tillarini o‘qitish amaliyotini takomillashtirishga xizmat qiladi.

Asosiy qism

Metonimiya va sinekdoxa tilning obrazlilik imkoniyatlarini kengaytiruvchi muhim semantik-stilistik vositalardan hisoblanadi. Ular nutqda ma’no ifodalashning ixcham, ta’sirchan va estetik shakllarini yaratishga xizmat qiladi. Ushbu troplar orqali til egalari voqelikdagi predmet va hodisalarni bevosita emas, balki ular bilan bog‘liq boshqa tushunchalar orqali ifodalaydilar. Natijada nutqning ekspressivligi va kommunikativ samaradorligi ortadi. Metonimiya ikki yoki undan ortiq tushunchalar o‘rtasidagi yaqinlik, aloqadorlik yoki sabab-natija munosabatlariga asoslangan ma’no ko‘chishidir. Tilshunoslikda metonimiya obyekt va uning belgisi, joy va unda yashovchilar, muallif va uning asari, idish va uning ichidagi narsa kabi munosabatlar asosida yuzaga kelishi qayd etiladi. Masalan, ingliz tilidagi *The White House issued a statement* jumlasida The White House AQSh prezident ma’muriyati ma’nosida qo‘llangan. O‘zbek tilida esa Butun zal olqishladi misolida zal so‘zi undagi odamlarni anglatadi. Har ikki holatda ham bir tushuncha unga aloqador boshqa tushuncha o‘rnida ishlatilgan. Metonimiyaning asosiy funksiyalaridan biri axborotni ixchamlashtirishdir. Muayyan voqea yoki hodisani uzun izohlarsiz ifodalash imkoniyati matnning ta’sirchanligini oshiradi. Ingliz matbuotida *Downing Street announced, Wall Street*

reacted nervously kabi birliklar keng qo‘llanadi. O‘zbek publitsistik uslubida esa Oliy Majlis muhokama qildi, Toshkent mezbonlik qiladi kabi ifodalar tez-tez uchraydi. Bu misollar metonimiyaning rasmiy va publitsistik uslublarda axborot berish vositasi sifatida muhim o‘rin tutishini ko‘rsatadi. Sinekdoxa esa butun va qism o‘rtasidagi munosabatga asoslangan ma’no ko‘chishidir. U orqali qism butun o‘rnida yoki butun qism o‘rnida qo‘llanadi. Ingliz tilidagi *All hands on deck* iborasida hands (qo‘llar) so‘zi dengizchilar ma’nosini ifodalaydi. Xuddi shuningdek, o‘zbek tilidagi Bir bosh qoramol, Yuz bosh qo‘y kabi birikmalarda bosh qism orqali butun hayvon anglatiladi. Bu holat sinekdoxaning til iqtisodiyoti tamoyiliga xizmat qilishini ko‘rsatadi. Badiiy adabiyotda metonimiya va sinekdoxa obraz yaratishning samarali vositasi hisoblanadi. Yozuvchi yoki shoir ushbu troplar yordamida tasvirni yanada jonli va ta’sirchan qiladi. Masalan, ingliz adabiyotida The crown so‘zining qirollik hokimiyati ma’nosida qo‘llanishi metonimik xarakterga ega bo‘lsa, o‘zbek badiiy matnlarida oq ro‘mol iborasining ayol obrazi bilan bog‘lanishi ramziy-metonimik ma’no kasb etadi. Bunday birliklar matnning estetik qiymatini oshiradi va o‘quvchida muayyan assotsiatsiyalarni uyg‘otadi. Metonimiya va sinekdoxa kommunikativ-pragmatik vazifani ham bajaradi. Nutq jarayonida ular ma’lumotni yanada aniqroq, ta’sirchanroq va hissiyroq yetkazishga xizmat qiladi. Ayrim hollarda bu troplar baholash, kinoya yoki istehzo ifodalash vositasiga ham aylanadi. Masalan, ingliz tilidagi *The pen is mightier than the sword* iborasida pen va sword so‘zlari metonimik ma’noda bilim hamda kuch tushunchalarini ifodalaydi. O‘zbek tilida esa qalam ahli birikmasi ijodkorlar va ziyolilar ma’nosida qo‘llanadi. Chog‘ishtirma tahlil natijalari ingliz va o‘zbek tillarida metonimiya hamda sinekdoxaning umumiy funksional xususiyatlari mavjudligini ko‘rsatadi. Har ikki tilda ular nutqning obrazliligini kuchaytirish, axborotni ixchamlashtirish, emotsional-ekspressiv ta’sirni oshirish va estetik vazifani bajarishga xizmat qiladi. Shu bilan birga, ularning ayrim modellari va qo‘llanish xususiyatlari har bir xalqning madaniyati, tarixi va milliy tafakkuri bilan chambarchas bog‘liqdir. Aynan shu jihatlar metonimiya va sinekdoxaning lingvokulturologik ahamiyatini belgilaydi.

Xulosa

Ingliz va o‘zbek tillarida metonimiya hamda sinekdoxaning funksional-uslubiy xususiyatlarini o‘rganish ushbu troplarning tilning semantik va stilistik tizimida muhim o‘rin tutishini ko‘rsatdi. Tadqiqot natijalari metonimiya va sinekdoxa nutqning obrazliligini kuchaytirish, axborotni ixcham shaklda ifodalash hamda kommunikativ ta’sirchanlikni oshirishda samarali vosita bo‘lib xizmat qilishini tasdiqladi. Tahlillar davomida metonimiya asosan predmetlar, hodisalar va tushunchalar o‘rtasidagi aloqadorlik munosabatlariga tayangan holda ma’no hosil qilishi, sinekdoxa esa qism

va butun o‘rtasidagi semantik munosabatlarga asoslanishi aniqlandi. Har ikki ko‘chim turi badiiy, publitsistik va so‘zlashuv uslublarida faol qo‘llanilib, nutqning ekspressiv va estetik imkoniyatlarini kengaytiradi. Chog‘ishtirma tahlil ingliz va o‘zbek tillarida metonimiya hamda sinekdoxaning asosiy funksiyalari o‘xshash ekanligini ko‘rsatdi. Ular axborotni tejamkor tarzda yetkazish, obraz yaratish, baholash munosabatini ifodalash va matnning ta’sir kuchini oshirish kabi vazifalarni bajaradi. Shu bilan birga, ayrim metonimik va sinekdoxik birliklarning shakllanishida milliy madaniyat, tarixiy tajriba va ijtimoiy qadriyatlarning ta’siri yaqqol namoyon bo‘ladi. Tadqiqot natijalari metonimiya va sinekdoxaning nafaqat stilistik vosita, balki inson tafakkuri va til o‘rtasidagi bog‘liqlikni aks ettiruvchi muhim semantik hodisa ekanligini ko‘rsatdi. Ushbu xulosalar chog‘ishtirma tilshunoslik, lingvopoetika, pragmalingvistika va tarjimashunoslik sohalarida olib boriladigan keyingi tadqiqotlar uchun nazariy asos bo‘lib xizmat qilishi mumkin. Shuningdek, ular badiiy matnlarni tahlil qilish, tarjima jarayonida ma’no va uslubiy bo‘yoqlarni saqlab qolish hamda chet tillarini o‘qitish amaliyotida muhim ahamiyat kasb etadi.

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QASHQADARYO VILOYATINING INKLYUZIV RIVOJLANISHINI TA'MINLASH UCHUN HUDUD RESURSLARIDAN OQILONA FOYDALANISHNING MAVJUD VA POTENSIAL SHART-SHAROITLARI

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Annotatsiya. Ushbu maqolada Qashqadaryo viloyatining inklyuziv iqtisodiy rivojlanishini ta'minlash maqsadida mavjud resurslardan oqilona foydalanishning shart-sharoitlari tahlil qilinadi. Viloyatning tabiiy, mehnat, moliyaviy va innovatsion resurslari holati baholanib, ulardan foydalanishning samaradorligini oshirishga qaratilgan chora-tadbirlar tavsiya etiladi. Tadqiqotda inklyuziv rivojlanish tushunchasi zamonaviy iqtisodiy nazariyalar doirasida ko'rib chiqilgan bo'lib, Qashqadaryo viloyatiga nisbatan tadbiq etiladi.
Kalit so'zlar: inklyuziv rivojlanish, Qashqadaryo viloyati, hudud resurslari, tabiiy kapital, mehnat resurslari, mineral xom ashyo, innovatsion salohiyat, barqaror rivojlanish.
Аннотация. В статье анализируются условия рационального использования имеющихся ресурсов Кашкадарьинской области для обеспечения инклюзивного экономического развития региона. Оценивается состояние природных, трудовых, финансовых и инновационных ресурсов области и предлагаются меры по повышению эффективности их использования.
Ключевые слова: инклюзивное развитие, Кашкадарьинская область, ресурсы региона, природный капитал, трудовые ресурсы, минеральное сырье, инновационный потенциал, устойчивое развитие.

Zamonaviy iqtisodiy rivojlanish nazariyasida "inklyuziv o'sish" tushunchasi markaziy o'rin egallamoqda. Jahon banki va Xalqaro valyuta jamg'armasi ta'rifiga ko'ra, inklyuziv o'sish — bu nafaqat umumiy YaIM o'sishi, balki jamiyatning barcha qatlamlari, hududlarning teng va samarali ishtiroki orqali erishiladigan, imkoniyatlar tengligini ta'minlovchi rivojlanish modeli hisoblanadi.[1]

[1] Acemoglu D., Robinson J. Why Nations Fail: The Origins of Power, Prosperity, and Poverty. — New York: Crown Publishers, 2012. — P. 45–47.

Inklyuziv o’sish nazariyasi 2000-yillar boshida Jahon banki va Osiyo taraqqiyot banki tadqiqotlarida shakllanib, D.Acemoglu va J.Robinson, E.Ostrom, S.Anand va P.Segal kabi olimlarning asarlarida rivojlantirilib kelmoqda. Ular inklyuziv o’sishni uchta asosiy o’lchov — iqtisodiy imkoniyatlar, barqarorlik va tenglik — kesimida baholash metodologiyasini taklif etgan.[2]

MDH makonidagi mintaqaviy rivojlanish tadqiqotlari orasida R.Minnikhanov, L.Karimova, A.Qodirov kabi olimlarning ishlari alohida ahamiyat kasb etadi. O’zbekiston kontekstida esa Sh.Mustafoqulov, B.Xolmatov va N.Toshmatovning hududiy rivojlanish muammolariga bag’ishlangan tadqiqotlari muhim ilmiy zamin yaratgan.[3]

Qashqadaryo viloyati O’zbekistonning yoqilg’i-energetika kompleksining asosini tashkil etuvchi viloyatlardan biri sifatida alohida o’rin tutadi. Viloyat hududida tasdiqlangan tabiiy gaz zahiralari 1 trln m³ dan ortiq bo’lib, bu O’zbekistonning umumiy gaz zahiralarining taxminan 60–65 foizini tashkil etadi. «Muborak» gaz qayta ishlash zavodi va «Qashqadaryo» konlari guruhidan qazib olinadigan gaz yillik 20–22 mlrd m³ ni tashkil etadi.[4]

Neft zahiralari jihatidan ham viloyat respublika bo’yicha yetakchi o’rinni egallaydi. Shuningdek, viloyatda kaliy tuzi, kükürt, mis, kumush va qimmatbaho metallarning kichik konlari aniqlangan. Mineral xom ashyo resurslaridan to’liq va samarali foydalanish uchun yangi qayta ishlash quvvatlari ishga tushirilishi, chuqur qayta ishlash texnologiyalari joriy etilishi zarur.

Viloyatda resurslardan oqilona foydalanish uchun bir qator qulay shart-sharoitlar allaqachon mavjud:

Birinchidan, yoqilg’i-energetika sektori barqaror moliyaviy baza yaratmoqda. «O’zneftgaz» va «O’zgazyoqilg’i» tuzilmalari viloyatdagi gaz va neft qazib olish faoliyatini amalga oshirib, hududiy byudjetga yirik soliq tushumlarini ta’minlamoqda. Bu mablag’larni inklyuziv infratuzilmaga yo’naltirish orqali yangi ish o’rinlari yaratish imkoniyati mavjud.

Ikkinchidan, Shahrisabz shahrining YUNESKO Jahon merosi ro’yxatiga kiritilganligi va Qashqadaryo vohasidagi tarixiy-madaniy yodgorliklar turizm sektorini

[2]Anand S., Segal P. The Global Distribution of Income // Handbook of Income Distribution. Vol. 2. — Amsterdam: North-Holland, 2015. — P. 940–942.

[3]Mustafoqulov Sh.I. Hududiy iqtisodiyotning raqobatbardoshligini oshirishning nazariy asoslari. — Toshkent: Fan va texnologiya, 2021. — B. 85–90.

[4]O'zbekiston Milliy Neft va Gaz Korporatsiyasi. Yillik hisobot 2023. — Toshkent: O'zneftgaz, 2024. — B. 34–37.

rivojlantirish uchun mustahkam zamin yaratmoqda. Tarixiy, agro- va ekologik turizm yo'nalishlari bo'yicha qo'shimcha ish o'rinlari yaratish hamda aholining turizmdan oladigan daromadlarini ko'paytirish salohiyati yuqori.

Uchinchidan, Termiz–Qarshi–Samarqand temir yo'l va avtomobil yo'llari hamda Qarshi xalqaro aeroportining ishlayotganligi viloyatni asosiy logistika yo'laklariga ulash imkonini bermoqda. Bu esa yuk tashish xarajatlarini kamaytirib, eksport salohiyatini oshirishga xizmat qiladi.

To'rtinchidan, viloyatda qishloq xo'jaligi va oziq-ovqat sanoatining nisbatan rivojlangan klasterlari mavjud. G'o'za, meva-sabzavot, bug'doy yetishtirishdagi an'anaviy tajriba va ixtisoslashuv mahalliy qayta ishlash sanoatini rivojlantirish uchun asos bo'lib xizmat qiladi.

Viloyatning inklyuziv rivojlanishi uchun hali to'liq ishga solinmagan bir qator potensial shart-sharoitlar mavjud. Qayta tiklanuvchi energetika salohiyati viloyatning eng muhim rivojlanish yo'nalishlaridan biridir. Qashqadaryo viloyatida yiliga o'rtacha quyosh nuri 2 800–3 000 soatni tashkil etib, bu quyosh energetikasini rivojlantirish uchun juda qulay sharoit hisoblanadi. Raqamli O'zbekiston — 2030 dasturi doirasida "yashil" energetika loyihalariga xalqaro investitsiyalarni jalb etish va energetika bozorini diversifikatsiya qilish tavsiya etiladi.[5]

Raqamli iqtisodiyot va texnologik park infratuzilmasi shakllantirilishi viloyat uchun yangi rivojlanish vektorlaridan birini ochib beradi. Qaror qilingan texnopark va IT-klasterlar iqtisodiyotning yuqori texnologiyali segmentlarida band bo'ladigan yosh mutaxassislar uchun ish o'rinlari yaratishi, va shu bilan aholining barcha qatlamlarini iqtisodiy hayotga yanada keng jalb etishi mumkin.

Agrosanoat kompleksida vertikal integratsiya imkoniyatlari ham katta. Hozirda viloyatda yetishtirilgan qishloq xo'jaligi mahsulotlarining katta qismi xom ashyo sifatida sotilib, qayta ishlash operatsiyalari boshqa hududlarda amalga oshirilmoqda. Meva-sabzavot konservalarini, efir moylarini, quruq mevalarni lokal ishlab chiqarish zanjiriga jalb etish eksport qiymatini oshiradi va yangi ish o'rinlari yaratadi.

1-jadval. Qashqadaryo viloyati resurs salohiyatining inklyuziv rivojlanish nuqtai nazaridan SWOT-tahlili

[5]World Bank Group. Renewable Energy Prospects for Uzbekistan: A Market Assessment. — Washington D.C.: World Bank, 2023. — P. 28–31.

Kuchli tomonlar (S)	Zaif tomonlar (W)
Ulkan uglevodorod zahiralari (gaz, neft)	Xom ashyo eksportiga haddan tashqari bog’liqlik
Kuchli agroklimatik salohiyat	Qayta ishlash sanoatining rivojlanmaganligi
Jahon merosi obidalari (Shahrisabz)	Investitsiya iqlimining yetarli darajada jozibador emasligi
Faol demografik o’sish	Malakali kadrlar etishmasligi
Rivojlanayotgan logistika infratuzilmasi	Raqamli ko’nikmalar darajasining pastligi
Imkoniyatlar (O)	**Tahdidlar (T)**
Qayta tiklanuvchi energetika investitsiyalari	Neft-gaz narxlarining global tebranishi
Turizm sektori kengayishi	Iqlim o’zgarishining qishloq xo’jaligiga ta’siri
Raqamli O’zbekiston — 2030 dasturi	Mehnat migratsiyasining kuchayishi
Agro-eksport zonalari rivojlanishi	Suv resurslarining kamayib borishi
IT-klasterlar va texnoparklar tashkil etish	Mintaqalararo raqobat kuchayishi

Manba: Muallif tomonidan tuzilgan.

Tadqiqot natijalariga asoslanib, Qashqadaryo viloyatida inklyuziv rivojlanishni ta’minlash uchun quyidagi ilmiy asoslangan chora-tadbirlar tavsiya etiladi.

Birinchi yo’nalish — uglevodorod rentasidan inklyuziv investitsiyalar jamg’armasini tashkil etish. Neft-gaz tarmog’idan keladigan daromadlarning ma’lum ulushini (10–15 foiz) alohida “Hududiy inklyuziv taraqqiyot jamg’armasi” ga yo’naltirish maqsadga muvofiq bo’lar edi. Bu jamg’arma mablag’lari kasb-hunar ta’limi infratuzilmasini modernizatsiya qilish, mikro va kichik biznes uchun imtiyozli kreditlash, hamda nogironligi bo’lgan shaxslar va kam ta’minlangan oilalarning iqtisodiy faolligini oshirishga sarflanishi lozim.

Ikkinchi yo’nalish — qayta tiklanuvchi energetika loyihalarini inklyuziv model asosida rivojlantirish. Katta quyosh stansiyalari qurish jarayonida mahalliy kooperativlar, dehqon xo’jaliklari va kichik tadbirkorlik subyektlarining hamkor sifatida ishtirok etishini ta’minlash mexanizmlarini joriy etish zarur. Bunday «kooperativ quyosh energetikasi» modeli Germaniya va Daniyada muvaffaqiyatli qo’llanilmoqda.[6]

Uchinchi yo’nalish — agrosanoat klasterlarida vertikal inklyuziya. Viloyatda meva-sabzavot, uzum va efir o’simliklari yetishtiruvchi fermerlarni qayta ishlash zavodlari bilan bevosita ulash va ularga ulush asosida ishtirok etish imkoniyatini berish iqtisodiy integratsiyani kuchaytiradi.

“Raqamli O’zbekiston — 2030” strategiyasi doirasida Qashqadaryo viloyatida raqamli inklyuziyani ta’minlash uchun bir qator aniq chora-tadbirlar amalga oshirilishi lozim. Qishloq joylarda keng polosali internet tarmog’ini kengaytirish, xalq ta’lim muassasalarida raqamli savodxonlik kurslarini joriy etish, elektron savdo platformalariga mahalliy ishlab chiqaruvchilarni ulash — bularning barchasi iqtisodiy imkoniyatlarni geografik jihatdan tenglashtirish vositasi bo’lib xizmat qiladi.

Viloyatning iqtisodiy boshqaruv tizimiga “aqlli shahar” (smart city) texnologiyalarini bosqichma-bosqich joriy etish — Qarshi shahridan boshlash, keyin tuman markazlariga kengaytirish — ommaviy xizmatlar samaradorligini oshirib, aholining iqtisodiy faolligini rag’batlantiradi.

Amalga oshirilayotgan chora-tadbirlarning inklyuzivlik darajasini baholash uchun viloyat miqyosida maxsus ko’rsatkichlar tizimi (Inklyuziv Rivojlanish Indeksi — IRI) joriy etilishi lozim. Taklif etilayotgan ko’rsatkichlar tizimi quyidagi uchta dimensiyani qamrab olishi kerak: iqtisodiy imkoniyatlar dimensiyasi (bandlik, daromadlar, tadbirkorlik muhiti); ijtimoiy inklyuziya dimensiyasi (ta’lim, sog’liqni saqlash, ijtimoiy himoya); ekologik barqarorlik dimensiyasi (resurslardan foydalanish samaradorligi, iqlim moslashuvchanlik darajasi).

Ushbu IRI ko’rsatkichlari bo’yicha yillik monitoring hisobotlarini viloyat hokimligi va tegishli vazirliklar tomonidan e’lon qilish shaffoflikni ta’minlab, inklyuziv rivojlanish siyosatini tuzatib borishga imkon yaratadi.

Xulosa o’rnida shuni ta’kidlash lozimli, Qashqadaryo viloyati inklyuziv iqtisodiy rivojlanish uchun muhim resurs va imkoniyat salohiyatiga ega, ammo bu salohiyatdan foydalanish hali yetarli darajada samarali emasligi ma’lum bo’ldi.

[6]Ostrom E. Governing the Commons: The Evolution of Institutions for Collective Action. — Cambridge: Cambridge University Press, 1990. — P. 90–102.

Tadqiqotning asosiy ilmiy xulosalari quyidagilardan iborat: birinchidan, viloyatning uglevodorod boyliklaridan olinayotgan renta daromadlari inklyuziv rivojlanishni moliyalashtirish uchun zarur moliyaviy baza yarata oladi, ammo buning uchun maqsadli jamg'arma mexanizmi joriy etilishi shart; ikkinchidan, qishloq xo'jaligi sektori vertikal integratsiya va klasterli yondashuv orqali nafaqat eksport salohiyatini, balki mahalliy aholining iqtisodiy faolligini ham oshira oladi; uchinchidan, qayta tiklanuvchi energetika va raqamli iqtisodiyot yo'nalishlari yangi, inklyuziv ish o'rinlari yaratish uchun keng potensialga ega; to'rtinchidan, inklyuziv rivojlanishni ta'minlash uchun siyosiy irodadan tashqari institutsional mexanizmlar — monitoring tizimi, inklyuziv jamg'armalar, raqamli platformalar — izchil shakllantirilishi lozim.

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DIAGNOSTIC PERFORMANCE OF SHEAR WAVE ELASTOGRAPHY AND PRO-INFLAMMATORY CYTOKINES IN THE DIFFERENTIAL DIAGNOSIS OF PAPILLARY THYROID CARCINOMA

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Background. Papillary thyroid carcinoma (PTC) is the most common malignant thyroid neoplasm. Despite advances in ultrasound diagnostics and fine-needle aspiration biopsy, differential diagnosis between malignant and benign thyroid lesions remains challenging, particularly in patients with autoimmune thyroiditis (AIT). Shear wave elastography (SWE) and inflammatory cytokines are considered promising non-invasive diagnostic markers.

Objective. To evaluate the diagnostic significance of shear wave elastography parameters and pro-inflammatory cytokines in the differential diagnosis of papillary thyroid carcinoma, autoimmune thyroiditis, and nodular goiter.

Materials and Methods. A comparative single-center observational study included 90 patients with thyroid diseases: 30 patients with PTC, 30 with AIT, and 30 with nodular goiter. All participants underwent thyroid ultrasound examination with TI-RADS assessment, shear wave elastography (SWE), strain ratio (SR) measurement, and laboratory evaluation of thyroid hormones, thyroid autoantibodies, and serum levels of IL-1β, IL-6, IL-8, and TNF-α. Statistical analysis was performed using non-parametric methods with effect size estimation.

Results. Patients with PTC demonstrated significantly higher thyroid tissue stiffness and elevated cytokine levels compared with the AIT and nodular goiter groups ($p < 0.001$). SWE values increased progressively from nodular goiter to AIT and reached the highest levels in PTC (15.3, 31.6, and 82.0 kPa, respectively; $\varepsilon^2 = 0.889$). Among laboratory markers, IL-8 showed the strongest discriminatory ability ($\varepsilon^2 = 0.851$). High TI-RADS categories, irregular margins, and microcalcifications were significantly associated with PTC. A clear inflammatory gradient (PTC > AIT > nodular goiter) was observed for all investigated cytokines.

Conclusions. Combined assessment of SWE and pro-inflammatory cytokines demonstrates high diagnostic value in papillary thyroid carcinoma. SWE was the most informative instrumental parameter, while IL-8 emerged as the most promising laboratory biomarker. The integration of elastographic, ultrasonographic, and

immunoinflammatory markers may improve the accuracy of non-invasive differential diagnosis and facilitate earlier detection of thyroid malignancies.

THE THEORY AND CLASSIFICATION OF VERBS IN IBN MALIK'S ALFIYYA

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Annotation: *This article analyzes how the theory of verbs is presented in Ibn Malik's Alfiyya. The author classifies verbs according to their grammatical function and explains each category in separate chapters. In particular, the syntactic features of auxiliary verbs like kana and its sisters, verbs of hope and proximity like kada, mental verbs like zanna, three-object verbs, commendation and condemnation verbs, and exclamatory verb forms are thoroughly discussed. The didactic and poetic style of Alfiyya makes it a significant source in Arabic grammar.*

Keywords: *Ibn Malik, Alfiyya, verb classification, kana, kada, zanna, commendation verbs, exclamation, Arabic grammar, syntax.*

IBN MOLIKNING "ALFIYYA" ASARIDA FE'LLAR NAZARIYASI VA TASNIFI

Annotatsiya: *Ushbu maqolada Ibn Molikning "Alfiyya" asarida fe'llar nazariyasi qanday bayon etilgani tahlil qilinadi. Muallif fe'llarni grammatik ta'siriga ko'ra toifalarga ajratib, har bir guruhni alohida boblarda bayon etgan. Xususan, "kana" va uning o'xshashlari, "kada" va umid fe'llari, "zonna" va qalb fe'llari, uch to'ldiruvchili fe'llar, maqtov-tanqid fe'llari hamda ta'ajjub fe'l tuzilmalarining sintaktik xususiyatlari keng yoritilgan. Alfiyya asarining didaktik va nazmiy uslubda bayon qilinishi uni arab grammatikasidagi muhim manba sifatida ajratib turadi.*

Kalit so'zlar: *Ibn Molik, Alfiyya, fe'l tasnifi, kana, kada, zonna, maqtov fe'llari, ta'ajjub, arab tili grammatikasi, sintaksis.*

ТЕОРИЯ И КЛАССИФИКАЦИЯ ГЛАГОЛОВ В ПРОИЗВЕДЕНИИ ИБН МАЛИКА «АЛЬФИЯ»

Аннотация: *В данной статье анализируется, как в произведении Ибн Малика «Альфия» изложена теория глаголов. Автор классифицирует глаголы по их грамматическим функциям и подробно освещает каждую группу в отдельных главах. В частности, рассматриваются синтаксические особенности вспомогательных глаголов, таких как кана и её аналоги, глаголы надежды и приближения (када), ментальные глаголы (зонна), глаголы с тремя дополнениями, глаголы похвалы и порицания, а также конструкции удивления. Дидактический и поэтический стиль Альфии делает её важным источником по арабской грамматике.*

Ключевые слова: *Ибн Малик, Альфия, классификация глаголов, кана, када, зонна, глаголы похвалы, удивление, арабская грамматика, синтаксис.*

In this work *Alfiyya*, Ibn Malik condenses the rules of Arabic grammar into 1000 lines and classifies the verbs he discusses into several categories. In particular, he dedicates separate chapters to verb types that enter sentences and affect grammatical structure, thoroughly explaining each. In traditional grammar, such verbs are called "ناسخ" (*nāsiḫ*)—"transforming" or "abrogating" verbs (those that alter the syntactic roles of sentence components). The author divides these into seven chapters, presenting each verb category in a specific order and discussing them individually:

1. "كان وأخواتها" (*kāna and its sisters*) – auxiliary verbs that influence both subject and predicate structure. Ibn Malik begins by covering this set, using fifteen lines to explain the rules related to *kāna* and similar verbs. According to many scholars, thirteen verbs belong to this group: *kāna, aṣbaḥa, aḍḥā, amsā, ẓalla, bāta, mā zāla, mā barraḥa, mā infakka, mā fataʾa, mā dāma, laysa,* and *ṣāra*.

These verbs keep the subject in the nominative case but make the predicate accusative. In *Alfiyya*, Ibn Malik opens the chapter with the line: "ترفع كان المبتدأ اسمًا والخبر تنصبه" – "*Kāna* raises the subject in the nominative and makes the predicate accusative."

The second and third lines list the *kāna*-type verbs; the fourth and fifth lines explain that *dāma* must be used with "mā". The next three lines discuss whether the predicate linked to these verbs can appear between the subject and the verb; then he covers the requirement for using *mā* as a negator with these verbs. The following six lines address word order variations in *kāna* sentences and specify *kāna*'s particular rules.

After concluding the *kāna* chapter, he does not immediately move to *kāda* but discusses the negative particles *mā* and *lā*, which, like *kāna* and its companions, have

grammatical influence—allocating six lines to them and noting their syntactic likeness to *kāna* and its partners.

2. "أفعال المقاربة" (*verbal proximity/approximation* verbs) – auxiliary verbs expressing that an action is about to occur. After discussing *kāna* verbs and certain negative usages of *laysa*, he devotes a relatively small section under this name to *kāda* and similar structures. This category covers not only proximity verbs but also verbs indicating hope and initiation of action. The author lists them and presents their rules in ten lines:

- Proximity verbs: *kāda* ("almost was"), *karuba* ("nearly remained"), *'awshaka* ("already became");
- Hope verbs: *'asa* ("hopefully, perhaps"), *ḥara*, *'akhlawlaqā*;
- Initiation verbs: *ṭafīqa*, *ja'ala*, *'akhadha*, *shara'a*, *'ansha'a*.

Like *kāna*, *kāda* and its class retain the subject in nominative and link the predicate. Ibn Malik begins the section with: "ككان كاد وعسى لكن ندر ... غير مضارعٍ لهذين خبر" — "*Kāda* and 'asa are like *kāna*. The predicates they govern are in what will be present or future tense, while the noun predicate is rare."

He also notes that *'asa* often links with *an* before its predicate and that *kāda* inserting *an* before the predicate is rare. The total count is eleven verbs: three *kāda*–type, three *'asa*–type, and five motion/initiation verbs.

3. "ظن وأخواتها" (*zanna and its sisters*) – these verbs affect both subject and predicate and transform them into two complements. In *Alfiyya*, the *zanna* group is semantically classified into psychological and physical verbs:

- Psychological: *zanna* ("thought"), *hasiba*, *ra'a*, *'alima*, *za'ama*, *wajada*, *khāla*, *'adda*, *ḥajā*, *darā*, *i'taqada*.
- Physical: *ja'ala*, *ṣayyara*, *wahaba*.

Ibn Malik begins with the line: "انصب بفعل القلب جزأي ابتدى – أعني رأى، خال، علمت، وجدا" — "The verb of the heart (psychological verb) makes its two parts accusative; I refer to *ra'a*, *khāla*, *'alimtu*, *wajada*, …"

This chapter spans fourteen lines and explains specific syntactic behaviors—like *ta'liq* (dependent clauses), *ilghā'* ("nullification" of grammatical effect), and passive

use. He elaborates on exceptions, for instance: when a negative or interrogative precedes the verb, or when the verb appears in passive ("zunna"), leading to subject or predicate omission, or introducing an entire subordinate clause instead of a predicate.

4. "أعلم وأرى" (*a'lama and ara*) – verbs requiring three objects. After the *zanna* section, Ibn Malik includes a short five-line chapter on *a'lama* and *ara*–type verbs. These are intensive forms derived with hamza (pluperfect pattern), meaning "to inform/show" and typically require three complements (who, what, how). He opens:

"إلى ثلاثة رأى وعلما عُدّا إذا صارا أرى وأعلما" — "*Ra'a* and *'alima*, when augmented with hamza to become *'ara* and *'a'lima*, count as requiring three complements."

He lists seven such verbs: *'a'lima, 'ara, nabba'a, anba'a, akhbara, khabbara, haddatha*. He then clarifies that the base forms *'alimtu* can function with two complements, but adding hamza makes them require three.

5. "نعم وبئس" (*ni'ma* and *bi'sa*) – verbs expressing praise and condemnation. This category, following *'a'lima* and *'ara*, is treated in eleven lines. These verbs form a unique structure in Arabic, typically with two definite nouns in the nominative; e.g., *"ni'ma ar-rajulu Zayd"* ("How excellent a man Zayd is"). They do not occur in present or future tenses and usually involve the definite article *al-*. Ibn Malik names this chapter:

"نعم وبئس وما جرى مجراهما" — "*Ni'ma* and *bi'sa*, and those with their syntactic pattern"

He also includes forms like *ḥabbaza* and *lā ḥabbaza*, demonstrating their syntactic alignment.

6. "أفعال التعجب" (*verbs of exclamation*) – verb patterns used to express astonishment. Ibn Malik includes this section in *Alfiyya*, although without listing specific verbs. He explicates particular forms: *ma af'alahu* and *af'il bihi*, contrasting their semantic features (e.g., *af'il* appears imperative but conveys information) in a few lines.

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CRITERIA FOR ASSESSING IMMEDIATE AND LONG-TERM RESULTS OF LAPAROSCOPIC CHOLECYSTECTOMY

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Relevance. In cases of high surgical and anesthetic risk due to the underlying condition (perivesical infiltrate, cholangitis) and associated pathology, treatment is performed in two stages. During the first stage (1-2 days), percutaneous cholecystostomy and endoscopic papillotomy are performed. During the second stage, after the patient's condition has improved and the risk has decreased, cholecystectomy is performed through a mini-incision.

Keywords: laparoscopic cholecystectomy, endoscopic papillotomy.

Abstract. The high prevalence of cholelithiasis, the increase in the number of elderly and senile patients, as well as the widespread concomitant cardiovascular, endocrine and metabolic diseases cause a steady increase in the number of patients with complicated forms of gallbladder inflammation, as written in their work by scientists from Uzbekistan [1,3,5,7,9,11,13], representing the Bukhara State Medical Institute, and they noted that the presence of multiple concomitant pathologies, a decrease in the functional reserves of the body and a high frequency of complicated forms of the disease significantly complicate both the diagnostic process and the decision-making process on choosing the optimal method of surgical treatment, which is also emphasized by Russian scientists, for example, from the Far Eastern State Medical University [2,4,6,8,10] and Novosibirsk National Research State University [3,15,17,19], and employees of the Institute of Postgraduate Education in Healthcare of the Republic of Tajikistan N.D. Mukhiddinov et al. [2,14,16,18] having studied the results of treatment of 95 patients with ACC showed that when choosing surgical tactics it is necessary to take into account not only the form of the inflammatory process, but also the nature of local anatomical changes, and when analyzing the results of open interventions, complications of the early postoperative period were recorded in 22.5% of patients, and the mortality rate reached 7.5%, which leads to an increase in publications where LHEC is considered as the main method of surgical treatment of ACC, and the accumulated world experience indicates that the use of minimally invasive technologies can significantly reduce surgical trauma, reduce the duration of hospitalization and reduce the frequency of postoperative complications compared to

traditional interventions, as written by researchers from the Beijing Union Medical College and the Chinese Academy of Medical Sciences Q. Liu et al. [20,21,22,23].

It should be noted that the presented studies focused primarily on the factors that contribute to difficult laparoscopic cholecystectomy, the reasons for access conversion, individual intraoperative complications, and improving the technical aspects of the procedure. However, the patterns of sequential development of unfavorable laparoscopic cholecystectomy outcomes, which integrate clinical, instrumental, and intraoperative changes into a single pathogenetic chain of complications, remain insufficiently studied.

Furthermore, the available literature contains virtually no studies devoted to a comprehensive assessment of preoperative and early intraoperative risk criteria, followed by the use of the obtained data for an objective choice of surgical tactics.

Aim of the study: To improve the results of laparoscopic cholecystectomy for acute calculous cholecystitis by developing and implementing a clinical and instrumental method for predicting the degree of surgical complexity.

Materials and methods. The study was conducted at the Abu Ali Ibn Sina Bukhara State Medical Institute. It analyzed the examination and surgical treatment results for 184 patients with ACC who underwent emergency or urgent laparoscopic cholecystectomy between 2023 and 2026. Depending on the diagnostic and treatment strategy used, all patients were divided into two clinical groups.

Accordingly, the conditions for dividing patients into the control and study groups were based on a comparison of two comparable groups, which formed the basis for a comparative assessment of the results of traditional and improved approaches to surgical treatment of patients with ACC. In accordance with these criteria, we defined study inclusion criteria as patients with a clinically, laboratory, or instrumentally confirmed diagnosis of ACC who underwent emergency or urgent laparoscopic cholecystectomy during hospitalization.

Results of the study and discussion. The immediate results of surgical treatment were analyzed based on the duration of surgery (min), the need for conversion, the nature and frequency of postoperative complications, the duration of postoperative hospitalization, and the total duration of inpatient treatment. All postoperative complications were systematized in accordance with the international Clavien-Dindo classification, which provides for the division of complications depending on their severity and the scope of the necessary therapeutic correction. That is, we classified grade I complications as conditions that do not require special drug or invasive treatment; grade II complications included situations requiring additional drug therapy,

blood transfusion, or other therapeutic measures; grade III complications were those cases characterized by the need for invasive interventions, including puncture-drainage procedures, endoscopic or repeat surgical interventions; grade IV complications corresponded to the development of life-threatening conditions requiring intensive care, while grade V complications included fatal outcomes. To assess the long-term outcomes of surgical treatment, we analyzed clinical manifestations of biliary pathology that developed after patient discharge. We monitored patients for 1 to 3 months postoperatively through outpatient examinations, medical record analysis, and repeat visits to specialized medical care. The main evaluation criteria were the presence of biliary pain syndrome, repeat visits for biliary tract diseases, the development of residual or recurrent choledocholithiasis, cholangitis, extrahepatic bile duct strictures, and the need for repeat endoscopic retrograde cholangiopancreatography or readmission. This analysis included an additional analysis of the cumulative incidence of biliary complications as an integral indicator of the long-term outcomes of surgical treatment.

Conclusions. For successful completion of treatment in patients with persistently high surgical risk after cholecystostomy, complete gallbladder debridement and ablation of its cavity are necessary. This is achieved through endoscopic obliteration of the gallbladder, which is less traumatic and dangerous than cholecystectomy. A contraindication to endoscopic obliteration of the gallbladder is unresolved common bile duct obstruction. The obtained results allow endoscopic obliteration of the gallbladder to be considered as an alternative to cholecystectomy and conservative treatment of acute cholecystitis in patients with severe comorbidities.

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ЧЕТ ДАВЛАТ СУДИНИНГ ЁКИ АРБИТРАЖИНИНГ ҲАЛ ҚИЛУВ ҚАРОРИНИ ТАН ОЛИШ ВА ИЖРОГА ҚАРАТИШ ТЎҒРИСИДАГИ ИҚТИСОДИЙ ИШЛАРДА ХАЛҚАРО ШАРТНОМАЛАР

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Халқаро иқтисодий ҳамкорлик мураккаб, кўп қиррали жараён бўлиб, кўпинча унинг иштирокчилари ўртасидаги низолар ҳам вужудга келиб туради. Низоларни ҳал қилишнинг энг тарқалган усулларидан бири судга мурожаат қилишдир.
Чет эл элементи иштирокидаги ишларда чет давлат судларнинг ваколатларини аниқлаш, шунингдек, чет давлат суд қарорларини тан олиш ва ижро этиш масалалари тегишли халқаро шартномаларни тўғри қўллаш ҳам муҳим саналади. Ўзбекистон Республикасининг Иқтисодий процессуал кодексига асосан чет давлатлар судларининг ва арбитражларининг иқтисодиёт соҳасида юзага келадиган низолар ҳамда бошқа ишлар бўйича қабул қилинган ҳал қилув қарорлари, агар бундай қарорларни тан олиш ва ижрога қаратиш Ўзбекистон Республикасининг тегишли халқаро шартномалари ҳамда қонунчилигида назарда тутилган бўлса, улар Ўзбекистон Республикаси иқтисодий судлари томонидан тан олинади ва ижрога қаратилади.
МДҲ мамлакатлари доирасида Ўзбекистон Республикаси “Фуқаролик, оилавий ва жиноий ишлар бўйича ҳуқуқий ёрдам ва ҳуқуқий муносабатлар тўғрисида”ги Конвенцияга (Минск, 1993 йил 22 январ) ва “Хўжалик фаолиятини амалга ошириш билан боғлиқ низоларни ҳал этиш тартиби тўғрисида”ги Конвенцияга (Киев, 1993 йил 20 март), Фуқаролик, оилавий ва жиноий ишлар бўйича ҳуқуқий ёрдам ва ҳуқуқий муносабатлар тўғрисидаги Конвенция (2002 йил 7 октябрда Кишинев)га аъзо бўлди. Бундан ташқари, Ўзбекистон Республикаси ва кўплаб давлатлар ўртасида тузилган фуқаролик, оилавий ва жиноий ишлар бўйича ҳуқуқий ёрдам тўғрисидаги икки томонлама шартномаларида судловлиликни белгилаш ва чет давлат суд қарорларини ўзаро тан олиш ва ижро этиш тўғрисидаги қоидалар киритилган.
Халқаро шартномалар Ўзбекистон Республикасининг суд қарорларининг чет элда ижро этилишини ҳам таъминлайди, жисмоний ва юридик шахсларимизнинг ҳуқуқ ва манфаатларни хорижий мамлакатларда ҳам ҳимоя қилиш имконини беради.

Халқаро шартномаларда чет давот судлари қарорларини тан олиш ва ижро этиш обекти турлича таърифланади. Бу МДҲ мамлакатларининг халқаро шартномаларига ҳам тегишли, гарчи уларнинг тан олиш ва ижро этиш обекти ҳақидаги қоидалари одатда бир-бирига жуда яқин (кўпинча ҳатто бутунлай бир хил). Бундан ташқари, баъзи шартномаларда чет давлат судлари қарорларини тан олиш ва ижро этишга тегишли суд қарори тушунчаси аниқлаштирилган бўлса, бошқаларида мустақил талқин йўқ. Шартнома қоидаларини тушунишдаги фарқлар ҳуқуқни қўллаш амалиётида қийинчиликларга олиб келади.

Иқтисодий судлар томонидан халқаро ҳуқуқнинг умум эътироф этилган тамойиллари, нормаларига ҳамда Ўзбекистон Республикаси иштирок этувчи халқаро шартномаларга қатъий риоя қилиши, жисмоний ва юридик шахсларнинг ҳуқуқлари ва қонуний манфаатларини ҳимоя қилишда Ўзбекистон Республикасининг халқаро мажбуриятларини бажаришнинг энг муҳим кафолати бўлиб, Ўзбекистон Республикасининг халқаро майдондаги обрўсини мустаҳкамлашга ҳисса қўшади. Халқаро ҳуқуқ қоидаларини суд амалиётида бир хил қўллаш билан боғлиқ суд фаолиятини янада такомиллаштириш жуда муҳим вазифадир.

Чет эл элементи билан мураккаблашган ишлар Ўзбекистон Республикаси судларининг мутлақ судловлигига тааллуқлик бўлиб, шунингдек, чет давлат суд қарорларини тан олиш ва ижро этиш шартлари ва тартиблари билан боғлиқ масалалар ҳозирда амалдаги процессуал қонунчилик билан тартибга солинади.

Л.А.Лунц таъкидлашича, чет давлат суд қарорини тан олиш, чет давлат суд қарорига ўз давлат судининг қарори билан бир хил маънода фуқаролик ҳуқуқлари ва мажбуриятларини тасдиқлаш имконини бериш демакдир[1].

Бошқа давлат суд фаолиятига ишончни акс эттирувчи суд қарорларини ўзаро тан олиш ва ижро этиш бўйича халқаро ҳамкорликни чуқурлаштириш трансчегаравий фуқаролик битимлари иштирокчиларининг манфаатларини самарали ҳимоя қилиш ва халқаро ҳуқуқий тартибни мустаҳкамлаш кафолати бўлиб хизмат қилади.

Рус ҳуқуқшуноси Т.М. Яблочковнинг фикрича, чет эл суд қарорларини тан олиш ва ижро этиш тўғрисидаги ишлар Россия қонунчилигида ҳар доим экзекватура тамойилига асосланиб келган ва шундай бўлиб қолмоқда. “Экзекватура институти” чет давлат суд қарорларини ижро этишни жамият манфаатлари йўлида давлат органлари назоратига бўйсундиришга қаратилган[2].

[1] Лунц Л.А. Курс международного частного права. В 3 т. М., 2002. С. 900.
[2] Яблочков Т.М. Труды по международному частному праву. М., 2009. С. 165.

Чет давлат суд қарорини тан олиш ва ижро этиш учун қарор фойдасига чиқарилган тараф қарорни ижро этиш ва ижро варақаси бериш учун ваколатли суд (орган)га мурожаат қилиши керак.

Х.Шакнинг фикрига кўра, суд қарорлари мустақил ҳужжат сифатида, улар қабул қилинган давлат чегараларидан ташқарида кучга қонуний эга эмас. Чет давлт судларининг қарорлари, агар бошқа давлат томонидан тан олган бўлса, бошқа давлатда ҳам амал қилиши мумкин. Суд қарори тан олиниб, ижрога қаратилиши, бу бутунлай чет давлатга боғлиқ бўлади. Халқаро ҳуқуқнинг умумий қоидаларига кўра, чет давлат суд қарорларини тан олиш мажбурияти йўқ. Бироқ, кўплаб халқаро шартномалар суд қарорларини ўзаро тан олишни назарда тутилади[3].

Чет давлат суд қарорларини тан олиш ва ижро этиш иқтисодий ишлари бўйича халқаро ҳуқуқий ҳамкорликнинг энг муҳим масалаларидан бири бўлиб, бир томондан фуқаролар ва юридик шахсларнинг ҳуқуқларига, иккинчи томондан эса суд институтлари фаолиятига бевосита таъсир қилади.

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ИСТОРИЯ ФОРМИРОВАНИЯ ТРАКТАТОВ «МАСАИЛЬ»

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Аннотация: В данной статье анализируется история формирования трактатов, относящихся к жанру «Масаиль» (вопросно-ответный метод), который занимает важное место в исламских науках. Рассматривается традиция раннего ислама, связанная с устной передачей знаний в форме вопросов и ответов, на примере научного общения между Пророком Мухаммадом (мир ему) и его сподвижниками. Раскрываются лексическое и терминологическое значения понятия «Масаиль», а также его роль в таких дисциплинах, как фикх, хадис, акида и тасаввуф. Освещается методологическое значение данного жанра в развитии исламской научной мысли и его становление как письменной научной традиции. На основе хадиса Джибриля и коранического предписания обращаться к «людям знания» обосновывается, что вопросно-ответный метод с самого раннего периода служил фундаментальной методологией познания религии.
Ключевые слова: Масаиль, метод «вопрос–ответ», исламские науки, фикх, хадис, акида, тасаввуф, научное мышление, религиозный диалог, толкование Корана, хадис Джибриля, исламская методология, религиозное учение, научное наследие.

ВВЕДЕНИЕ

В истории исламских наук в становлении и развитии научной мысли, а также в широком распространении религии важную роль сыграл ряд методов. Если на начальном этапе формирование исламской мысли осуществлялось Пророком Мухаммадом (мир ему) посредством да‘ва — призыва к благому и удержания от дурного, — то впоследствии, по мере совершенствования религиозных предписаний, возникновения потребности в системном религиозном подходе к вопросам повседневной жизни и в концептуальном осмыслении Священного Корана, важное место занял устный метод «вопрос–ответ». В ранний период ислама религиозно-научная мысль широко распространялась в вопросно-

ответной форме между Пророком и сподвижниками, сподвижниками и таби‘инами (представителями второго поколения мусульман, жившими после сподвижников и оставившими значимый след в истории ислама), а также между таби‘инами и последующими поколениями. Это не только закрепило особый метод, но и сыграло значимую роль в создании ценных источников, написанных в вопросно-ответной форме, особенно в науках хадиса и фикха. Настоящая статья посвящена анализу истории формирования трактатов жанра «Масаиль» и их методологического значения в развитии исламской научной мысли.

МЕТОДОЛОГИЯ И ИСТОЧНИКИ

Исследование опирается на историко-описательный метод, терминологический анализ и анализ первоисточников. Понятие «масаиль» рассматривается в двух аспектах — лексическом и терминологическом, что позволяет определить содержательные и жанровые границы данного типа сочинений. В качестве источников привлечены сборники хадисов (в частности, «Сахих» аль-Бухари с комментарием Ибн Хаджара аль-Аскалани «Фатх аль-Бари»), классические арабские лексикографические труды («Лисан аль-араб» Ибн Манзура), а также Священный Коран и его толкование («Тафсири Хилол»).

РЕЗУЛЬТАТЫ

В арабском языке слово «масаиль» (المسائل) является формой множественного числа от «мас’ала» (مسألة) и в словарном значении передаёт смыслы «спрашивать о чём-либо», «требовать» (سؤال عن الشيء، الطلب) [1, с. 374]. В терминологическом отношении оно обозначает «вопрос, требующий обоснования» (القضية التي يبرهن عليها), то есть цикл сочинений, основанный на изложении определённых научных, религиозных или практических вопросов в вопросно-ответной форме [2]. В данном жанре вопросы обычно выражают конкретные проблемы, а ответы разъясняются на основе коранических аятов, хадисов, иджтихадных суждений и рациональных доводов.

В трактатах, относящихся к жанру «Масаиль», сформировалась письменная форма проблемного мышления в исламских науках; через неё освещаются сложные или встречающиеся в повседневной жизни вопросы фикха, акиды и тасаввуфа, а также развивается процесс научного диалога и дискуссии.

Как отмечалось выше, в ранний период ислама процесс приобретения и передачи религиозных знаний осуществлялся преимущественно в вопросно-ответной форме. В источниках хадиса отражено, что сподвижники задавали Пророку Мухаммаду (мир ему) вопросы по различным аспектам религии, а Пророк (мир ему) отвечал на них. Эта традиция продолжилась при изучении религиозного

учения последующими поколениями и превратилась в важную форму научного общения.

Сподвижники методом «вопрос–ответ», то есть методом «масаиль», изучали не только важные сведения, требующие точного знания и эсхатологического истолкования, но и основополагающие вероучительные вопросы. Об этом свидетельствует переданный имамом аль-Бухари «хадис Джибриля» — один из хадисов, заключающих в себе концептуальные основы ислама:

حدثنا مسدد قال حدثنا إسماعيل بن إبراهيم أخبرنا أبو حيان التيمي عن أبي زرعة عن أبي هريرة قال :كان النبي صلى الله عليه وسلم بارزا يوما للناس فأتاه رجل، فقال :ما الإيمان؟ قال» :الإيمان أن تؤمن بالله وملائكته وكتبه وبلقائه ورسله وتؤمن بالبعث«، قال» :ما الإسلام؟«، قال» :الإسلام أن تعبد الله ولا تشرك به وتقيم الصلاة وتؤدي الزكاة المفروضة وتصوم رمضان«، قال» :ما الإحسان؟«، قال» :أن تعبد الله كأنك تراه فإن لم تكن تراه فإنه يراك«، قال» :متى الساعة؟ «قال» :ما المسؤول عنها بأعلم من السائل وسأخبرك عن أشراطها إذا ولدت الأمة ربها وإذا تطاول رعاة الإبل البهم في البنيان في خمس لا يعلمهن إلا الله» .«هذا جبريل جاء يعلم الناس دينهم».

Передаётся от Абу Хурайры (да будет доволен им Аллах): однажды Пророк Мухаммад (мир ему) сидел среди людей. К нему подошёл человек и спросил: «Что такое вера (иман)?» Пророк (мир ему) ответил: «Вера — это веровать в Аллаха, Его ангелов, Его Писания, во встречу с Ним (в загробную жизнь), в Его посланников и в воскрешение». Тот спросил: «Что такое ислам?» Пророк (мир ему) ответил: «Ислам — это поклоняться Аллаху, не придавать Ему сотоварищей, надлежащим образом совершать молитву, выплачивать обязательный закят и поститься в рамадан». Тот снова спросил: «Что такое ихсан?» Пророк (мир ему) ответил: «Ихсан — это поклоняться Аллаху так, будто ты видишь Его; и хотя ты не видишь Его, поистине, Он видит тебя». Тот спросил: «Когда наступит Час?» Пророк (мир ему) сказал: «Спрашиваемый о нём знает не больше спрашивающего. Но я расскажу тебе о его признаках: когда невольница родит свою госпожу и когда босые, нагие, неимущие пастухи верблюдов станут соревноваться в возведении высоких зданий. Время же Часа — из тех пяти вещей, которые знает только Аллах». Затем Пророк (мир ему) сказал: «Это был Джибриль, он пришёл, чтобы научить вас вашей религии» [3, с. 5].

Слова Пророка (мир ему) «هذا جبريل جاء يعلم الناس دينهم» — «Это Джибриль, он пришёл научить людей их религии» — раскрывают, каким образом в ту эпоху приобретались религиозные знания. Это свидетельствует о том, что метод «масаиль» с самых ранних периодов служил фундаментальной методологией понимания и изучения религии. Данную мысль подтверждает и аят Священного

Корана: «فاسألوا أهل الذكر إن كنتم لا تعلمون» — «Спросите же обладателей знания, если вы не знаете» [4; 5, с. 342].

ОБСУЖДЕНИЕ

Приведённые свидетельства показывают, что вопросно-ответный метод не являлся второстепенным приёмом, а с самого раннего периода выступал в качестве фундаментальной методологии познания и преподавания религии. Хадис Джибриля, в котором основы веры, ислама и ихсана излагаются именно в форме вопросов и ответов, а также коранический призыв обращаться к «людям знания» закрепляют этот метод как нормативный способ получения религиозного знания. Со временем устная вопросно-ответная традиция, восходящая к эпохе Пророка и сподвижников, оформилась в самостоятельный письменный жанр — прежде всего в науках фикха и хадиса, — что обеспечило преемственность и систематизацию религиозного знания.

ЗАКЛЮЧЕНИЕ

Таким образом, метод «масаиль» имеет важное методологическое значение в становлении и развитии научной мысли в исламских науках. Возникнув в ранние периоды в вопросно-ответной форме, этот метод впоследствии оформился как письменный жанр в науках фикха, хадиса, акиды и тасаввуфа. Трактаты жанра «Масаиль» играют важную роль в развитии научного диалога, аргументации и иджтихадного подхода. Поэтому изучение данного метода имеет актуальное значение для глубокого осмысления исламского научного наследия.

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THE EFFECTIVENESS OF COOPERATIVE LEARNING TECHNOLOGY IN RUSSIAN LANGUAGE LESSONS

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Abstract: This article explores the effectiveness of Cooperative Learning technology in Russian language lessons. Modern educational approaches emphasize active student participation, collaboration, and communicative competence development. Cooperative Learning is recognized as one of the most effective learner-centered instructional strategies because it encourages students to work together toward common educational goals while developing academic, social, and communicative skills. The study examines the theoretical foundations of Cooperative Learning, its methodological principles, and its practical application in Russian language classrooms. Particular attention is paid to the development of speaking skills, vocabulary acquisition, communication competence, and student motivation. The findings indicate that cooperative learning environments significantly improve language proficiency, classroom engagement, and interpersonal communication among learners.

Keywords: Cooperative Learning, Russian language teaching, collaborative learning, communicative competence, student interaction, language acquisition, active learning, educational effectiveness.

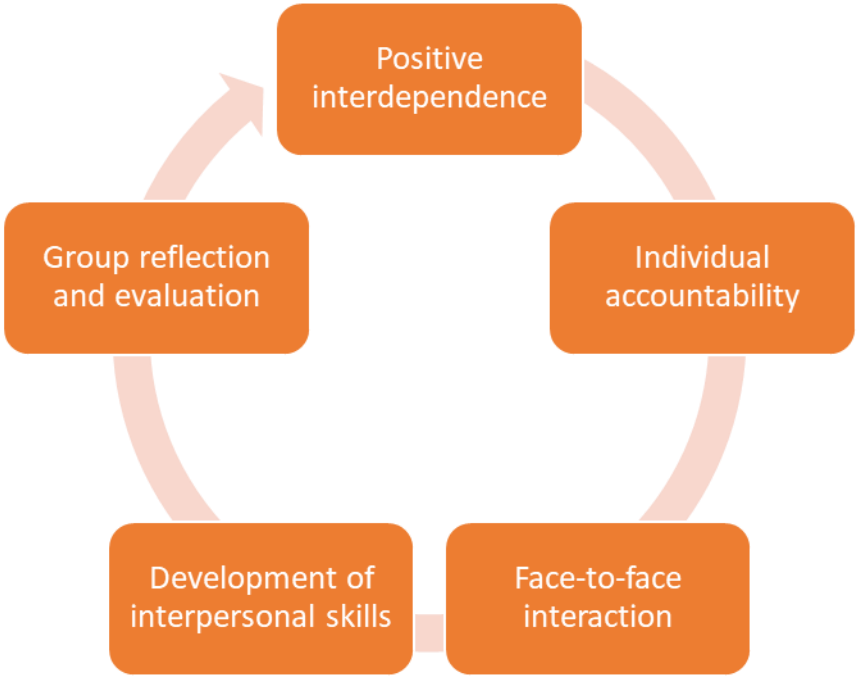
Introduction

The modernization of education has brought significant changes to language teaching methodologies. Contemporary educational systems increasingly prioritize learner-centered approaches that encourage students to participate actively in the learning process. Traditional teacher-centered instruction often limits opportunities for interaction and collaboration, whereas modern pedagogical strategies emphasize communication, cooperation, and independent knowledge construction. Russian language education in schools aims not only to provide grammatical and lexical knowledge but also to develop students' communicative competence and practical language skills. To achieve these objectives, teachers must create learning environments that promote active participation and meaningful interaction. One of the most effective approaches for accomplishing this goal is Cooperative Learning. Cooperative Learning is an instructional methodology in which students work together

in small groups to achieve shared educational objectives. Unlike competitive or individualistic learning models, Cooperative Learning emphasizes positive interdependence, individual accountability, face-to-face interaction, and collaborative problem-solving[1]. Through cooperative activities, students learn not only academic content but also important social and communication skills. The growing importance of communication and teamwork in modern society highlights the relevance of Cooperative Learning in language education. By encouraging students to interact, discuss ideas, and support one another, this approach creates favorable conditions for language acquisition and personal development. Therefore, investigating the effectiveness of Cooperative Learning technology in Russian language instruction is both timely and pedagogically significant. The purpose of this study is to analyze the effectiveness of Cooperative Learning technology in Russian language lessons and to evaluate its contribution to the development of students' communicative competence, language proficiency, and classroom engagement.

Theoretical foundations of cooperative learning

Cooperative Learning is based on the principle that students learn more effectively when they work together toward common goals. Educational researchers emphasize that collaboration encourages active participation, deeper understanding, and long-term knowledge retention. The fundamental elements of Cooperative learning include:



[1] Johnson D.W. Johnson D.W., Johnson R.T. Cooperation and competition: theory and research. Minneapolis: Interaction Book Company, 2019. – 298 p.

These components ensure that every student contributes to the learning process while benefiting from group interaction. In Russian language classrooms, cooperative learning provides opportunities for students to practice language skills in authentic communication contexts. Through collaboration, learners exchange ideas, negotiate meaning, and support each other's language development[2].

Cooperative learning and communicative competence development

Communicative competence is one of the primary objectives of Russian language education. It involves the ability to use language effectively in various social and educational situations. Cooperative learning contributes to communicative competence by encouraging students to:

- Participate in discussions;
- Express personal opinions;
- Ask and answer questions;
- Negotiate meaning;
- Solve problems collaboratively.

For example, when studying the topic "Family traditions", students work in groups to discuss customs and traditions in their families. Each group prepares a short presentation in Russian and shares its findings with the class. During this activity, students actively use vocabulary related to family relationships, cultural practices, and personal experiences. Such interactions promote meaningful language use and strengthen communicative skills.

Cooperative learning strategies in russian language lessons

Several Cooperative Learning strategies can be successfully implemented in Russian language instruction.

Think-pair-share. Students first think individually about a question, then discuss their ideas with a partner, and finally share their conclusions with the class.

Example topic: "The Importance of Reading Books." This strategy promotes critical thinking and encourages all students to participate in classroom discussions.

Jigsaw method. Students become "experts" on different parts of a topic and then teach the information to their group members. For example, when studying Russian culture, different groups may investigate:

[2] Slavin R.E. Slavin R.E. Cooperative learning: theory, research and practice. Boston: Allyn & Bacon, 2020. – 356 p.



Students exchange information and collaboratively construct a complete understanding of the topic.

Group projects. Group projects allow students to research, discuss, and present information together. Example project: "Famous russian cities". Students prepare presentations about Moscow, Saint Petersburg, Kazan, and Sochi. This activity develops research skills, vocabulary acquisition, and oral communication[3].

The impact of cooperative learning on student motivation

Student motivation plays a crucial role in language acquisition. Cooperative Learning creates a supportive and engaging environment where learners feel responsible for both individual and group success. When students work collaboratively, they receive encouragement from peers and become more confident in using the target language. The fear of making mistakes decreases because communication occurs in a supportive group setting. For example, in vocabulary-building activities, students can work together to create semantic maps or solve language puzzles. Such tasks transform learning into an enjoyable experience and increase students' interest in Russian language study. Research indicates that cooperative learning environments often lead to higher levels of motivation, participation, and academic achievement compared to traditional instructional approaches.

Educational Advantages of Cooperative Learning Technology

[3] Shchukin A.N. Shchukin A.N. Methods of teaching russian as a foreign language. Moscow: Flinta, 2021. – 508 p.

The implementation of Cooperative Learning technology in Russian language lessons offers numerous pedagogical benefits:

1. Enhances communicative competence.
2. Improves speaking and listening skills.
3. Encourages active student participation.
4. Strengthens vocabulary acquisition[4].
5. Develops teamwork and collaboration skills.
6. Promotes critical thinking and problem-solving.
7. Increases motivation and classroom engagement.
8. Creates a positive and inclusive learning environment.

These advantages demonstrate the value of Cooperative Learning as an effective methodology for modern Russian language education.

The influence of cooperative learning on russian language learning outcomes[5]

Learning Indicator	Before Cooperative Learning	After Cooperative Learning	Observed Improvement
Speaking Skills	Moderate	High	Significant
Vocabulary Development	Moderate	High	Considerable
Classroom Participation	Moderate	Very High	Significant
Listening Comprehension	Moderate	High	Noticeable
Communicative Competence	Moderate	High	Significant
Learning Motivation	Moderate	Very High	Significant
Teamwork Skills	Low	High	Very Significant
Critical Thinking	Moderate	High	Considerable

The data presented in Table 1 indicate that Cooperative Learning has a positive impact on multiple aspects of Russian language education. Significant improvements are observed in communicative competence, speaking ability, classroom participation, and motivation. The most remarkable development occurs in teamwork skills, reflecting the collaborative nature of the instructional approach. These findings confirm that

[4] Tolipov O'. Tolipov O‘., Usmonboyeva M. Pedagogik texnologiyalar nazariyasi va amaliyoti. Toshkent: Fan va texnologiya, 2021. – 286 b.
[5] Ishmuhamedov R.J. Ishmuhamedov R.J. Innovatsion pedagogik texnologiyalar. Toshkent: Fan, 2022. – 312 b.

Cooperative Learning promotes both academic achievement and social interaction, making it a valuable strategy for language teaching.

Conclusion

The study has demonstrated that Cooperative Learning technology is an effective pedagogical approach for teaching the Russian language in school settings. By creating opportunities for collaboration, discussion, and mutual support, Cooperative Learning encourages active language use and meaningful communication among students. The findings reveal that cooperative activities contribute significantly to the development of communicative competence, vocabulary acquisition, speaking skills, and classroom engagement. Students become more confident in expressing their ideas, interacting with peers, and applying language knowledge in authentic situations. Furthermore, Cooperative Learning promotes social responsibility, teamwork, and critical thinking, which are essential competencies for modern education. In conclusion, the integration of Cooperative Learning technology into Russian language lessons enhances both the quality of instruction and students' overall learning experience. Its systematic implementation can contribute to the formation of communicatively competent, motivated, and collaborative learners capable of meeting the demands of contemporary society.

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"THE IMPACT OF JUDO TRAINING ON THE PHYSICAL AND PSYCHOLOGICAL PREPAREDNESS OF YOUNG ATHLETES"

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Abstract : This research examines how judo training influences the physical condition and psychological development of young athletes. As a multifaceted combat sport, judo contributes to the enhancement of key motor skills such as strength, speed, endurance, coordination, and flexibility, while also fostering important psychological qualities including self-confidence, emotional control, discipline, and resistance to stress.The aim of the study was to evaluate the effectiveness of systematic judo practice in improving both physical fitness and mental resilience among youth participants. The study is based on a theoretical review of existing scientific literature and comparative analysis of previous research in the fields of sports physiology and psychology.The results show that consistent engagement in judo training significantly improves muscular strength, cardiovascular endurance, and neuromuscular coordination. Moreover, it supports the development of quick decision-making under pressure, better emotional regulation, and higher motivation for success. In addition, the core values of judo, such as respect, self-control, and efficiency, contribute to the moral and social growth of young athletes.In conclusion, judo is an effective sport for the holistic development of youth, positively affecting both physical performance and psychological well-being. Therefore, its inclusion in youth sports and physical education programs is highly recommended.

Keywords: judo, youth athletes, physical development, psychological development, sports training, endurance, emotional control..

Physical activity plays a crucial role in the development of young individuals, contributing to their health, fitness, and psychological stability. Among various sports disciplines, judo stands out as a unique combat sport that combines physical performance with moral and psychological education.Judo, founded by Jigoro Kano in 1882, is based on the principles of maximum efficiency and mutual welfare. It has evolved into an Olympic sport practiced worldwide. Beyond competition, judo emphasizes discipline, respect, and self-control, making it a valuable educational tool for youth development.Recent studies in sports science indicate that judo training

improves cardiovascular endurance, muscular strength, coordination, and neuromuscular efficiency. At the same time, it enhances psychological qualities such as emotional regulation, confidence, and resilience under pressure.The purpose of this study is to analyze the impact of judo training on the physical and psychological preparedness of young athletes based on existing scientific literature.

This study employed a qualitative research design based on a systematic literature review. The research focused on analyzing published scientific materials related to the effects of judo training on the physical and psychological development of young athletes. Data were collected from peer-reviewed journal articles, books, and sport science publications published between 2000 and 2025.The selection of sources was carried out using relevance criteria, focusing on studies that investigated judo training, combat sports physiology, and sports psychology in youth populations. Only studies written in English and widely cited in academic databases were included in the analysis.The collected data were analyzed using content analysis and comparative analysis techniques. Content analysis was used to identify key themes such as physical fitness development, motor skill improvement, and psychological adaptation. Comparative analysis was applied to examine similarities and differences among previous research findings.Consequently, the findings were synthesized to draw general conclusions regarding the impact of judo training on young athletes' physical and psychological preparedness. No experimental or field intervention was conducted in this study; the results are based entirely on secondary data sources.

The analysis of the reviewed scientific literature shows that judo training has a significant positive effect on both the physical and psychological development of young athletes.In terms of physical development, regular participation in judo training leads to noticeable improvements in muscular strength, explosive power, endurance, coordination, balance, and flexibility. These adaptations are mainly associated with the high-intensity and full-body nature of judo techniques, which require continuous engagement of multiple muscle groups. Additionally, repeated technical drills and randori (free practice) sessions enhance neuromuscular efficiency and reaction speed.From a physiological perspective, judo training contributes to improved cardiovascular and respiratory function. Young athletes demonstrate increased aerobic and anaerobic capacity, which supports better performance during high-intensity efforts typical of competitive matches. Recovery ability between bouts of effort also improves with consistent training.Regarding psychological outcomes, judo practice positively influences emotional stability, self-confidence, and stress management. Athletes exposed to competitive training environments develop stronger coping

mechanisms for pressure situations. The necessity to make quick tactical decisions during matches enhances cognitive processing speed and situational awareness.Furthermore, the discipline and ethical principles embedded in judo training contribute to improved motivation, self-control, and respect for opponents. As a result, the findings consistently indicate that judo is an effective sport for the integrated development of physical and psychological capacities in youth athletes.

The findings of this study confirm that judo training plays an important role in the comprehensive development of young athletes by simultaneously enhancing physical fitness and psychological resilience. The results align with previous research in sports science, which emphasizes that combat sports requiring close interaction with an opponent produce higher levels of motor skill development and cognitive engagement compared to non-contact sports.The improvement in physical performance observed in judo practitioners can be explained by the multidimensional nature of the sport. Judo involves throwing techniques, grappling, and defensive actions that require continuous activation of major muscle groups, leading to the development of strength, power, endurance, and coordination. In addition, the intermittent high-intensity structure of training sessions contributes to both aerobic and anaerobic adaptations.From a psychological perspective, judo provides a competitive environment that naturally exposes athletes to stress and pressure situations. As a result, young athletes gradually develop emotional control, confidence, and the ability to make quick and effective decisions. The repetitive experience of success and failure during training and competition also strengthens resilience and motivation.Another important aspect is the educational and moral framework of judo. The principles of respect, discipline, and mutual welfare contribute to character formation, making judo not only a physical activity but also a pedagogical system. This distinguishes judo from many other sports by integrating moral development with performance training.However, the effectiveness of judo training largely depends on coaching quality, training methodology, and age-appropriate load management. Inadequate training design may limit development or increase the risk of injury, especially in young athletes.As a result, the discussion supports the idea that judo is a highly effective sport for holistic youth development, provided that training is properly structured and scientifically guided.

In conclusion, this study concludes that judo training has a strong and positive impact on the physical and psychological development of young athletes. Regular participation in judo significantly improves key physical qualities such as muscular strength, endurance, coordination, balance, and flexibility. These improvements are

largely due to the dynamic and full-body nature of judo techniques, which require continuous physical engagement and neuromuscular adaptation.In addition to physical benefits, judo training also plays an important role in psychological development. Young athletes involved in judo demonstrate higher levels of self-confidence, emotional stability, discipline, and stress resistance. The competitive environment of judo helps athletes develop the ability to remain calm under pressure and make quick, effective decisions during matches.Furthermore, the moral and philosophical principles of judo, including respect, self-control, and mutual welfare, contribute to character building and social development. This makes judo not only a sport but also an educational system that supports holistic youth development.In general, judo can be considered an effective training system for improving both physical fitness and psychological well-being in young athletes. Therefore, it is recommended that judo be further promoted and integrated into youth sports programs and physical education systems.

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ALISHER NAVOIY G‘AZALLARIDAGI TARIXIY SHAXS NOMLARI BILAN BOG‘LIQ ALLUZIYALAR

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ANNOTATSIYA

Yevropa tillarida XVII asrda paydo bo‘lgan, rus adabiyotida Pyotr I davridan ishlatila boshlangan, o‘zbek tilshunosligida XX asrning boshlarida yuzaga chiqqan, shaklan va mazmunan adabiyotshunoslikda mavjud bo‘lgan Talmehga o‘xshash birlik – alluziyalarning lingvokulturalogik jihatlari muhim ahamiyat kasb etadi. Ushbu maqolada Alisher Navoiy qalamiga mansub bo‘lgan ayrim g‘azallarda kishi nomlari bilan bog‘liq alluziyaga xos bo‘lgan birlik tahlil ostiga olingan. Xususan, Rus olimi Yevseyev Aleksandr Sergeyevich tomonidan ishlab chiqilgan tasnifga tayangan holda, g‘azallarning lingvopoetik xususiyatlari bilan bir qatorda alluzik jihatlari batafsil yoritilgan. Bunda davr nuqtai nazardan yuzaga chiqadigan o‘ziga xos jihatlarga e’tibor berilgan.

Kalit so‘zlar : alluziya, lingvopoetik xususiyat,tasnif, g‘azal, davr nuqtayi nazari

Аннотация

Лингвокультурологические аспекты аллюзий – единицы, аналогичной талмеху, появившейся в европейских языках в XVII веке, начавшей использоваться в русской литературе со времён Петра I, а в узбекском языкознании – в начале XX века, и присутствующей в литературоведении по форме и содержанию, – имеют большое значение. В данной статье анализируется характерная для некоторых газелей Алишера Навои единица аллюзий. В частности, на основе классификации, разработанной Александром Сергеевичем Евсеевым, подробно рассматриваются аллюзивные аспекты газелей наряду с лингвопоэтическими особенностями. При этом особое внимание уделяется специфике, проявляющейся с точки зрения эпохи.

Ключевые слова: аллюзия, лингвопоэтическая особенность, классификация, газель, теория точек эпохи

ABSTRACT

The linguocultural aspects of the allusions, a unit similar to Talmekh, which appeared in European languages in the 17th century, began to be used in Russian literature from the time of Peter I, and emerged in Uzbek linguistics at the beginning of the 20th century, and is present in literary studies in form and content, are of great importance. This article analyzes the unit characteristic of allusions in some ghazals written by Alisher Navoi. In particular, based on the classification developed by Yevseyev Alexander Sergeyevich, the allusive aspects of ghazals are covered in detail along with the linguopoetic features. In this, attention is paid to the specific aspects that emerge from the perspective of the period.

Keywords: allusion, linguopoetic feature, classification, ghazal, period point theory

Ma’lumki, antroposentrik yondashuvning taraqqiy topib borishi natijasida inson omilining muhim jihatlarini, u orqali amalga oshirilishi mumkin bo‘lgan hodisalarni ochib berish yetakchi ahamiyat kasb etmoqda. Mana shunday zaruriy vositalardan biri allyuziyadir. Hammamizga ayonki, inson nomining ishorasi bilan beriladigan va turli ishoralar asosida shakllantiriladigan allyuziya lingvokulturologiyaning muhim obyektlaridan biri sanaladi.

Rus tilshunos olimi V.V. Krasnix shaxs nomlarining badiiy asarlarda, umuman, nutqda ishlatilishini uch xususiyatga qarab ajratadi: 1)mashhurlilik; 2)taniqlilik; 3)ma’lumlilik. Olim shu xususiyatlariga ko‘ra shaxs nomlarini yana uch turga ajratadi:

a)har qanday zamonda ham hamma uchun ma’lum bo‘lgan nomlar;

b)ma’lum bir ijtimoiy muhitda tanish bo‘lgan nomlar;

d)milliy qahramon nomlari kabi. Uning fikricha, mazkur nomlar ma’lum madaniyat vakillariga anglashiladi va ular bilan bog‘liq holatlar, voqea-hodisalar, belgilar faqatgina shularga ma’lum bo‘ladi.
D.Xudoyberganova o‘z tadqiqotida mustaqillikdan keyingi davrda xalqqa milliy-madaniy qahramonlarning nomlari qayta tiklanganligi, mazkur ishlar samarasi o‘laroq

shu nomlarning qaytganligini o‘z ishida keltiradi hamda aniq misollar asosida dalillab beradi.

Alisher Navoiyning “Xazoyin ul-maoniy” kulliyoti tarkibiga kiruvchi tarixiy shaxslarning nomi ma’lum keyingi davrlardagi siyosiy, mafkuraviy jarayonlarga taalluqli bo‘lmaganligi sababli mazkur antroponimlar doirasida qator ishlar amalga oshirildi, ularning ma’lum birlarining ilm-fanimiz doirasidan chiqarib yuborilganligi ham kuzatilmagan.

Nomlar har qanday xalqning ham milliy, ham madaniy boyligi hisoblanadi, shuni inobatga olgan holda XV asrda Alisher Navoiy asarlarida qo‘llanilgan antroponimlarni o‘rganish orqali madaniy merosning hozirgi davrga qanday shaklda yetib kelganligi, o‘z davrida qanday vazifalarni ifodalanganligi oydinlashadi.

Alisher Navoiy asarlaridagi antroponimlar tadqiqini amalga oshirish uchun ma’lum darajadagi muammolar mavjudligi oydinlashadi. Chunonchi, ma’lum bir qahramonlarning nomlari haqida aniq ma’lumot haligacha yetarli emas. Ba’zi qahramonlarni mifologik yoki tarixiy shaxs ekanligini aniqlash hali ham o‘z yechimini kutayotgan muammolar sirasiga kiradi. Afridun, Xalil, Skandar, Doro, Bilol, Suxayb, Mahmud, Abulg‘ozi ibn Boyqaro, Hofiz Sheroziy, Husayn Boyqaro, Xusrav, Jomiy, G‘aznaviy kabi shaxslar nomi “Xazoyin ul-maoniy” asarida keltirilgan.

Mazkur nomlarni davr nuqtayi nazaridan to‘rt guruhga ajratish mumkin:

a)Islomgacha bo‘lgan va Islomga daxldor bo‘lmagan nomlar: Afridun, Doro, Skandar, Xusrav kabi;

b)Islomdan keyingi yoki uning ta’sirida shakllangan nomlar: Xalil(Ibrohim payg‘ambarga berilgan rutba), Bilol(birinchi azon aytgan kishi), Suxayb(Zuhayb);

d)Alisher Navoiy yashagan davrdan oldin yashagan shaxslar: Mahmud, Hofiz Sheroziy, G‘aznaviy;

e)Alisher Navoiyning davrida yashagan shaxslar: Abulg‘ozi ibn Boyqaro, Husayn Boyqaro, Jomiy kabi.

Bunday davrlashtirish asosida nomlarni ajratish Alisher Navoiy qaysi davrdagi voqealarni, ularning qaysi xususiyatlariga qarab tasvirlaganligiga oydinlik kiritish uchun zarur hisoblanadi.

Antroponimlarning badiiy asarda qo‘llanilishi ham informatsion, ham madaniy etiketni ochib berishda xizmat qiladi. Alisher Navoiyning bu tipdagi asarlari tarkibida tarixiy shaxslarning nomi kamroq qo‘llanilishi tabiiy hol, chunki ijodkorning badiiy amqsadidan kelib chiqib leksik birliklarning tanlanishi ayon. Quyida tarixiy shaxs nomlari sifatida keltirilgan nomlarning qanday maqsadda ishlatilganligini tahlil qilishga qaror qilindi:

Ey Navoiy, bizni yod etgaymu barqandon kuni,
Ichsa jomi Jam bilan soniye Afridun qadah(G‘aroyib us-Sig‘ar. – B.102). Ko‘pgina ijodkorlar qatori Alisher Navoiy ham aruzning talabi va ohangdorlikni oshirish maqsadida Jamshid nomini qisqartirib qo‘llashni ma’qul ko‘rishadi. Jamshid antroponimiga murojaat qilinsa, u ham tarixiy, ham mifologik ma’lumotlarga qorishib ketgan qahramon sifatida tilga olinadi, Afridun(Faridun) ismi haqida ham xuddi shunday fikr yuritish mumkin. Har ikki shaxs haqidagi ma’lumotlarga diqqat qarataylik:

-shoh Jamshid haqida qadimgi afsonalar ma’lumoticha, peshdodiylar sulolasiga mansub, Eronda uzoq yillar davomida hukmronlik qilgan eng buyuk shoh;

-Tahmuraspdan keyin davlatni yetti yzu yil boshqaruvi davomida sharobni kashf etgan, Navro‘z bayramining Yangi yil sifatida nishonlanishini tartib bergan, zardushtiylik dinidan oldin o‘ziga xos diniy mazhab yaratgan, ko‘zgu ixtiro qilgan , odamlarga matodan kiyim kiyishni o‘rgatgan, tabaqalashtirishni joriy qilgan;

- u maishatga berilib ketib xudolik da’vo qila boshlagan davrda yurtga Zahhok ismli shoh bostirib keladi va uni qilich bilan ikkiga bo‘lib yuborgan, Zahhokning ikki yelkasidagi ilonga xalq farzandlarining miyasi yedirilgan, bunga qarshi isyon ko‘targan temirchi Kova uni o‘ldiradi va taxtga Jamshid avlodi sanalgan Faridun chiqadi;

-shoh Jamshidni hazrati Sulaymon ekanligi ta’kidlaydigan ayrim manbalar mavjud;

-Faridun davlatni adolat bilan boshqargan, vafotidan so‘ng saltanatni Nuh kabi farzandlariga bo‘lib bergan. Keltirilgan ma’lumotlar hali Alisher Navoiy nima sababdan bu nomlarni keltirganligini aniq izohlashga asos bo‘la olmaydi. Olima M.Jabborova Jamshid antroponimining genezisining kelib chiqishiga oid maqolasida bir qator manbalarni ko‘zdan kechiradi va shu asosda tahlil qiladi. Maqolaning muhim jihati shundaki, aynan Jamshid obrazining xususiyatlari ularning asarlar bag‘rida rivojlanib boruvchi semantik maydonini aniqlashtirishga harakat qilinganidadir. Dastlabki ma’lumotar “Avesto”, hind hamda eron mifologiyalarida, Abu Hanifa Diynavardiy, Abulqoshim Firdavsiyning “Shohnoma”, Abu Nasr as-Saolibiyning “Kitob al-g‘urar”, Tabariy qalamiga mansub “Tarixi Tabariy”, Beruningning “Qadimgi xalqlardan qolgan yodgorliklar” kabi qator manbalarda Jamshid , uning qaysi sulolaga mansub ekanligi, uning qanday ishlarni amalga oshirganligi, shaxsiyati haqida ma’lumotlar keltirilgan, ular bir-biridan qay darajada farqlanishidan qat’i nazar fan uchun muhim manba hisoblanadi. Mazkur manbalarda “Jomi Jam” haqidagi ma’lumot mavjud, aynan shunday birikma shaklida emas. Uning badiiy adabiyotda allyuziv birlik sifatida qachon ommalashgani haqida taxmin qilish mumkin, uning

adolatpesha, bunyodkor, xalqiga g‘amxo‘rlik qilgan shoh sifatidagi ma’lumotlar yuqorida nomi zikr etilgan manbalarda mavjud. Juda ko‘p ijobiy ishlarni amalga oshirganligi sababli o‘ziga bino qo‘yishi , oxir –oqibatda tanzzulga yuz tutgani, Zahhok tomonidan dahshatli qatli amalga oshirilgani haqidagi tasavvurlar asosida hosil qilingan allyuziyalar ham baddiy adabiyotda uchraydi. Umar Hayyom, Farididdin Attor, Hofiz Sheroziylarning ijodi orqali badiiy adabiyotga obraz sifatida mustahkam o‘rin olgan. Xo‘sh, “Jomi Jam”(Jamshid jomi) tushunchasi badiiy adabiyotda qayerdan kelib chiqqan? Bu haqida Farididdin Attorning “Ilohiynoma” va xalq orasida mashhur bo‘lgan “Qissayi Jamshid” asarlarida keltirilgan. Farididdin Attor keltirgan hikoyatda Jamshid shu nom orqali butun yer yuzini ko‘rib turadi-yu, ammo o‘z holidan bexabar qoladi. Baytga e’tibor qaratilsa, mazmunan oyna emas, balki qadam ma’nosi ifodalanayotganligini kuzatish mumkin. Uning bunday mazmun ifodalashi xalq orasidagi rivoyatlar asosida shakllangan bo‘lishi ehtimol.

Qachonkim zohir etsang, “tanzi’ ul-mulk”,

Skandarning bo‘lib mag‘lubi Doro(G‘aroyib us-Sig`ar. – B.26). Insonning hayotida turli xil voqea-hodisalar sodir bo‘lishi mumkin, hech birimizga sir emaski, ba’zi insonlar dunyoning o‘tkinchi mol-dunyosidan mag‘rurlanib kibr yo‘liga kirishadi, boshqalarga nisbatan bepisand munosabatda bo‘lishni boshlashadi. Bu holatning juda yomon salbiy oqibatlarga olib kelishi mumkinligini Iskandar va Doro haqidagi voqeaning allyuziya tarzida berilishi bilan kitobxonga ibratni yetkazishga harakat qilinadi.

Jamoling partavidin sha’m o‘ti gar gulsiton ermas,

Nedin parvona o‘t ichra o‘zin solur Xaliloso(G‘aroyib us-Sig`ar. – B.24). Ibrohim Xalilullohning mushriklar tomonidan palahmon yordamida olovning ichiga otilgani voqeasiga ishora qilinmoqda. Mazkur birlikda allyuziya bilan birga ntonomaziyaning ham mavjudligi kuzatiladi. Ibrohim olovning ichiga o‘zini otgan emas, uni majburlab tashlashadi, Nosuriddin Rabg‘uziyning “Qissasi Rabg‘uziy” asarida Alloh Javroilni yuborganligi va olovni “serin”, ya’ni “salqin” qilib berganligi haqida yozilgan. Baytda holatning badiiy ifodasi sifatida shu hodisaga ishora qilish orqali allyuziya, teskari badiiy tasvirning mavjudligi, ya’ni parvonaning o‘tda kuyishi, ammo Ibrohim Xalilullohning kuymay qolganligi antonomaziyaning yuzaga chiqishini ta’minlagan.

Ko‘zlaring birla labing andoqki urdi din yo‘lin,

Ne balolardin Bilol o‘tgay, ne sahbodin Suhayb(G‘aroyib us-Sig`ar. – B.62). Din tarixidan ma’lumki, sahobalardan Bilol birinchi bo‘lib Ka’ba ustiga chiqib azon aytgan sifatida ma’lum, u shu ishni amalga oshirganidan so‘ng mushriklar tomonidan juda ko‘p azob-uqubatlarga duchor bo‘ladi, uning o‘zi aslida qul bo‘ladi, Islomni qabul

qilganidan so‘ng Ka’bada azon o‘qigan. Manbalarda Suhayb ar-Rumiy nomi Iroqda tug‘ilganligi, rumliklarga asir tushgani, qullikka duchor bo‘lgani, Islomni qabul qilguncha ham, undan keyin ham mushriklardan aziyat chekkani, hijrat qilish uchun barcha mol-mulkidan kechganligi, Umar vafot etishidan oldin unga uch kun jamoat namozlarini o‘qish va xalifalikni boshqarishni vasiyat qilgan. Shuncha mashaqqatlar chekib ulug‘lik martabasiga erishganlar hayotiga ishora qilish oqali ibratomuz pand-nasihat qiladi.

Magarki Hofizi Sheroz senki, bir sog‘ar

Tutib Navoiyg‘a qilding karomat, ey hofiz(G‘aroyib us-Sig`ar. – B.235). Mazkur baytda Hofiz Sheroziy tarannum etiladi, xalq rivoyatlar va bishqa manbalarda Amir Temur Hofizni ko‘rushni istaganligi, u Samarqand-u Buxoroni bir yorning “qaro xoli”ga almashtirishi bilan bog‘liq baytiga ishora qilinadi. Baytda shohning ismi keltirilgan emas, intertekstual holat qatlamli allyuziyaning hosil bo‘lishiga xizmat qilgan. Dunyo hukmdorini lol qilgan bu shoir agar Navoiyga qadah tutadigan bo‘lsa, u, albatta, karomat qilganligi, ijodkorni ulug‘likka yetaklashi mumkinligidan o‘zida faxr tuyadi.

Sen Navoiyg‘a vafo aylamasang, bor o‘lsin

Shoh Abulg‘ozi ibin Boyqaro, ey qora ko‘z(G‘aroyib us-Sig`ar. – B.184). Adolat timsoli sifatida ta’riflanadigan, Islom va haqiqat, Haq rutbasini mahkam ushlagan kishilarga nisbatan shunday rutba birgalikda ishlatilgan. Mazkur baytdan shunday xulosa anglashiladiki, agar Navoiydan biron sitam yetgan taqdirda ham Abulg‘ozi adolati bor ekanligi, u , shubhasiz, har ishni me’yorlashtirishi, mezonlarning mo‘tadilligini ta’minlay olishiga ishora qiladi.

Navoiy ohi navosozi shoh Abulg‘ozi,

Sipehr martaba Sulton Husayn Boyqaro(Navodir ush-Sabob. – B.27). Navoiy Husayn Boyqaroni madh etar ekan, unda o‘zining orzu-istaklari, kelajakka nisbatan adolatpesha qarashlarini ko‘radi, shohning qanday inson bo‘lishi lozimligini turli yo‘llar bilan ta’riflaydi.

Yanaki nutq ila – yu ruh ila yeturdi anga,

Fuyuz orifi Jomiy-u rindi Sheroziy(Navodir ush-Sabob. – B.471). Hazrat Alisher Navoiy ijodkorlar rutbasini juda yuqoriga ko‘taradi, Jomiy va Sheroziylarning xislatlari, ularning hayot, ijodiy yuksakliklarini tarannum etadi, shu bilan she’riyatning ruhini ularning nutqi, misralari bilan yetkazganligiga ishora qiladi.

Antroponimlar o‘zida ma’lum hayotiy voqealar, ma’lumotlar, madaniy kodlarni tashiy olish jihati bilan pretsedentlik xususiyatiga ega bo‘ladi, til vositalari yordammida mana

shu pretsedentlikning ochilib borishi natijasida ham yakka shaxsning, ham ma’lum bir xalqning milliy-madaniy tomonlari haqidagi ma’lumotlar avloddan avlodga o‘tadi.
Hech bir voqea, tarixiy shaxs yoki boshqa tushunchalar o‘zidan o‘zi hammaga ma’lum , mashhur bo‘lib qolmaydi, ularning shu holatga keltiradigan vaziyat til vositalaridir. Xalq yoki ma’lum bir ijodkor badiiy asarlari bo‘ladimi, qaysi vosita yordamida bo‘lishidan qat’i nazar ular haqida ma’lumotlar beriladi. Mashhurlikka, hammaga ma’lum qilinishning ham o‘ziga xos asoslari mavjud, mumtoz adabiyotimizda didaktiklik xususiyati yuqori ekanligi hammamizga ma’lum. Bu borada maxsus asarlar yaratilgan yoki boshqa asarlar tarkibida ham shunga ishora qilinadign o‘rinlar salmog‘i keng. “Xamsa” tipida yozilgan dostonlarning barchasining dastlabki dostoni pand-nasihat , didaktik usulda yozilganligini juda yaxshi bilamiz, boshqa asarlarda esa , odatda, ijodkorning mavjud jamiyat va kelajak haqidagi orzu-istaklari, umidlari yotadi, shuni inobatga olgan holda ma’lum bir badiiy asardan ko‘zlangan badiiy maqsadni amalga oshirish uchun “ibratlilik” tushunchasidan juda keng miqyosda foydalanilgan. Matnlararo munosabatning allyuziyalarda muhimligi mana shunday vaziyatlar tutumida qo‘l keladi. Ijodkorlar tarixiy shaxslar bilan bog‘liq voqealar, ular orqali olib keriladigan ma’lumotlardan doimiy ravishda tayyor birlik sifatida foydalanavergan deyish bir qadar yanglish, sababi ular bunday jarayonda ma’lum bir shaxs doirasida yana qo‘shimcha semantik maydon, freymlar yaratishgan. Natijada ma’lum tushuncha doirasidagi muayyan konseptning yuzaga kelishiga erishilgan.
Allyuziyalarning ishoraviyli xususiyati tarkibiga diniy, axloqiy, madaniy, olam va odam haqidagi qarashlari, ramziy ifodalar jamlangan bo‘ladi. Shu asoslardan kelib chiqib ijodkorlar qanday mazmun-muddao ko‘zlanganligiga qarab ularning ayrim jihatlaridan alohida-alohida foydalanishga harakat qilishgan. Antroponimlarning o‘zi kengaygan bir tushunchani ifodalamasligi mumkin, ammo tarixiy davr, ma’lum bir sharoit, odamlarga bo‘lgan munosabati, tashqi va ichki olami nuqtayi nazarida etalon, stereotip. arxeotip, turli darajadagi etiketlarni o‘zida tashuvchi vosita hisoblanadi. Shaxs haqidagi bilimlarning davrlar osha boyib borishi ularning allyuziativ belgilarini ham oshib borishini ta’minlaydi. Bunday belgilarning oshib borishiga ma’lum davrlarda sodir bo‘lgan voqealar , ijodkorning badiiy quvvati, dunyoqarashi sabab bo‘ladi. Shaxs nomlarining tillararo va madaniyatlararo ko‘chib yurishi ularning intertekstual va ekstralingvistik hodisa ekanligini ko‘rsatadi.
Atroponimlar asosida shakllantirilgan allyuziyalarning badiiy asarlarda qo‘llanilishi quyidagi funksiyalarni bajarishga xizmat qiladi:

1)unutilgan, ammo insoniyat yashagan davr davomidagi ma’lum bir bilimlarni, tasavvurlarni qayta jonlantirishga, ularda zamonaviylik bo‘yog‘ini berishga yordam beradi;
2)informativlik xususiyatini namoyon etib, ma’lum bir davrdagi shaxs, xalq madaniy xususiyatlari haqidagi ma’lumotlarni yetkazadi;
3) badiiy asarning badiiy quvvati, etik-estetik ta’sirini oshirishga, emotsionalik, ekspressivlik, psixik ta’sirini oshirishga muhim vosita hisobanadi;
4) har qanday ijodkorning badiiy asarni yozishdan ko‘zlagan maqsadi bo‘ladi, bu maqsadni amlga oshirish uchun turli vazifalarni qo‘yadi, bunday vazifalarnining badiiy in’ikosi sifaida ma’lum bir bir vositalardan foydalanadi, antroponimlar orqali allyuziativ tarzda shaxs nomlarning berilishi muhim obyet sifatida xizmat qiladi;
5) shaxs nomlarining har bir asarda keltirilishida ijodkorlar mavjud voqealarni yoki jihatlarni ko‘r-ko‘rona bermasligi aniq, shuning uchun har bir so‘z ustasi yana boshqa bir semani qo‘shadi, natijada yangi yaratiladigan asarlar uchun mohiyatan kengaygan manbaning hosil qilinishiga asos bo‘ladi.
Har bir geografik hududning, millatning , xalqning, madaniy qatlamning o‘ziga xos ibratomuz tasvirlanadigan yoki asar badiiy ta’sirini oshirishda xizmat qiladigan obrazlari bo‘ladi. Beriladigan qahramonlarning qay darajada ma’lum yoxud mashhur ekanligini yuqorida ko‘rsatilgan omillardagi qaysi kriteriyiga mos kelishi bilan ham izohlash mumkin.
Lingvomadaniy birliklarni o‘rganilish doirasi kengayib borgani sayin bu sohaga doir ilmiy adabiyotlar soni ham oshib bormoqda, har bir lingvokulturologik terminning mohiyatini ochib berishga qaratilgan ta’rifar yuzga kelmoqda. Lingvomadaniy birliklar tadqiqi bilan shug‘ullanluvchi olimlar allyuziyalarni ma’lum bir til birliklari vositasida istalgan badiiy asar yo sotsial-tarixiy dalilga tayangan ishoraga asoslangan stilistik figuraligi, shu obyekt yoki subyektda bir necha madaniy-semiotik munosabat jihatidan o‘rganilishini; pretsedent nomlar, mashhur voqea, matn , vaziyatlarga taalluqli nomlar muayyan belgilar majmuasining ibratlilik, namuna bo‘la olishga qaratilganligini ta’kidlashadi.
Fanda mashhur shaxslar, joylar bilan bog‘liq hodisalar, misol sifatida nasihatomuz, ibratomuz yoki boshqa maqsadlarni ko‘zlab kiritilgan birliklar pretsedent nomlar termini asosida beriladi. Mazkur tushunchani fanga dastlab Y.N.Karaulov kiritgan. Ushbu termin dastlab yurisprudensiya sohasida ishlatilgan bo‘lib, adabiyotshunoslik, tilshunoslik sohalarida ham ishlatila boshlandi. Mazkur tushuncha doirasida o‘zbek tilshunosligida ham maxsus , fundamental ish amalga oshirilgan, unda shunday termin ostida birlashadigan birliklarning xususiyatlari atroflicha yoritib berilgan.

O‘zbek mumtoz adabiyotida shaxs nomlari bilan aloqador allyuziyalarning qo‘llanilish holatlari ko‘p ekanligini bilamiz. Antroponimlar badiiy asar tarkibida ishlatilganda, ular doim ham ishoraviy belgiga, allyuziyani hosil qilaveradi, degan xulosaga kelish to‘g‘ri emas, chunki allyuziyalarning hosil bo‘lishi intertekstual mohiyat kasb etad. Alisher Navoiyning quyidagi baytiga e’tibor qarataylik:

Xusrave ko‘rsangki, ash’orim o‘qub holat qilur,

Ey Navoiy, anglakim , shohi suxandonimdir ul(Alisher Navoiy , 6-jild, B-263).

Antroponimlarning qay holatda , nima maqsadlarda qo‘llanilishi mumkinligini bir qator misollar orqali dalillandi, ammo biron bir nomning keltirilishida nomning o‘zi katta ahamiyat kasb etmaydi, faqatgina shu nomga ega bo‘lgan kishining turli darajadagi xususiyatlari, belgilari, ularning hayotiy tutumlari, shaxsiy va jamiyat hayotidagi mavqeyining nimalar vositasida paydo bo‘lganligi inobatga olinadi. Hazrat Alisher Navoiy ham ushbu bayt orqali o‘z ijodining qanday maqomga erishishida Xusrav Devlaviyning qay darajada ahamiyatga ega bo‘lganligini e’tirof etadi. Bunday matnlarning tushunish uchun kitobxonda ma’lum bilim, saviya bo‘lishi talab etiladi. Ma’lum bir asarlarda ikki shaxsning bir nom bilan atalishi tarzdagi holatlarni barataraf etish , avvalo, ma’lum aniq informativ bilimga ega bo‘lish shart. To‘g‘ri, ijodkor mazkur antroponimni keltirish jarayonida uning shoirlik xususiyatiga diqqat qaratmoqda, lekin shu nom bilan ataluvchi boshqa asar qahramoni bilan adashtirmaslik uchun aniq bilimning bo‘lishi joiz.

Demak, allyuziyalarda ma’lum nomning keltirilishi bilan boshqa tekstlarga ishora qiladi, bu esa ularning perefrazaik, matndan matnga ko‘chuvchilik xususiyatini ta’minlab beradi.

Xulosa sifatida shuni keltirish mumkinki, allyuziyalar insonning lisoniy tasavvurida turli hodisalar, belgilar, tafakkurning shakllanishida va turli aloqaga kirishishi mumkin bo‘lgan har qanday tushunchaning mantiqiy aloqadorligini anglashga yordam beradi.

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УПРАВЛЕНИЕ ПРОЕКТАМИ В УСЛОВИЯХ ТРАНСФОРМАЦИИ ЭКОНОМИКИ

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Аннотация. *В статье рассматриваются особенности управления проектами в условиях трансформации экономики, обусловленной цифровизацией, структурными изменениями и переходом к более гибким моделям организационного управления. Показано, что традиционные каскадные методологии не всегда обеспечивают необходимую скорость и адаптивность в условиях высокой неопределённости, характерной для трансформационных процессов, чем объясняется рост популярности гибких (Agile) и гибридных подходов. На основе анализа актуальных международных данных систематизированы ключевые факторы успеха проектной деятельности — организационная зрелость, развитие управленческих компетенций (в том числе деловой проницательности и коммуникативных навыков) и интеграция инструментов искусственного интеллекта в проектные процессы. Сформулированы практические рекомендации по повышению эффективности управления проектами в условиях продолжающейся экономической трансформации.*
Ключевые слова: *управление проектами; трансформация экономики; цифровая трансформация; гибкие методологии; Agile; проектная зрелость; искусственный интеллект.*

PROJECT MANAGEMENT IN THE CONTEXT OF ECONOMIC TRANSFORMATION

Abstract. *The article examines the specifics of project management under conditions of economic transformation driven by digitalization, structural change, and a shift toward more flexible models of organizational governance. It is shown that traditional waterfall methodologies do not always provide the speed and adaptability required under the high uncertainty typical of transformation processes, which explains the growing popularity of Agile and hybrid approaches. Based on an analysis of current international data, the key success factors of project activity are systematized, including organizational maturity, the development of managerial competencies (notably business acumen and communication skills), and the integration of artificial intelligence tools into project processes. Practical recommendations are formulated for improving the effectiveness of project management under conditions of ongoing economic transformation.*
Keywords: *project management; economic transformation; digital transformation; agile methodologies; Agile; project maturity; artificial intelligence.*

Введение

Современный этап развития мировой и национальных экономик характеризуется одновременным протеканием нескольких трансформационных процессов — цифровой, технологической, структурной и обусловленной переходом к принципам устойчивого развития (ESG). По данным отраслевых обзоров, порядка 90% организаций в настоящее время находятся в той или иной фазе цифровой трансформации, а ESG-проекты названы приоритетным направлением работы технологических подразделений почти у половины (48%) опрошенных компаний на ближайшие два года. Поскольку трансформационные изменения по своей природе носят временный, ресурсно-ограниченный и уникальный

характер, их практическая реализация всё чаще осуществляется не через рутинные операционные процессы, а через инструментарий проектного и программного управления, что закономерно повышает практическую значимость исследования адекватности применяемых методологий управления проектами условиям трансформационной экономики.

Вместе с тем стратегическая значимость проектного управления сочетается с весьма умеренными показателями результативности проектной деятельности в целом. Согласно отчёту Project Management Institute «Pulse of the Profession 2025», полностью успешными в мире признаются лишь около половины проектов, а доля прямых неудач достигает 13%, что выше показателя предыдущего года. Ситуация выглядит ещё более тревожной применительно непосредственно к трансформационным инициативам: по данным McKinsey & Company, порядка 70% проектов цифровой трансформации не достигают поставленных целей, а для ИТ-проектов в целом доля полностью успешных результатов составляет лишь около 31% при 19% прямых неудач. Указанный разрыв между стратегической значимостью проектного управления как инструмента трансформации и его фактической результативностью составляет центральную проблему, рассматриваемую в настоящей статье.

Цель статьи — систематизировать теоретические подходы к методологии управления проектами в условиях экономической трансформации и на основе актуальных эмпирических данных выявить ключевые факторы проектной результативности. Для достижения цели в статье решаются следующие задачи: уточнить роль проектного управления как инструмента реализации трансформационных процессов; проанализировать эволюцию методологий управления проектами от каскадных к гибким и гибридным моделям; систематизировать факторы успеха проектной деятельности на основе данных международных отраслевых исследований 2024–2026 годов; сформулировать практические рекомендации для организаций, осуществляющих деятельность в условиях трансформационной экономики.

1. Управление проектами как инструмент реализации трансформационных процессов

В соответствии со стандартом PMBOK Guide, разрабатываемым Project Management Institute, проект определяется как временное предприятие, осуществляемое для создания уникального продукта, услуги или результата, а управление проектами — как применение знаний, навыков, инструментов и методов к проектной деятельности с целью достижения её требований. В отечественной литературе close по смыслу определение даётся в работе И.И. Мазура, В.Д. Шапиро и Н.Г. Ольдерогге «Управление проектами», где управление проектом трактуется как методология организации, планирования, руководства, координации трудовых, финансовых и материально-технических ресурсов на протяжении проектного цикла, направленная на эффективное достижение его целей. Сходные положения развиваются в работе А.С. Товба и Г.Л. Ципеса «Управление проектами: стандарты, методы, опыт», систематизирующей международный опыт применения проектных стандартов в корпоративной практике.

Принципиальная особенность трансформационных процессов — цифровизации, структурной перестройки бизнес-моделей, перехода к принципам устойчивого развития — состоит в том, что они, в отличие от рутинной операционной деятельности, обладают признаками, прямо соответствующими определению проекта: ограниченностью во времени, уникальностью результата и ресурсной ограниченностью. Именно поэтому крупные организации реализуют трансформационные изменения преимущественно через портфели и программы проектов, а не через текущие операционные процедуры, что переводит управление проектами из

категории сугубо тактического, исполнительского инструмента в категорию стратегического механизма организационных изменений. Данное смещение статуса проектного управления согласуется с современной трактовкой PMI, рассматривающей управление проектами как часть более широкой системы создания ценности (value delivery system) организации, а не как изолированную функцию исполнения отдельных задач.

2. Эволюция методологий управления проектами: от каскадных моделей к гибким и гибридным подходам

Классическая каскадная (waterfall) модель управления проектом предполагает последовательное прохождение строго определённых фаз — инициации, планирования, исполнения, контроля и завершения — и наилучшим образом подходит для условий со стабильными, заранее определёнными требованиями, что традиционно характерно для капитального строительства и инженерных проектов. Однако в условиях высокой неопределённости и быстрой смены технологических и рыночных условий, типичных для трансформационных процессов, последовательное директивное планирование оказывается недостаточно устойчивым: согласно агрегированным отраслевым данным, в сфере информационных технологий, где трансформационные проекты особенно многочисленны, доля полностью успешных проектов составляет лишь около 31%, тогда как 50% признаются «проблемными», а 19% — неудачными.

Ответом на ограничения каскадной модели стало формирование гибких (Agile) методологий, основные принципы которых были сформулированы в «Манифесте гибкой разработки программного обеспечения» (2001 г.) и предполагают итеративную разработку, тесное взаимодействие с заказчиком и приоритет адаптивности перед жёстким следованием изначальному плану. Эмпирические данные подтверждают практическую эффективность подобного подхода: по оценке McKinsey & Company, применение принципов Agile в среднем повышает скорость реализации проектов на 20–30%. Вместе с тем гибкие методологии в чистом виде не всегда применимы к масштабным трансформационным инициативам, включающим капиталоёмкие, регуляторно зависимые или инфраструктурные компоненты, что обусловило распространение гибридных подходов, сочетающих элементы предиктивного (каскадного) и адаптивного (гибкого) управления в рамках одного проекта или портфеля. Согласно отраслевым обзорам 2025–2026 годов, современные организации всё чаще осознанно сочетают предиктивные и гибкие методы в зависимости от характера конкретного компонента трансформационной программы — например, строительные компании используют цифровые панели мониторинга для отслеживания хода работ на объекте при сохранении традиционной фазовой структуры проекта в целом.

Таблица 1 — Сопоставление каскадного, гибкого и гибридного подходов к управлению проектами

Критерий	Каскадная модель	Гибкая модель (Agile)	Гибридная модель
Структура процесса	Последовательные фиксированные фазы	Короткие итерации (спринты) с регулярной обратной связью	Сочетание фазовой структуры с итеративными элементами

Критерий	Каскадная модель	Гибкая модель (Agile)	Гибридная модель
Адаптивность к изменениям	Низкая	Высокая	Средняя — высокая, в зависимости от компонента
Предсказуемость сроков и бюджета	Высокая при стабильных требованиях	Ограниченная на старте, повышается по ходу проекта	Умеренная, сочетает элементы обоих подходов
Типичная область применения	Капитальное строительство, инженерные проекты	Разработка ПО, цифровые продукты	Масштабные программы цифровой и структурной трансформации

Как показывает сопоставление, представленное в таблице 1, выбор методологии не является универсальным и должен определяться характером конкретного компонента трансформационной программы: гибридные модели на практике оказываются наиболее адекватным ответом на разнородность задач, типичную для масштабных трансформационных инициатив, объединяющих как высоконеопределённые цифровые компоненты, так и более предсказуемые инфраструктурные элементы.

3. Факторы успеха проектной деятельности в условиях трансформации

Анализ актуальных международных данных позволяет утверждать, что выбор методологии как таковой объясняет лишь часть наблюдаемой вариации результативности проектов. Так, по данным PMI, организации с высоким уровнем зрелости управления проектами — то есть систематически применяющие практики управления содержанием, бюджетом, сроками и измерением результативности, — достигают показателя успешности проектов на уровне 92%, тогда как организации с низким уровнем зрелости показывают результат лишь в 33% случаев. Разрыв в 59 процентных пунктов существенно превышает эффект, который можно было бы объяснить одним лишь выбором между каскадной, гибкой или гибридной методологией, что указывает на первостепенную значимость организационной зрелости как фактора успеха.

Вторым по значимости фактором выступает развитие управленческих компетенций проектных команд. Согласно отчёту PMI «Pulse of the Profession 2025», лишь 18% специалистов по управлению проектами демонстрируют высокий уровень деловой проницательности (business acumen), однако именно эта группа показывает на 27% более низкий уровень неудач проектов и на 5 процентных пунктов более высокий уровень достижения целей по сравнению с остальными. Наличие у команды чётко сформулированного видения успеха проекта повышает интегральный показатель восприятия успеха (Net Project Success Score) до +41 пункта против −18 пунктов при отсутствии такого видения. Значимым фактором также остаётся качество коммуникации: по оценке PMI, неэффективная коммуникация выступает основной причиной неудачи примерно в трети всех случаев провала проектов, а организации, системно развивающие коммуникативные и иные «мягкие» навыки персонала, демонстрируют более высокий уровень успеха проектов (72% против 65%) и

меньшую подверженность неконтролируемому расширению содержания проекта (28% против 40% случаев).

Третьим существенным фактором, специфичным именно для условий цифровой трансформации, выступает интеграция инструментов искусственного интеллекта в проектную деятельность. Рынок программного обеспечения для управления проектами, по оценке Mordor Intelligence, оценивается в 7,24 млрд долларов США в 2025 году с прогнозом роста до 12,02 млрд долларов США к 2030 году, при этом сегмент решений на основе искусственного интеллекта в управлении проектами растёт ещё быстрее — с 3,08 млрд долларов США в 2024 году до 3,58 млрд долларов США в 2025 году. Однако технологические возможности заметно опережают организационную готовность к их использованию: по данным PMI, лишь около 20% специалистов по управлению проектами обладают развитыми практическими навыками работы с инструментами искусственного интеллекта, что формирует дополнительный разрыв компетенций, аналогичный отмеченному выше разрыву в области деловой проницательности. Дополнительным структурным вызовом является прогнозируемый кадровый дефицит: по оценке PMI, к 2027 году глобальная потребность в специалистах по управлению проектами достигнет 87,7 млн человек при текущей базе порядка 40 млн специалистов, что предполагает возможный дефицит до 30 млн профессионалов к 2035 году.

Заключение

Проведённый анализ показывает, что в условиях трансформации экономики управление проектами закрепляется в качестве центрального стратегического инструмента организационных изменений, однако его фактическая результативность остаётся умеренной и существенно варьируется в зависимости от ряда факторов, не сводимых к простому выбору между каскадной и гибкой методологией. Результативность проектной деятельности в первую очередь определяется уровнем организационной зрелости управления проектами, развитием управленческих компетенций команд (деловой проницательности и коммуникативных навыков) и способностью организации интегрировать новые технологические инструменты, включая искусственный интеллект, в проектные процессы быстрее, чем формируется соответствующий разрыв компетенций.

На основании проведённого анализа организациям, реализующим трансформационные изменения, можно рекомендовать: переход к гибридным моделям управления проектами, сочетающим предиктивные и адаптивные элементы в зависимости от характера конкретного компонента трансформационной программы; систематическое развитие организационной зрелости управления проектами как фактора, обладающего наибольшим эмпирически подтверждённым эффектом на результативность; целевое обучение проектных команд навыкам деловой проницательности, коммуникации и работы с инструментами искусственного интеллекта; и заблаговременное планирование кадрового обеспечения проектной деятельности с учётом прогнозируемого глобального дефицита квалифицированных специалистов. Перспективным направлением дальнейших исследований представляется эмпирическая проверка сформулированных положений на материале конкретных секторов и стран с переходной (трансформационной) экономикой, включая государства Центральной Азии.

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УПРАВЛЕНИЕ СТРАТЕГИЧЕСКИМИ ИЗМЕНЕНИЯМИ В УСЛОВИЯХ ЦИФРОВОЙ ТРАНСФОРМАЦИИ

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Аннотация. В статье рассматриваются теоретические и практические аспекты управления стратегическими изменениями в организациях, осуществляющих цифровую трансформацию. Показано, что классические модели управления изменениями — модель К. Левина, модель Дж. Коттера и модель ADKAR, — разработанные для линейных и относительно предсказуемых условий, требуют существенной адаптации к специфике цифровой среды, характеризующейся высокой скоростью технологических изменений, итеративностью процессов и кросс-функциональным характером преобразований. На основе анализа существующих подходов предложена интегрированная модель управления стратегическими изменениями, объединяющая принципы agile-методологий, цифрового лидерства и развития организационной культуры непрерывного обучения. Сделан вывод о том, что успешность цифровой трансформации определяется не столько внедрением технологий, сколько способностью организации выстроить системный процесс управления изменениями на всех уровнях.

Ключевые слова: стратегические изменения, цифровая трансформация, управление изменениями, организационная культура, цифровое лидерство, сопротивление изменениям, agile-подход.

ВВЕДЕНИЕ

Современный этап развития мировой экономики характеризуется стремительным ростом влияния цифровых технологий на все сферы деятельности организаций — от производственных процессов до моделей взаимодействия с потребителями. Цифровая трансформация перестала быть инициативой отдельных IT-подразделений и приобрела статус общекорпоративной стратегической задачи, затрагивающей бизнес-модель, организационную структуру, корпоративную культуру и систему управления персоналом. В этих условиях резко возрастает значимость эффективного управления стратегическими изменениями, поскольку именно способность организации адаптироваться к новым технологическим и рыночным реалиям определяет её конкурентоспособность в долгосрочной перспективе.

Несмотря на значительный объём научных публикаций по теории управления изменениями, накопленный преимущественно во второй половине XX века, специфика цифровой трансформации как контекста изменений остаётся недостаточно исследованной. Многие классические модели создавались для условий относительно стабильной внешней среды и предполагали последовательную, поэтапную реализацию изменений. Однако цифровая трансформация отличается высокой степенью неопределённости, непрерывностью преобразований и необходимостью одновременного управления несколькими взаимосвязанными процессами, что требует переосмысления традиционных подходов.

Целью настоящей статьи является анализ особенностей управления стратегическими изменениями в условиях цифровой трансформации и разработка практических рекомендаций по адаптации классических моделей управления изменениями к специфике цифровой среды. Для достижения данной цели в статье решаются следующие задачи: систематизация теоретических основ управления стратегическими изменениями; выявление специфических характеристик цифровой трансформации как контекста изменений; определение ключевых барьеров, возникающих при реализации цифровых преобразований; разработка интегрированного подхода к управлению изменениями, адаптированного к условиям цифровой среды.

1. ТЕОРЕТИЧЕСКИЕ ОСНОВЫ УПРАВЛЕНИЯ СТРАТЕГИЧЕСКИМИ ИЗМЕНЕНИЯМИ

Под стратегическими изменениями в научной литературе принято понимать целенаправленные преобразования ключевых элементов организации — её стратегии, структуры, бизнес-процессов, корпоративной культуры и системы управления, — направленные на повышение долгосрочной конкурентоспособности и адаптацию к изменяющимся условиям внешней среды. В отличие от операционных изменений, затрагивающих отдельные процессы или подразделения, стратегические изменения носят комплексный характер и требуют пересмотра фундаментальных принципов функционирования организации.

Среди классических моделей управления изменениями наиболее широкое распространение получили трёхэтапная модель К. Левина, восьмиэтапная модель Дж. Коттера и модель ADKAR, разработанная компанией Prosci.

Модель К. Левина описывает процесс изменений через три последовательные стадии: «размораживание» (разрушение устоявшихся представлений и

подготовка к изменениям), «движение» (непосредственное внедрение новых практик) и «замораживание» (закрепление новых норм и стандартов). Несмотря на простоту, данная модель остаётся методологической основой для большинства последующих разработок.

Модель Дж. Коттера детализирует процесс изменений через восемь последовательных шагов: создание ощущения безотлагательности, формирование команды реформаторов, разработка видения и стратегии, информирование сотрудников о новом курсе, наделение их полномочиями, достижение быстрых результатов, закрепление достигнутых успехов и институционализация новых подходов в корпоративной культуре. Модель Коттера ориентирована на крупномасштабные организационные преобразования и предполагает значительную роль высшего руководства.

Модель ADKAR (Awareness, Desire, Knowledge, Ability, Reinforcement) фокусируется на индивидуальном уровне изменений, рассматривая успешность трансформации как результат последовательного прохождения каждым сотрудником пяти стадий: осознания необходимости изменений, формирования желания участвовать в них, получения необходимых знаний, развития способности применять новые навыки и закрепления достигнутых результатов.

Общей чертой перечисленных моделей является представление об изменениях как о дискретном, управляемом процессе с чётко определёнными начальной и конечной точками. Данное допущение, обоснованное для условий индустриальной экономики, требует существенного пересмотра применительно к условиям цифровой трансформации.

2. ОСОБЕННОСТИ ЦИФРОВОЙ ТРАНСФОРМАЦИИ КАК КОНТЕКСТА ИЗМЕНЕНИЙ

Цифровая трансформация представляет собой не просто внедрение отдельных информационных технологий, а фундаментальное переосмысление способов создания и доставки ценности потребителю посредством интеграции цифровых технологий во все аспекты деятельности организации. В отличие от цифровизации, ограничивающейся переводом существующих процессов в электронный формат, цифровая трансформация предполагает изменение самой бизнес-модели, организационной структуры и принципов принятия решений.

К числу специфических характеристик цифровой трансформации как контекста стратегических изменений можно отнести следующие.

Во-первых, непрерывность преобразований. Если классические модели управления изменениями предполагают дискретный переход организации из

одного устойчивого состояния в другое, то цифровая трансформация представляет собой перманентный процесс, не имеющий чётко определённой конечной точки, что обусловлено постоянным развитием технологий и изменением ожиданий потребителей.

Во-вторых, высокая скорость изменений и сжатые сроки реализации, что снижает эффективность жёстко регламентированных, последовательных моделей и требует перехода к итеративным, agile-ориентированным подходам управления.

В-третьих, кросс-функциональный характер преобразований. Цифровая трансформация одновременно затрагивает несколько направлений деятельности организации — маркетинг, производство, логистику, управление персоналом, — что требует координации изменений на уровне всей организации, а не отдельных подразделений.

В-четвёртых, технологическая неопределённость. Постоянное появление новых технологических решений — искусственного интеллекта, аналитики больших данных, облачных вычислений, интернета вещей — создаёт ситуацию, в которой организация вынуждена принимать стратегические решения в условиях ограниченной информации о долгосрочных эффектах внедряемых технологий.

В-пятых, изменение роли человеческого фактора. Цифровая трансформация требует не только освоения сотрудниками новых технических навыков, но и формирования новых моделей мышления, ориентированных на эксперименты, быструю обратную связь и готовность к постоянному обучению.

Перечисленные особенности обусловливают необходимость адаптации классических моделей управления изменениями к специфике цифровой среды, что и составляет предмет дальнейшего анализа.

3. ОСНОВНЫЕ ПРОБЛЕМЫ И БАРЬЕРЫ ПРИ РЕАЛИЗАЦИИ ЦИФРОВЫХ ПРЕОБРАЗОВАНИЙ

Анализ практики реализации проектов цифровой трансформации позволяет выделить ряд типичных барьеров, снижающих эффективность управления стратегическими изменениями.

Организационное сопротивление изменениям проявляется в нежелании сотрудников и отдельных уровней управления отказываться от привычных способов работы, особенно в случае, когда цифровые инициативы воспринимаются как угроза занятости или статусу.

Дефицит цифровых компетенций персонала и руководителей среднего звена ограничивает скорость и качество внедрения новых технологических решений,

поскольку формальное обучение часто не успевает за темпами технологического развития.

Фрагментация лидерства и отсутствие единого видения цифровой стратегии приводят к тому, что отдельные подразделения реализуют разрозненные цифровые инициативы без должной координации с общей стратегией организации.

Устаревшая IT-инфраструктура и накопленный технологический долг существенно ограничивают возможности интеграции новых цифровых решений с существующими корпоративными системами.

Несоответствие организационной культуры требованиям цифровой среды, в частности недостаточная толерантность к ошибкам и низкая готовность к экспериментированию, замедляет процессы инновационного поиска.

Давление краткосрочных финансовых показателей, вступающее в противоречие с долгосрочным характером инвестиций в цифровую трансформацию, приводит к преждевременному сворачиванию перспективных, но не дающих немедленной отдачи инициатив.

4. ИНТЕГРИРОВАННЫЙ ПОДХОД К УПРАВЛЕНИЮ СТРАТЕГИЧЕСКИМИ ИЗМЕНЕНИЯМИ В УСЛОВИЯХ ЦИФРОВОЙ ТРАНСФОРМАЦИИ

С учётом выявленных особенностей цифровой среды и типичных барьеров предлагается интегрированный подход к управлению стратегическими изменениями, объединяющий элементы классических моделей с принципами agile-методологий и цифрового лидерства. Основные компоненты предлагаемого подхода представлены в таблице 1.

Таблица 1. Компоненты интегрированной модели управления изменениями

Принцип	Содержание	Ожидаемый эффект
Agile-управление изменениями	Итеративная реализация изменений короткими циклами с регулярной переоценкой приоритетов	Снижение рисков, быстрая адаптация к новым условиям
Сеть агентов изменений	Формирование распределённой по уровням организации	Усиление вовлечённости персонала, снижение сопротивления

Принцип	Содержание	Ожидаемый эффект
	группы цифровых лидеров и change-агентов	
Непрерывная коммуникация	Регулярная двусторонняя обратная связь между руководством и сотрудниками на всех этапах трансформации	Повышение прозрачности и доверия к изменениям
Развитие цифровых компетенций	Системное обучение сотрудников новым технологиям и моделям работы	Повышение готовности персонала к изменениям
Культура экспериментирования	Формирование психологически безопасной среды, допускающей ошибки и быстрое обучение на них	Рост инновационной активности подразделений

Ключевой особенностью предлагаемого подхода является отказ от представления об изменениях как о конечном проекте в пользу рассмотрения управления изменениями как постоянной организационной способности. Это предполагает встраивание процедур управления изменениями в систему регулярного стратегического планирования, а не их обособленное применение в рамках отдельных трансформационных проектов.

Не менее значимым элементом подхода выступает развитие распределённого лидерства, при котором ответственность за инициирование и сопровождение изменений возлагается не только на топ-менеджмент, но и на сеть подготовленных агентов изменений на различных уровнях организационной иерархии. Подобная децентрализация позволяет повысить скорость реакции организации на возникающие технологические и рыночные изменения.

ЗАКЛЮЧЕНИЕ

Проведённый анализ показал, что классические модели управления изменениями, разработанные для условий относительно стабильной и предсказуемой внешней среды, нуждаются в существенной адаптации

применительно к специфике цифровой трансформации. Ключевыми особенностями цифровой среды, определяющими необходимость такой адаптации, выступают непрерывность преобразований, высокая скорость принятия решений, кросс-функциональный характер изменений, технологическая неопределённость и возрастающая роль человеческого фактора.

Предложенный интегрированный подход, объединяющий принципы agile-управления, распределённого цифрового лидерства, непрерывной коммуникации, развития цифровых компетенций и культуры экспериментирования, может служить методологической основой для построения системы управления стратегическими изменениями, адекватной требованиям цифровой экономики.

Практическая значимость представленных результатов заключается в возможности их использования организациями различных отраслей при разработке программ цифровой трансформации, а также в качестве основы для дальнейших эмпирических исследований эффективности отдельных компонентов предложенной модели на материале конкретных отраслей и организаций.

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CHARACTERISTICS AND ADVANTAGES OF MODERN EDUCATIONAL TECHNOLOGIES

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Annotation. This article explores the essential characteristics and advantages of modern educational technologies in the context of contemporary educational reforms. The study examines the pedagogical, technological, and methodological foundations of innovative teaching approaches aimed at improving the effectiveness and quality of education. Particular attention is given to learner-centered instruction, interactivity, flexibility, adaptability, digitalization, and competency-based learning. The article analyzes the role of information and communication technologies, multimedia resources, virtual learning environments, and interactive teaching methods in enhancing students' academic performance and professional development. The findings indicate that modern educational technologies significantly increase learning motivation, facilitate active participation, improve critical and creative thinking skills, and contribute to the formation of lifelong learning competencies. The study concludes that the integration of modern educational technologies is a crucial factor in ensuring sustainable educational development and improving educational outcomes.

Keywords: modern educational technologies, innovative learning, digital education, interactive teaching methods, learner-centered approach, information and communication technologies, educational effectiveness, competency-based education, educational innovation, lifelong learning.

Introduction. Modern educational technologies have become an integral part of the education system in today's globalized, digitized, and information-based society. They help increase the efficiency of the learning process, deepen the level of knowledge assimilation, and develop the student's ability to think independently, take a creative approach, and make the right decisions in problem situations. Modern educational technologies are understood not only as the use of technical means, but also as a set of methods, techniques, and tools aimed at designing the educational process on a scientific basis, systematically organizing the pedagogical process, ensuring interactive cooperation between the teacher and the student, optimizing the

content of education, and ensuring effectiveness. These technologies, by their very nature, differ from traditional education in that they view the student not as a passive listener, but as an active participant, a knowledge-creating subject.

Main part. One of the most important features of modern educational technologies is their individual orientation. While in the traditional education system, students are often taught using the same method, the modern approach requires taking into account the individual abilities, needs, interests, and level of knowledge of each student. This allows for the development of differentiated and individualized education. As a result, each student develops in accordance with his or her own abilities, which leads to an increase in the quality of general education. A personalized approach strengthens students' motivation to understand themselves, assess their abilities, and develop.

Another important feature is interactivity. In modern educational technologies, there is a two-way dialogue between the teacher and the student, where students not only listen, but also ask questions, discuss, express opinions and defend their point of view. Interactive methods, such as "brainstorming", "cluster", "debate", "role-playing" and "case studies", encourage students to think actively. Through these methods, students discover knowledge not in a ready-made form, but in an independent manner, which leads to a stronger assimilation of knowledge. Interactivity also serves to develop social skills, that is, students learn to work in a team, listen to the opinions of others and respect them.

Another characteristic of modern educational technologies is their focus on results. In this approach, the educational process is planned on the basis of clear goals and the expected results are determined at each stage. This allows both the teacher and the student to clearly direct their activities. Result-orientedness also facilitates monitoring and evaluating the quality of education. The assessment process covers not only the final result, but also the student's activity in the learning process, which creates a more fair and objective assessment system.

Integration with digital technologies is one of the integral features of modern education. The use of information and communication technologies makes the learning process more interesting and effective. For example, multimedia tools, interactive whiteboards, online platforms, virtual laboratories and distance learning systems allow students to acquire knowledge in a visual and practical way. Digital technologies allow students to learn anytime, anywhere, and support the principle of lifelong learning. In addition, digital tools allow teachers to monitor, analyze, and improve the learning process.

Adaptability and innovation are also important characteristics of modern educational technologies. These technologies are able to adapt to the demands of a rapidly changing society and incorporate new methods and approaches.

For example, innovative methods such as STEM education, project-based learning, problem-based learning, and competency-based approaches are aimed at developing students' practical skills. This prepares them to solve real-life problems. Modern educational technologies are constantly being updated, which ensures that the education system develops in line with the requirements of the times.

The advantages of modern educational technologies are very wide and multifaceted. First of all, they increase the efficiency of learning. Since students actively absorb knowledge, their level of memorization is high. Studies show that knowledge learned through interactive methods is retained for a much longer period of time than through traditional methods. This leads to an increase in the quality of education.

Another important advantage is the development of students' independent learning skills. Modern educational technologies educate the student not only as a learner, but also as a person who independently shapes his knowledge. This forms important competencies in students, such as self-development, research, and the desire for innovation. Independent learning skills help a person to update their knowledge throughout their life.

Modern educational technologies also contribute significantly to the development of creative thinking in students. Interactive methods, problem situations and project work encourage students to develop new ideas. This develops their ability to think innovatively. Creative thinking is important not only in the educational process, but also in future professional activities.

In addition, modern educational technologies increase student motivation. Interesting and interactive lessons increase students' interest in learning. Since students actively participate in the lesson process, they feel important and needed. This changes their attitude towards learning in a positive way.

Another advantage of modern educational technologies is the ability to individualize the learning process. Each student has the opportunity to learn at their own pace and in their own way. This prevents students from falling behind and ensures the full development of each of them. Individualized learning is especially effective when working with students at different levels. Modern educational technologies are also changing the role of the teacher. The teacher is no longer just a teacher of knowledge, but also a guide, consultant and organizer. This requires a high level of pedagogical

skills, creativity and adaptability from the teacher. As a result, the teacher's professional development is also ensured.

Modern educational technologies also help develop social and communicative skills. Through group work, discussion, and exchange of ideas, students acquire the skills to communicate, express their thoughts clearly, and understand others. This helps them to successfully function in society. In conclusion, modern educational technologies serve to fundamentally reform the education system, increase its efficiency, and ensure the all-round development of students. Their unique characteristics - personalization, interactivity, results-orientedness, integration with digital technologies, adaptability, and innovation - make the learning process more effective and modern. Its advantages include deep assimilation of knowledge, development of independent learning skills, formation of creative thinking, increased motivation, and provision of individualized education. For this reason, the introduction and improvement of modern educational technologies is considered one of the most urgent tasks of today's education system.

Conclusion. The conducted research confirms that modern educational technologies represent an essential component of contemporary educational systems and play a significant role in improving the quality and effectiveness of the teaching-learning process. Their distinguishing characteristics, including interactivity, adaptability, flexibility, accessibility, technological integration, and learner-centeredness, create favorable conditions for enhancing students' intellectual and practical competencies.

The study demonstrates that the implementation of modern educational technologies increases students' motivation and engagement, supports independent learning, and promotes the development of critical thinking, creativity, communication, and problem-solving skills. Furthermore, digital tools and innovative instructional methods enable educators to individualize the learning process and address diverse educational needs more effectively.

The advantages of modern educational technologies extend beyond academic achievement by fostering professional competencies and preparing learners for active participation in the information society. Therefore, the systematic integration of innovative educational technologies into teaching practice is a strategic necessity for ensuring educational quality, improving learning outcomes, and developing highly qualified specialists capable of meeting the challenges of the modern world. The successful application of these technologies contributes to the modernization of education and supports the sustainable development of educational institutions in the era of digital transformation.

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IQTISODIY XAVFSIZLIKNING EKONOMETRIK MODELLASHTIRISH

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Annotatsiya. Sanoat korxonalarining iqtisodiy xavfsizligi barqaror iqtisodiy rivojlanishning muhim jihati hisoblanadi. Biz maqolada korxonalarning iqtisodiy xavfsizligini ta'minlashda ekonometrik modellashtirishning ahamiyati va dolzarbligini ta'kidlaydigan ilmiy-nazariy va amaliy asoslar, gipotezalar, qonunlar va rivojlanish tendentsiyalarini, hamda sanoat korxonasining iqtisodiy xavfsizligini ekonometrik modelini ko'rib chiqiladi.
Калит сўзлар: *ekonometrik modellashtirish, iqtisodiy xavfsizlik, sanoat korxonalari, xavf-xatarni baholash, moliyaviy barqarorlik, qarorlarni qo'llab-quvvatlash, regressiya tahlili, zaiflikni baholash, iqtisodiy ko'rsatkichlar, xavfni yumshatish, ma'lumotlarga asoslangan xavfsizlik strategiyalari*

ЭКОНОМЕТРИЧЕСКОЕ МОДЕЛИРОВАНИЕ ЭКОНОМИЧЕСКОЙ БЕЗОПАСНОСТИ

Абстрактный. Экономическая безопасность промышленных предприятий является важным аспектом устойчивого экономического развития. В статье рассматриваются научно-теоретические и практические основы, гипотезы, закономерности и тенденции развития, подчеркивающие важность и актуальность эконометрического моделирования в обеспечении экономической безопасности предприятий, а также эконометрической модели экономической безопасности промышленного предприятия.
Ключевые слова: *эконометрическое моделирование, экономическая безопасность, промышленные предприятия, оценка рисков, финансовая устойчивость, поддержка принятия решений, регрессионный анализ, оценка уязвимости, экономические показатели, снижение рисков, стратегии безопасности, основанные на данных*

ECONOMETRIC MODELING OF ECONOMIC SECURITY

Abstract. The economic security of industrial enterprises is an important aspect of sustainable economic development. The article discusses the scientific, theoretical and practical foundations, hypotheses, patterns and development trends, emphasizing the importance and relevance of econometric modeling in ensuring the economic security

of enterprises, as well as an econometric model of the economic security of an industrial enterprise.
Keywords: *econometric modeling, economic security, industrial enterprises, risk assessment, financial stability, decision support, regression analysis, vulnerability assessment, economic indicators, risk mitigation, data-driven security strategies*

Zamonaviy ishbilarmonlik muhitining dinamik manzarasida sanoat korxonalari iqtisodiy xavfsizlikni ta'minlashi, uni har tomonlama tushunish va unga faol yondashuvni talab qiladi. Ishbilarmonlik muhitining dinamik o’zgaruvchanligi korxonalar faoliyati moslashuvchanlik qobilyatini shakllantirishda ko'plab muammolarga duch kelinmoqda. Jahon iqtisodiyotining o‘zaro bog‘liqligi tobora kuchayib borayotganligi sababli, sanoat korxonalarining turli ichki va tashqi omillar ta’sirida zaifligi, ularning barqarorligi va o‘sishiga jiddiy xavf tug‘dirmoqda. Ushbu murakkabliklarga javoban, ekonometrik modellashtirishni qo'llash sanoat ekotizimlarida iqtisodiy xavfsizlikni tahlil qilish va mustahkamlash uchun kuchli vosita sifatida paydo bo'ladi.

Ushbu maqola sanoat korxonalari kontekstida iqtisodiy xavfsizlikni baholash va bashorat qilishning ajralmas metodologiyasi sifatida ekonometrik modellashtirishning o’ziga xos tomonlarini o'rganadi. Ekonometrikaning iqtisodiy xavfsizlik bilan integratsiyasi nafaqat mustahkam tahliliy asosni ta'minlabgina qolmay, balki qaror qabul qiluvchilarni noaniqliklarni boshqarish, ongli strategik tanlovlar qilish va o'z tashkilotlarining moliyaviy farovonligini himoya qilish uchun qimmatli tavsiyalar bilan ko’maklashadi.

Maqolada, tadqiqot davomida biz iqtisodiy xavfsizlik bilan bog'liq bo'lgan ekonometrik modellashtirishning asosiy tarkibiy qismlarini, risklarni baholash, moliyaviy barqarorlik va makro va mikroiqtisodiy o'zgaruvchilarning sanoat korxonalariga ta'siri kabi omillarni ko'rib chiqamiz. Ushbu elementlar o'rtasidagi murakkab munosabatlarni ko'rib chiqish orqali korxonalarda iqtisodiy xavfsizlikni kuchaytirish, barqarorlikni oshirish va sanoat korxonalarining doimiy rivojlanayotgan landshaftida barqaror o'sishni rag'batlantirish uchun zarur bo'lgan faol choralarni chuqurroq tushunishga hissa qo'shishga qaratilgan tavsiyalar beriladi.

Korxonaning iqtisodiy xavfsizligi deganda umumiy moliyaviy barqarorlik, ichki va tashiqi muxit o’zgarishlariga chidamlilik va turli iqtisodiy qiyinchiliklar va noaniqliklarga dosh berish qobiliyati tushuniladi. U korxonaning vaqt o'tishi bilan iqtisodiy farovonligini saqlab qolish va yaxshilash qobiliyatini ta'minlaydigan shartlar va chora-tadbirlar majmuini o'z ichiga oladi. Iqtisodiy xavfsizlik dinamik va ko'pincha oldindan aytib bo'lmaydigan biznes muhitida korxonaning barqaror o'sishi, raqobatbardoshligi va hayotiyligi uchun juda muhimdir.

Sanoat korxonalarining iqtisodiy xavfsizligini baholash va ta'minlash uchun ishlab chiqilgan ekonometrik modelni tenglama ko’rinishida keltiramiz. Modelga kiritiladigan asosiy o'zgaruvchilar va ularni tavsiflovchilarni keltiramiz. Natijalar

modelning iqtisodiy xavfsizlikni yaxshilashga qaratilgan amaliy oqibatlariga urg'u berilgan holda tushunarli formatda taqdim etamiz.

1. Model spetsifikatsiyasi : Taklif etilayotgan ekonometrik model sanoat korxonalarining iqtisodiy xavfsizligini baholash va ta'minlash uchun asosiy iqtisodiy ko'rsatkichlarni birlashtiradi. Model turli sanoat kontekstlariga moslashish uchun mo'ljallangan va qaror qabul qilish uchun keng qamrovli asosni taqdim etadi.

2. O'zgaruvchilar:

A. Moliyaviy barqarorlik (FS): Likvidlik koeffitsientlari, qarz darajasi va rentabellik ko'rsatkichlaridan foydalangan holda korxonaning moliyaviy holatini baholash.

B. Bozor raqobatbardoshligi (MC): Bozor ulushi, narx strategiyasi va mahsulotni farqlash orqali kompaniyaning bozordagi mavqeini baholash.

V. Tashqi zarbalarga chidamlilik (RES): Biznesning bozor tebranishlari yoki geosiyosiy hodisalar kabi tashqi iqtisodiy qiyinchiliklarga dosh berish qobiliyatini o‘lchaydi.

3. Tenglama :

$$“Iqtisodiy\ xavfsizlik” = \beta_0 + \beta_1 *FS + \beta_2 *MC + \beta_3 *RES + \epsilon$$

Bu yerda:

- “*Iqtisodiy xavfsizlik*” - korxonaning umumiy iqtisodiy xavfsizligi.
- $\beta_0, \beta_1 FS, \beta_2 MC, \beta_3 *RES$- moliyaviy barqarorlik, bozor raqobatbardoshligi va tashqi zarbalarga chidamlilik og'irliklarini ifodalovchi koeffitsientlar.
- ϵ- kuzatilmaydigan omillarni hisobga olgan holdada xato.

Xulosa qilib sanoat korxonalarining iqtisodiy xavfsizligini ekonometrik modellashtirish iqtisodiy barqarorlik asoslarini tushunish va mustahkamlashda hal qiluvchi rol o'ynaydi. Ushbu modellar turli xil iqtisodiy o'zgaruvchilar o'rtasidagi munosabatlarni miqdoriy baholash orqali nozik tahlilni osonlashtiradi va murakkab dinamikani aniqroq va dalillarga asoslanib tushunishga imkon beradi. Ushbu yondashuvga xos bo'lgan ijobiylik, uning qaror qabul qiluvchilar, siyosatchilar va menejerlarga ongli tanlov qilish, iqtisodiy landshaftda ishonch bilan harakat qilish uchun zarur bo'lgan vositalar bilan ta'minlaydi.

Ekonometrik modellardan foydalanish orqali manfaatdor tomonlar potentsial xavflarni aniqlashlari, qiyinchiliklarni oldindan bilishlari va sanoat korxonalarining iqtisodiy xavfsizligini oshirish strategiyalarini ishlab chiqishlari mumkin.

Biroq, ma'lumotlar yetishmasligi va model taxminlari kabi ekonometrik modellashtirish bilan bog'liq o'ziga xos muammolarni tan olish kerak. Ijobiy istiqbolni saqlab qolishda bu muammolarni yengib bo'lmaydigan to'siqlar sifatida emas, balki doimiy takomillashtirish imkoniyatlari sifatida tan olishni lozim. Ekonometrik modellashtirishning ijobiy tomoni uning moslashuvchanligi va yangi ma'lumotlar va metodologiyalarni birlashtirish orqali takomillashtirish potentsiali mavjudligidadir.

Bu sanoat korxonalarining iqtisodiy farovonligini himoya qilish bo'yicha olib borilayotgan sa'y-harakatlarga ijobiy nuqtai nazarni qo'llab-quvvatlagan holda, ongli

qarorlar qabul qilish, xavflarni kamaytirish va doimiy takomillashtirish uchun optimistik salohiyatga urg'u beradi.

Aytish mumkinki, ekonometrik model sanoat korxonalarining iqtisodiy xavfsizligini baholash va ta’minlash uchun qimmatli vositadir, lekin uni muvaffaqiyatli qo‘llash uning kuchli, zaif tomonlari, imkoniyatlari va tahdidlarini sinchiklab ko‘rib chiqishni talab qiladi.

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LOGICAL REASONING ACCORDING TO WORLD SCIENTISTS

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Abstract: This article presents the views and perspectives of prominent educators and scholars from around the world on the development of logical thinking. It examines various educational theories and approaches that emphasize the importance of logical reasoning as a fundamental component of intellectual and academic growth. The article highlights the contributions of internationally recognized pedagogues who have explored the processes through which learners develop the ability to analyze information, identify relationships, draw conclusions, and solve problems systematically.

Key words: logical reasoning, world scientists, analyzing information, drawing conclusions.

The content of the teacher's activity in the educational process includes: diagnosing the level of logical culture of students, encouraging students to develop logical thinking, developing a system of logical tasks used by the teacher in the process of teaching English, compiling lesson material taking into account optimal logical coherence, developing the logical culture of students.

In the educational process, the teacher can use the following forms: collective implementation of logical tasks in a foreign language, group and pair work to perform logical-cognitive tasks based on various language situations, and individual logical tasks.

The most common teaching model today is project-based learning. This model is used in a variety of classrooms. In project-based learning, teachers develop students' logical and critical thinking skills. Project-based learning also encourages students to think creatively. This model is being used effectively in the United Kingdom, the United States, and Canada. While working on a specific project, students analyze information, search for different solutions to a problem, and find the most suitable solution, ultimately developing logical and critical thinking skills. In the process of solving the problem, students look for creative ways.

Several studies have been conducted to prove the effectiveness of project-based learning (PBL) pedagogy, and it has been confirmed that the project-based learning

(PBL) approach can provide students with effective strategies for increasing their autonomous critical thinking skills[1].

Project-based language learning (PBL) is an innovative pedagogical approach. PBL, unlike traditional teaching methods, prioritizes experiential learning and seeks to enhance students' comprehensive language proficiency through project-based activities. Based on the principles of project-based learning (PBL) and the learning environment in China, empirical research demonstrates the effectiveness of PBL in developing student autonomy among English majors.

Students who participated in project-based learning (PBL) sessions performed better than their peers who did not engage in project-based learning. Project-based learning is an interesting and rewarding approach to learning and teaching, which increases motivation, and therefore warrants its widespread use in language learning and teaching. However, educational institutions, teachers, and students must invest considerable time and effort to integrate this method as an essential element of their teaching and learning practices[2].

The importance of incorporating project-based learning in teaching English as a second language has been reflected in many studies[3].

A case study methodology was examined using different methods for two thinking skills programs in England and Wales for a maximally variable sample of five to six year olds. According to school staff interviewed, thinking skills programs improved critical thinking skills as well as language use, attentive listening, social cooperation, confidence and independence. Observations showed that students have different approaches to group projects, student discussions, and open questions and problems. There are certain signs of growth and change in students' verbal thinking. A national strategy led by critical thinking skills, excellent professional development, a whole-school approach and mentoring with methodical observation and feedback, and mentoring with methodical observation and feedback were among the conditions that supported change and sustainability[4].

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The learning process of developing problem-solving skills through computer games uses word tables, interactive computer games, and puzzles to increase cognitive flexibility[5].

Explores digital game-based learning (DGBL), which uses the immersive features of games to enhance digital learning experiences. A virtual reality educational game for students uses puzzle boxes and uses interconnected puzzles to enhance cognitive capabilities, explores the design of digital game-based learning (DGBL), evaluates the impact of puzzle boxes on the learning experience, and explores the interactive design elements of puzzles and puzzle boxes[6].

To encourage critical thinking in elementary school students, methods such as brainstorming, prediction (using a name, picture, or movie excerpt), creating prediction charts, reading, initial assessment of personal knowledge on the topic, and forming introspection charts are also used to develop students' logical thinking[7].

Nowadays, due to the development of artificial intelligence, the relationship between logical and critical thinking and artificial intelligence is widely studied in methodology, and attention is also paid to the development of logical and critical thinking of students through artificial intelligence.

It was emphasized that more attention should be paid to the development of human intelligence, especially in early childhood, using artificial intelligence. It was suggested that artificial intelligence should be used correctly so that it does not harm human intelligence. Scientists have proven the impact of content tools created by artificial intelligence on students' critical thinking skills and the need for children to have developed logical and critical thinking in perceiving these tools[8][9].

A study was conducted to examine the factors influencing the intention to use ChatGPT in teaching English from traditional classrooms in Malaysia. A survey of teachers indicated that ChatGPT is a software-based AI model that enhances English language acquisition, influences content creation among teachers, and provides a personalized learning methodology.

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The study identified several elements that influence teaching techniques in Malaysian schools. The limited capabilities of ChatGPT, teachers' struggle to strike a balance between integrating technology and maintaining the legitimacy and authenticity of their pedagogical methods, and the lack of critical thinking skills among students pose challenges for teachers in developing autonomous thinking and analytical thinking in the classroom.

The study highlighted the importance of improving critical thinking skills and integrating personalized learning approaches to create an effective learning environment in Malaysian schools[10].

Currently, modern society places high demands on the level of development of the intellectual abilities of the younger generation. The ability to fully perceive, process, analyze and apply the received information is considered the most important factor for a person's successful adaptation in the modern world.

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CO_2 ADSORBSIYASI UCHUN LABORATORIYA SHAROITIDA SOL-GEL USULI ASOSIDA SILIKOGEL SINTEZI

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Annotatsiya
Ushbu ishda tabiiy kvars qumi asosida sol-gel usuli yordamida silikogel sintez qilish texnologiyasi o‘rganildi. Silikogel olish jarayoni xom ashyoni tayyorlash, natriy silikat (suyuq shisha) hosil qilish, gel hosil qilish hamda yuvish va quritish bosqichlarini o‘z ichiga oladi. Jarayonda tabiiy kvars qumi tarkibidagi aralashmalar sulfat kislota bilan ishlov berish orqali bartaraf etildi, natriy silikat eritmasi sulfat kislota yordamida gellantirildi va hosil bo‘lgan gel yuvilib, quritish orqali g‘ovak tuzilishga ega silikogel olindi. Sintez jarayonida eritma muhiti pH 3–5 oralig‘ida ushlab turilishi hamda gellanish va quritish sharoitlari silikogelning g‘ovak tuzilishi va adsorbsion xossalariga sezilarli ta’sir ko‘rsatishi aniqlandi. Taklif etilgan usul arzon va keng tarqalgan tabiiy xom ashyo asosida yuqori g‘ovaklikka ega silikogel olish imkonini beradi. Olingan silikogel adsorbent, qurituvchi material hamda CO_2 gazini yutuvchi aminli sorbentlarni modifikatsiyalash uchun tayanch material sifatida istiqbolli hisoblanadi.

Kalit so‘zlar: silikogel, sol-gel usuli, kvars qumi, natriy silikat, suyuq shisha, adsorbent, g‘ovak tuzilish, CO_2 adsorbsiyasi, sorbent, sintez.

*Silikogel sintezi:*Bugungi kunda silikogel olishjarayonida Ushbu metodika ya’ni tabiiy qum asosida *sol*-gel usuli bilan silikagel sintez qilish jarayonini tavsiflaydi. Jarayon to‘rtta asosiy bosqichdan iborat va har bir bosqich silikagelning tarkibi va adsorbsion xossalariga bevosita ta’sir ko‘rsatadi.

Birinchi bosqich tayyorlov bosqichi bo’lib, kvars qum avval boyitiladi. Bunda qum tarkibidagi organik va mineral aralashmalar yuvish hamda sulfat kislota bilan ishlov berish orqali chiqarib tashlanadi. Oqartirilgan va maydalangan qumning zarracha o‘lchamining kichraytirilishi ya’ni maydalanishi keyingi bisqichdagi kimyoviy reaksiyalar tezligini oshiradi hamda kremniy dioksidning aktivligini yaxshilaydi.

Suyuq shisha olinadigan keyingi bosqichda tozalangan qum natriy karbonat bilan yuqori haroratda qizdirilib, natriy silikat olinadi. Bunda harorat 1060 °C atrofida

bo’lishi bo’lishi kerak. Chunki bu haroratda SiO_2 va Na_2CO_3 o‘rtasidagi reaksiya yuqori samarali kechishini ta’minlaydi. Ushbu haroratda natriy karbonat qisman parchalanib, aktivligi yuqori bo’lgan natriy oksid (Na_2O) hosil qiladi va natijada natriy silikatning hosil bo‘lish jarayoni tezlashadi. Bu kabi yondashuv kvartsni to‘liq eritish uchun talab qilinadigan juda yuqori haroratlarni qo‘llash zaruratini bartaraf etib, energiya sarfini kamaytiradi.

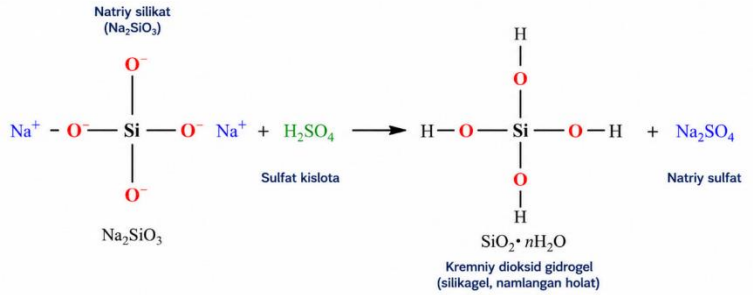
Reaksiya quyidagicha ifodalanadi:

$$SiO_2 + Na_2CO_3 \rightarrow Na_2SiO_3 + CO_2\uparrow$$

Biz silikagel sintezi uchun sotuvda qurulish materiali sifatida ishlatiladigan natriy ortosilikat (suyuq shisha) eritmasidan foydalanildi. Reaksiya jarayoni adabiyotlar tahlili natijasida aniqlangan usullar asosida olib borildi. Olingan suyuq shisha 1:4 massa nisbatda distillangan suv bilan suyultirilib 100 g 10-20 % oralig’ida bo’lgan eritma tayyorlanadi va yaxshilab aralashtiriladi. Boshqa stakan idishga sulfat kislotaning 100 ml 15% li eritmasi tayyorlab olindi. Natriy ortosilikat eritmasi bir maromda aralashtirib turildi va unga gel hosil bo’lguncha sulfat kislota eritmasi tomchilab qo’shildi. Eritma muhiti (Ph 3-5) kuchsiz kislotali holatiga kelganda kislotani tomchilatish to’xtatildi. Aralashma 12 soat davomida to’liq gel hosil bo’lguncha tindirildi va hosil bo’lgan natriy sulfat tuzini chiqarib yuborish uchun distillangan suv bilan 3 marotaba qayta yuvildi. Eritma filtirlanib, so’ng dastlab 2 soat davomida gel tarkibidagi suvni chiqarib yuborish uchun 180-200 ^oC da qizdirildi. Vaqt tugagandan so’ng qizib turgan gel birdan sovutildi. Bunda gel o’zining amorf holatini saqlab qoladi. Natijada hosil bo’lgan gel shaffof va mo’rt bo’lib, bu laboratoriya sharoitida olingan silikogel moddasidir. Olingan moddaning g‘ovaklik darajasi eritmani neytrallash jarayonini tugallanadigan nuqtasining pH darajasiga va eritmani gellanish haroratiga bevosita bog‘liq bo‘ladi.

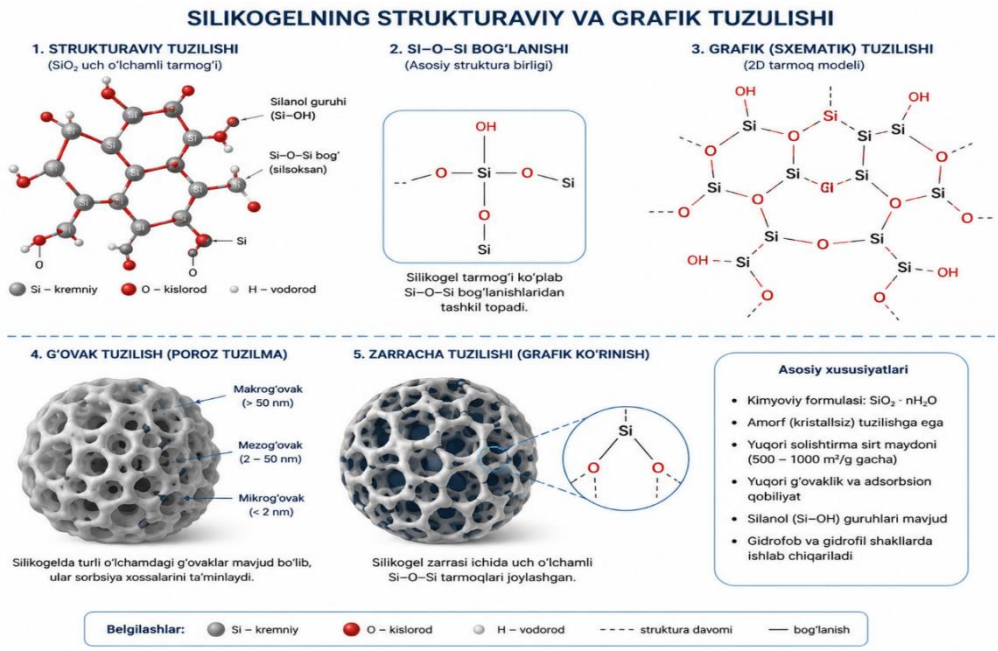
Silikagel hosil bo‘lish reaksiyasi quyidagicha yoziladi:

Na_2SiO_3 ning sulfat kislota bilan reaksiyasi



Oxirgi bosqichda hasil bo‘lgan gel bir necha marta yuviladi va tarkibidagi xlorid ionlari chiqarib yuboriladi. Yaxshilab yuvilgan gel filtrlab olinadi va quritiladi. Quritilgan

silikogel g‘ovak tuzilishga ega bo’lib, uni trli sohalarda xom ashyo va maxsulot sifatida ishlatiladi.



Bu usulning afzalligi shundaki, deyarli barcha davlatlar hududlarida mavjud bo’lgan arzon va keng tarqalgan tabiiy kvars qumdan yuqori g‘ovaklikka ega bo’lgan silikagel olish imkonini beradi. Natijada olingan silikagel adsorbent, qurituvchi material yoki CO_2 ni yutuvchi sorbentlarni modifikatsiyalash uchun asos sifatida ishlatish mumkin. Dissertatsiya mavzusi nuqtai nazaridan ushbu metod silikagel asosidagi CO_2-selektiv sorbentlarni yaratish uchun istiqbolli yo‘nalish hisoblanadi.

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METHODOLOGY FOR PREPARING STUDENTS FOR THE FLIPPED CLASSROOM

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Abstract. This article illuminates the theoretical and practical foundations of the methodology for preparing students in the higher pedagogical education system to use the Flipped Learning model. The digital transformation of modern education, the widespread implementation of a competency-based approach, and the need for individualized learning make it a pressing issue to prepare teaching staff for the effective use of innovative teaching technologies. In this study, preparing students for Flipped Learning is interpreted as a continuous didactic process, and its methodological content is revealed through the mutual integration of pedagogical design, digital educational resources, active teaching methods, and reflective assessment. The author scientifically substantiates the main stages of the methodology, its didactic principles, and the pedagogical conditions that foster the development of methodological preparedness. The research results serve to develop the methodological, pedagogical, and digital competencies of future teachers, to activate their independent learning activities, and to expand the possibilities for the effective application of the Flipped Learning model in primary education practice.

Keywords: Flipped Learning, methodological preparedness, future teacher, methodology, pedagogical design, digital education, pedagogical technologies, competency, reflection.

INTRODUCTION. The profound changes occurring in the global education system today are setting entirely new tasks for higher educational institutions. The rapid development of digital technologies, the integration of artificial intelligence elements into the educational process, the expansion of open educational resources, and the need for individualized learning necessitate a revision of teaching methods. The primary focus of the educational process is now shifting from delivering knowledge in a ready-made form to fostering a student's ability to acquire knowledge independently, think critically, solve problems, and apply their knowledge in practical activities. For this reason, modern pedagogical technologies, particularly the Flipped

Learning model, are becoming one of the priority areas in higher pedagogical education.

The Flipped Learning model is an innovative pedagogical approach that fundamentally transforms the traditional lesson structure. In this model, theoretical knowledge is acquired outside the classroom through video lessons, electronic learning materials, and other digital resources. In-class sessions are then directed towards applying the acquired knowledge in practice, analyzing problem-based situations, creating projects, working collaboratively, and organizing reflective activities. As a result, during the lesson, the student transforms from a passive listener into an active participant, while the teacher's role shifts from a purveyor of knowledge to that of a facilitator who organizes and guides the learning process.

The significance of this model for the teacher education system is even greater. This is because a future teacher must not only know the theoretical foundations of this technology but also be able to apply it effectively in their future pedagogical practice. To achieve this, it is necessary to develop a holistic system within higher education institutions for the methodological preparation of students to use the Flipped Learning model. Otherwise, even if students know how to use digital tools, they may face difficulties in selecting them for appropriate didactic purposes, designing educational content, integrating in-class and out-of-class activities, and evaluating learning outcomes.

From this perspective, preparing students for Flipped Learning involves not only teaching the use of information and communication technologies but also the comprehensive development of their competencies in creating pedagogical designs, modeling educational content, selecting active learning methods, organizing reflective activities, and managing the educational process. Therefore, the content of methodological preparation must be based on the organic integration of theoretical knowledge, practical skills, and professional reflection.

State of the Art. The Flipped Learning model is one of the innovative educational technologies that has been widely researched in foreign pedagogical science in recent decades. The conceptual foundations of this model were developed by J. Bergmann and A. Sams, and its didactic potential was further expanded in the scientific research of R. Talbert, C. Brame, E. Mazur, C. Bonk, H. Threlkeld, and other scholars. In these studies, the Flipped Learning model is recognized as a pedagogical approach that supports students' independent learning and directs classroom time toward organizing high-level cognitive activities.

The theoretical and methodological foundations of Blended Learning and Flipped Learning technologies R. Garrison, R. Graham, A. Alammary, N. Friesen, S. Jong, H. Morgan, D. Berrett, B. T

A METHODOLOGY FOR PREPARING STUDENTS FOR THE FLIPPED CLASSROOM. Preparing student teachers to use the flipped classroom model is a key direction in modern pedagogical education and is directly linked to the development of future teachers' professional competence. This preparation cannot be limited to merely teaching the use of digital platforms or forming skills for creating video lessons. On the contrary, this process should be viewed as a continuous didactic system that entails the comprehensive development of a teacher's methodological thinking, their ability to create pedagogical designs, their competence in managing the educational process, and their reflective practice.

Research has shown that the effectiveness of the flipped classroom model is primarily determined by the future teacher's ability to design the lesson correctly. If theoretical material is studied outside the classroom, but classroom sessions continue in the form of a traditional lecture, the didactic potential of this model will not be fully realized. Therefore, methodological preparation must be aimed at organizing all stages of the educational process as a single pedagogical cycle.

The proposed methodology is based on an iterative approach to pedagogical design. In this approach, the results of each session are analyzed to improve subsequent ones, and the learning process is continually updated. This ensures the methodology develops as a dynamic, rather than a static, system. The iterative nature of pedagogical design allows the teacher to regularly refine the educational content based on students' needs, their level of preparation, and their pace of learning.

In this methodology, preparation is carried out in five interconnected stages. First, during the diagnostic stage, students' digital literacy, methodological knowledge, independent learning skills, and attitudes towards innovative pedagogical technologies are assessed. The results of this diagnosis serve to define an individual developmental trajectory. Diagnosis is seen not just as a tool for determining the initial state, but as a scientific foundation for planning subsequent methodological activities.

The next stage is the methodological orientation stage. At this stage, students study the theoretical foundations of the Flipped Learning concept, its application in international practice, its didactic potential, and its pedagogical advantages. In particular, a deep understanding of the F-L-I-P principles is a crucial condition for methodological preparation. A flexible learning environment, a culture of learning, intentional content, and a professional educator form the methodological basis of this

model. Students not only master these principles theoretically but also acquire methods for applying them in real pedagogical situations.

The central part of the methodology is dedicated to the creation of the pedagogical design. At this stage, students learn to define the lesson's objective, determine learning outcomes, select electronic learning resources, create video lessons, develop independent learning tasks, and design classroom sessions based on active methods. Bloom's taxonomy's cognitive levels are used as a methodological criterion. While the mastery of theoretical material is directed towards the "remembering" and "understanding" stages, classroom sessions serve to develop the "applying," "analyzing," "evaluating," and "creating" stages. Thus, the educational process is focused not on memorizing knowledge, but on applying it in practical activities.

The use of digital educational resources is of particular importance in the pedagogical design process. However, the strength of the methodology is determined not by the number of platforms used, but by their didactic appropriateness. Educational effectiveness increases only when video lessons, electronic presentations, interactive tests, virtual whiteboards, and LMS platforms are used in an integrated manner as components of a unified methodological system. Therefore, fostering students' ability to analyze the pedagogical function of each digital tool and to use it purposefully is considered a priority of the methodology.

The practical stage of the methodology is organized based on micro-teaching technology. During the micro-teaching process, students test the flipped classroom lesson plans they have developed in small groups. The process is video-recorded and subsequently subjected to pedagogical analysis. This approach allows future teachers to identify their methodological mistakes, evaluate their strengths, and develop the competence to make pedagogical decisions. In particular, peer expert review and the process of mutual assessment contribute to the formation of reflective thinking.

One of the important aspects of the proposed methodology is the seamless integration of out-of-class and in-class activities.

RESEARCH RESULTS AND DISCUSSION. The methodology developed during the research was piloted in higher pedagogical education institutions. To evaluate the methodology's effectiveness, the motivational, cognitive, activity-oriented, and reflective components of students' methodological preparedness were comprehensively analyzed. The evaluation process utilized diagnostic observation, pedagogical monitoring, expert review of electronic portfolios, analysis of micro-teaching results, and peer assessment methods.

The experimental results indicated that in the groups where the methodology was applied, students demonstrated significant development in skills such as understanding the essence of the flipped classroom technology, designing lessons based on pedagogical design, and selecting and purposefully using digital educational resources. In particular, positive changes were observed in competencies related to organizing independent study, planning classroom sessions based on active methods, and making methodological decisions for managing students' cognitive activities.

Whereas before the methodology's introduction, students primarily perceived the flipped classroom as a technology associated with using video lessons, by the end of the experiment, they began to understand this model as a holistic didactic system incorporating pedagogical design, reorganization of educational content, active teaching methods, and reflective assessment. This indicates that their methodological preparedness developed not only on a technological level but also on the level of pedagogical thinking.

During the discussion, it was determined that the methodology's effectiveness is defined by several factors. First, the integral link between extracurricular and in-class activities ensures the cohesiveness of the educational content. Second, the iterative approach to pedagogical design allows for the continuous improvement of lessons. Third, micro-teaching and reflective analysis serve to promptly identify and eliminate students' methodological errors. Fourth, formative assessment and regular feedback strengthen students' motivation for self-development.

The results obtained were observed to be consistent with the scientific conclusions presented by foreign researchers. Specifically, the idea of effective redistribution of learning time put forward by J. Bergmann and A. Sams, the active learning strategies recommended by R. Talbert, and the perspectives on blended learning by R. Graham and N. Friesen were in harmony with the research findings. At the same time, this study distinguished itself from existing scientific works by developing a continuous cyclical model for methodological preparation and proposing a mechanism for the iterative improvement of pedagogical design.

The practical significance of the proposed methodology is that it can be effectively used in teaching subjects such as "Pedagogical Mastery," "Pedagogy of Primary Education," "Educational Technologies," and "Specific Teaching Methods," as well as in organizing teaching practice and improving the content of professional development courses. This methodology is recommended as a universal methodological system for developing the professional competence of teaching staff in the context of digital transformation.

CONCLUSION. Based on the research conducted, the following conclusions were drawn.

First, preparing students for the flipped classroom is a priority direction in modern pedagogical education, which necessitates the comprehensive development of future teachers' methodological, pedagogical, and digital competencies.

Second, organizing methodological preparation based on a continuous didactic cycle—comprising the stages of diagnostics, methodological orientation, pedagogical design, micro-teaching, and reflective improvement—ensures the effective mastery of the flipped classroom model.

Third, the integration of independent study outside the classroom with the active learning process inside the classroom directs students to apply theoretical knowledge to practical activities and develops their competencies in critical thinking, problem-solving, and pedagogical decision-making.

Fourth, an iterative approach to pedagogical design, micro-teaching, formative assessment, and reflective monitoring are the key didactic mechanisms that increase the methodology's effectiveness.

Fifth, the developed methodology serves to improve the scientific and methodological foundations for preparing future primary school teachers to use modern educational technologies in higher pedagogical education institutions, and it offers the potential for adaptation to other specializations in the pedagogical field.

In the future, it is advisable to continue scientific research on integrating this methodology with artificial intelligence tools, adaptive learning platforms, and personalized learning technologies.

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PERSONAL BUDGET MANAGEMENT: A KEY TO FINANCIAL STABILITYS

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ANOTATION : This article examines the importance of personal budget management in achieving financial stability and long-term economic well-being. It discusses the basic principles of budgeting, including planning income and expenses, controlling unnecessary spending, saving money regularly, and preparing for unexpected financial situations. The article also highlights the role of financial literacy and modern digital budgeting tools in helping individuals make informed financial decisions. Effective personal budget management not only reduces financial stress but also promotes responsible spending habits and supports the achievement of personal and professional goals.

Keywords: personal budget, financial literacy, income, expenses, savings, budgeting, financial planning, money management.

УПРАВЛЕНИЕ ЛИЧНЫМ БЮДЖЕТОМ: КЛЮЧ К ФИНАНСОВОЙ СТАБИЛЬНОСТИ

АННОТАЦИЯ: В данной статье рассматривается значение управления личным бюджетом для достижения финансовой стабильности и экономического благополучия. Освещаются основные принципы составления бюджета, включая планирование доходов и расходов, контроль ненужных трат, регулярные сбережения и подготовку к непредвиденным финансовым ситуациям. Особое внимание уделяется финансовой грамотности и использованию современных цифровых инструментов для эффективного управления денежными средствами. Рациональное управление личным бюджетом способствует снижению финансовых рисков и достижению долгосрочных жизненных целей.

Ключевые слова: личный бюджет, финансовая грамотность, доходы, расходы, сбережения, бюджетирование, финансовое планирование, управление финансами.

SHAXSIY BUDJETNI BOSHQARISH: MOLIYAVIY BARQARORLIKNING MUHIM OMILI

ANOTATSIYA: Ushbu maqolada shaxsiy budjetni boshqarishning moliyaviy barqarorlikka erishishdagi ahamiyati yoritilgan. Daromad va xarajatlarni rejalashtirish, ortiqcha sarf-xarajatlarni nazorat qilish, muntazam jamg‘arma yaratish hamda kutilmagan moliyaviy holatlarga tayyor turishning asosiy tamoyillari tahlil qilinadi. Shuningdek, moliyaviy savodxonlikni rivojlantirish va zamonaviy raqamli budjet dasturlaridan foydalanishning afzalliklari ko‘rsatib beriladi. To‘g‘ri tashkil etilgan shaxsiy budjet insonning moliyaviy xavfsizligini ta'minlash bilan birga, kelajakdagi maqsadlariga erishishiga ham xizmat qiladi.

Kalit so’zlar : shaxsiy budjet, moliyaviy savodxonlik, daromad, xarajat, jamg‘arma, budjet rejalashtirish, moliyaviy boshqaruv.

Personal budget management has turned into one of the most essential life skills in today’s rapidly changing economic environment, because everything feels like its moving a little faster than before. So, rising living costs, inflation, general uncertainty in the economy, and even more consumer expectations push many people to make more careful money choices. No matter the age, the job, or how much someone earns, every person really needs a solid, thought-through budget , so they can keep financial balance and still move toward long term goals. And honestly, budgeting isnt only for companies, or governments, anymore—it has also become day to day for students, workers, entrepreneurs, and families.

A personal budget is basically a money blueprint that describes a person’s expected income and spending over a certain time period, usually a month, though sometimes a bit longer or shorter depending on the situation. It lets people see where their money comes from, where it goes, and how it can be managed in a more efficient way. With a budget, individuals can avoid needless spending, build up savings, reduce financial pressure, and be ready for upcoming opportunities or just plain, unexpected emergencies. It also trains discipline, accountability, and sharper financial awareness, these traits matter in personal life and in working life too, not only “on paper”.

One of the primary advantages of personal budgeting is that it gives you this clear picture ,sort of, of an individual’s financial situation. A lot of people spend money without properly tracking their expenses, and then—surprise—financial difficulties show up at the end of the month. When someone records every single source of income along with every expenditure, they can spot these spending habits and figure out which costs are required and which ones can be trimmed or even taken out entirely. Honestly,

this kind of small routine can boost better financial choices, and it also helps prevent wasteful spending, like the silent kind you dont notice.

Income is the foundation of every personal budget. It covers salaries, wages, scholarships, pensions ,freelance earnings ,business profits, investment returns, and other regular or occasional financial resources. Grasping your total income matters because every money plan should be based on real earnings ,not hopes or assumptions. Individuals should avoid building budgets around uncertain future income, since this can create a financial imbalance and slowly push you into debt.

Expenses can generally be divided into two categories: fixed expenses and variable expenses. Fixed expenses include rent, mortgage payments, tuition fees, insurance premiums, internet subscriptions, and utility bills. These expenses usually remain constant every month. Variable expenses, on the other hand, include food, transportation, clothing, entertainment, shopping, travel, and leisure activities. Since variable expenses are more flexible, they provide opportunities for saving money through careful planning and responsible spending habits. An effective budgeting strategy often follows the principle of balancing income and expenses. Financial experts frequently recommend the **50/30/20 budgeting rule,** which allocates approximately 50 percent of income to essential needs, 30 percent to personal wants, and 20 percent to savings or debt repayment. Although this rule may not be suitable for everyone, it provides a practical framework for developing healthy financial habits. Individuals may adjust these percentages according to their personal circumstances, income level, and financial goals.

Saving money is, kind of a core piece of effective personal budget handling, because it brings financial peace of mind and lets people deal with those sudden bumps like medical emergencies , job loss, or even urgent repairs. If someone sets up an emergency fund that typically holds about three to six months of living costs, they’re usually less stuck relying on loans, and they can grow more financial self reliance. Still, debt that’s managed in a responsible way is just as necessary. Even if loans and credit cards can give quick support, too much borrowing tends to turn into long lasting financial strain. So, people should borrow with care, settle what they owe right on schedule, and keep saving in the foreground while also dodging expenses that are not really needed.

Financial literacy along with modern tools has made personal budget management much easier. When people understand budgeting, saving, investing, and what responsible spending really means, they’re more able to make solid financial choices and work toward long term ambitions. Digital banking services, plus budgeting apps,

make it simpler to monitor income, stay on top of spending, and build solid day to day money routines. For students and younger adults, learning these skills early, makes future financial duties feel less intimidating. In the end, managing a budget well supports financial steadiness, lowers stress levels, and helps individuals reach stronger economic security, plus a higher quality of life.

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ARTIFICIAL INTELLIGENCE-BASED SOFTWARE FOR RECOGNIZING DYNAMIC GESTURES OF THE KARAKALPAK SIGN LANGUAGE IN INCLUSIVE EDUCATION

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Abstract

The development of inclusive education requires the introduction of modern digital technologies that provide equal access to learning for students with special educational needs. In particular, learners with hearing impairments need effective methodological and technological support for mastering sign language as a major means of communication, social interaction, and educational participation. This thesis examines the design and pedagogical application of artificial intelligence-based software for recognizing dynamic gestures of the Karakalpak Sign Language in an inclusive educational environment.

The relevance of the study is determined by the fact that dynamic gestures have a complex spatio-temporal structure. They include hand trajectory, palm orientation, movement speed, gesture rhythm, and a sequence of motion phases. Traditional methods of teaching and assessing gestures often depend on the subjective observation of the teacher and do not always provide immediate, objective, and individualized feedback. Therefore, the use of artificial intelligence, computer vision, and neural network technologies creates new opportunities for improving the quality of inclusive education.

The proposed software system is designed to analyze video sequences of learners' hand movements, extract spatial and temporal features, classify dynamic gestures, and generate pedagogical feedback. The system includes video capture, preprocessing, feature extraction, gesture classification, and feedback modules. Convolutional neural networks are used to identify spatial features of hand movements, while recurrent neural network-based approaches help analyze the temporal dynamics of gesture execution. The software supports repeated practice, self-control, correction of errors, and objective assessment of learning outcomes.

The results of the study show that the integration of artificial intelligence-based gesture recognition software into the learning process contributes to the formation of sign language communicative competence, increases learner independence, and improves the objectivity of assessment. The proposed approach can be considered an effective digital pedagogical tool for teaching regional sign languages, including the Karakalpak Sign Language, in inclusive education.

Keywords: inclusive education, artificial intelligence, dynamic gesture recognition, Karakalpak Sign Language, computer vision, neural networks, digital pedagogy, pedagogical feedback.

1. Introduction

Inclusive education is one of the most important directions in the modernization of the modern education system. Its main purpose is to create equal educational opportunities for all learners, regardless of their physical, social, psychological, or communicative characteristics. In this process, particular attention is paid to students with hearing impairments, because their successful participation in education depends not only on access to learning materials, but also on the availability of effective communication tools.

For learners with hearing impairments, sign language plays a central role in communication and knowledge acquisition. It allows them to understand educational content, interact with teachers and peers, and develop communicative competence. However, teaching sign language, especially dynamic gestures, requires special methodological support. Dynamic gestures differ from static gestures because they are performed through movement in time and space. Their correct execution depends on the direction of hand movement, speed, sequence, rhythm, position of the fingers, and coordination of the whole gesture structure.

The Karakalpak Sign Language is an important means of communication for learners with hearing impairments in the regional educational environment. However, the digital resources and intelligent educational tools designed specifically for teaching and recognizing dynamic gestures of the Karakalpak Sign Language are still limited. This creates the need to develop software solutions based on artificial intelligence that can support both teachers and learners in the educational process.

Traditional assessment of gesture performance is mainly carried out by the teacher. Although the teacher’s role remains essential, subjective assessment may not always provide sufficient accuracy, consistency, and immediate feedback. Learners often need repeated practice and instant correction in order to master the correct form of a gesture. In this context, artificial intelligence-based software can become an effective educational assistant that analyzes the learner’s gesture performance and provides objective feedback.

The aim of this study is to present an artificial intelligence-based software system for recognizing dynamic gestures of the Karakalpak Sign Language and to justify its pedagogical effectiveness in inclusive education.

2. Research Objective and Tasks

The main objective of the research is to improve the methodology of teaching dynamic gestures of the Karakalpak Sign Language through the use of artificial intelligence-based recognition software in inclusive education.

To achieve this objective, the following tasks were defined:

1. To analyze the pedagogical and technological requirements for teaching dynamic gestures in inclusive education.

2. To identify the main characteristics of dynamic gestures of the Karakalpak Sign Language.
3. To develop a software architecture for recognizing gestures based on video analysis.
4. To apply artificial intelligence methods for extracting and classifying spatio-temporal gesture features.
5. To integrate pedagogical feedback mechanisms into the software system.
6. To evaluate the role of the proposed software in improving gesture competence and learner independence.

The research focuses not only on the technical recognition of gestures, but also on the pedagogical function of the software. Therefore, the system is considered as a digital educational tool that supports learning, assessment, correction, and individual development.

3. Materials and Methods

The methodological basis of the research includes the principles of inclusive education, digital pedagogy, computer vision, machine learning, and neural network-based pattern recognition. The developed software is intended to recognize dynamic gestures from video sequences that record the hand movements of learners.

The architecture of the software consists of the following functional modules:

Video capture module. This module receives video input from a camera and records the learner's gesture performance. The quality of the video stream is important for the correct recognition of hand movements, gesture direction, and movement phases.

Image preprocessing module. At this stage, the system processes video frames, reduces unnecessary visual noise, detects the hand area, and prepares the image data for further analysis. Preprocessing improves the stability and accuracy of gesture recognition.

Feature extraction module. This module identifies the main spatial and temporal characteristics of the gesture. These include hand trajectory, palm orientation, speed of movement, sequence of gesture phases, and changes in hand position during execution.

Gesture classification module. The extracted features are compared with gesture patterns stored in the system. Artificial intelligence algorithms classify the performed gesture and determine whether it corresponds to the required gesture model.

Pedagogical feedback module. After classification, the system provides feedback to the learner and teacher. Feedback may include information about the correctness of the gesture, detected mistakes, and recommendations for correction.

Convolutional neural networks are used to analyze spatial characteristics of hand movements. These networks are effective in recognizing visual patterns, hand positions, and frame-based gesture features. In order to analyze the temporal structure of dynamic gestures, recurrent neural network-based approaches are applied. They make it possible to consider the sequence and duration of movements, which are essential for recognizing dynamic gestures.

The combination of computer vision and neural network methods allows the system to analyze gestures more accurately than traditional visual observation alone. At the same time, the software does not replace the teacher, but supports the teacher's pedagogical activity by providing objective data and analytical feedback.

4. Pedagogical Model of Using the Software

The proposed pedagogical model of inclusive teaching of dynamic gestures of the Karakalpak Sign Language includes several interrelated components: target, content, technological, intellectual, and evaluative-resultative components.

The **target component** defines the main educational goal: the formation of gesture communicative competence among learners with hearing impairments. This competence includes understanding, performing, correcting, and using dynamic gestures in educational and social communication.

The **content component** includes selected dynamic gestures of the Karakalpak Sign Language, methodological materials, practical exercises, and tasks aimed at developing gesture performance skills.

The **technological component** is represented by the artificial intelligence-based software system. It organizes video analysis, recognition of gestures, and automatic feedback.

The **intellectual component** includes algorithms for recognizing gestures, analyzing movement patterns, and comparing learner performance with correct gesture models.

The **evaluative-resultative component** provides objective assessment of learning outcomes. It helps the teacher monitor the learner's progress, identify difficulties, and adapt the teaching process according to individual needs.

The use of the software creates a cyclical learning process:

gesture performance — automatic analysis — feedback — correction — repeated performance.

This cycle is important for developing stable gesture skills. Learners can repeat gestures several times, compare their performance with the required model, and correct mistakes independently. As a result, the learning process becomes more individualized, interactive, and objective.

5. Results and Discussion

The implementation of artificial intelligence-based gesture recognition software in the educational process demonstrated several pedagogical advantages.

First, the software increased the objectivity of assessment. In traditional teaching, the evaluation of gesture performance may depend on the teacher's individual perception. The proposed system provides additional objective data based on movement trajectory, gesture speed, orientation, and sequence of motion phases. This allows the teacher to make more accurate conclusions about the learner's progress.

Second, the software supported the development of learner independence. Learners were able to practice gestures repeatedly and receive feedback without waiting for constant direct correction from the teacher. This increased their confidence and reduced psychological tension connected with public evaluation.

Third, the system contributed to the formation of self-control skills. Since learners could see the results of their performance, they became more aware of their mistakes and more actively participated in correcting them. This is especially important in inclusive education, where the development of autonomy and active learning behavior is a key pedagogical objective.

Fourth, the software helped the teacher organize differentiated instruction. The data collected by the system made it possible to identify which gestures were difficult for specific learners. Based on this information, the teacher could adjust exercises, repeat necessary materials, and provide individualized support.

Fifth, the proposed approach expanded the possibilities of teaching regional sign languages. Many existing digital solutions are focused on widely used sign languages, while regional sign languages often remain insufficiently represented in intelligent educational systems. Therefore, the development of software for recognizing dynamic gestures of the Karakalpak Sign Language has both scientific and practical significance.

The results show that artificial intelligence-based recognition technologies can serve as an effective bridge between digital innovation and inclusive pedagogy. They provide technical support for recognition and assessment, but the educational value of the system depends on its correct methodological integration into the learning process.

It is important to emphasize that artificial intelligence should not be understood as a replacement for the teacher. The teacher remains the main organizer of the educational process, interprets the results, provides emotional support, and ensures the humanistic orientation of inclusive education. The software acts as an intelligent assistant that strengthens the teacher’s methodological opportunities.

6. Scientific and Practical Significance

The scientific significance of the study lies in the development of an approach that combines artificial intelligence, computer vision, and inclusive pedagogy for teaching dynamic gestures of a regional sign language. The research contributes to the study of digital methods for recognizing and teaching the Karakalpak Sign Language. The practical significance of the study is reflected in the possibility of using the software in inclusive schools, special education institutions, teacher training programs, and independent learning environments. The system can support students with hearing impairments, teachers, speech and sign language specialists, and researchers working in the field of digital inclusive education.

The proposed software may also be used as a basis for expanding gesture databases, developing mobile applications, and creating multimodal educational platforms. In the future, the system can be improved by adding real-time recognition, voice and text support, visual prompts, and adaptive learning scenarios.

7. Conclusion

The use of artificial intelligence-based software for recognizing dynamic gestures of the Karakalpak Sign Language is an effective direction for improving inclusive education. The proposed system provides technological and pedagogical support for

the formation of gesture communicative competence among learners with hearing impairments.The software analyzes video sequences, extracts spatial and temporal features of gestures, classifies gesture patterns, and provides feedback for correction. Its integration into the educational process increases the objectivity of assessment, supports independent learning, and improves the effectiveness of practical gesture training.

The research confirms that artificial intelligence technologies can significantly enrich the methodology of teaching sign language when they are used as pedagogical support tools. The developed approach helps create a more accessible, interactive, and learner-centered educational environment.

Future research should focus on expanding the database of dynamic gestures of the Karakalpak Sign Language, improving recognition accuracy in real time, adapting the system to different lighting conditions and camera positions, and integrating multimodal feedback mechanisms. These directions will further strengthen the role of intelligent technologies in inclusive education and support the development of digital resources for regional sign languages.

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ANALYSIS OF THE CONCEPT OF GENDER EQUALITY AND INTERNATIONAL AND NATIONAL EXPERIENCE IN ENSURING WOMEN'S RIGHTS

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Abstract. This paper analyzes the conceptual framework and practical mechanisms of gender policy in the context of building a "New Uzbekistan," emphasizing the unique synthesis of universal democratic principles with national values. It evaluates key legislative advancements—including the 2019 Gender Equality Law and Article 58 of the new Constitution—alongside grassroots institutional structures like the Mahalla system and the "Wise Women" movement. Finally, the study highlights state-funded educational incentives for female students as a primary catalyst for developing a new generation of intellectual and socially active female leaders.

Keywords: *Gender equality, New Uzbekistan, Legislative reform, Mahalla system, Educational incentives.*

In the context of building a new Uzbekistan and shaping its democratic image, ensuring the full rights and interests of every member of society, especially women, who constitute a significant part of the population and intellectual resources, has become one of the fundamental foundations of state policy. It is impossible to build a society in which human dignity is glorified without ensuring equal rights for women in state and public administration and without mobilizing their potential. After all, as the President of the Republic of Uzbekistan Shavkat Mirziyoyev noted: *"Our people, proud of their intelligent, beautiful women, consider the creation of equal rights and opportunities for women in all spheres of social life to be their most important task."*

During the years of independence, especially in the last decade, Uzbekistan has implemented fundamental and systematic legal reforms in order to strengthen the socio-political activity of women and their place in society and public administration. In Uzbekistan, the state policy on improving the status of women in society has a unique conceptual character, which is based on a rational synthesis (harmony) of universal democratic principles with the Uzbek national mentality, age-old values, and oriental family ethics. Unlike Western de-modeled gender approaches, the activation of the female personality in Uzbek society goes hand in hand with the preservation and further enhancement of her authority as a sacred mother in the family, the spiritual support of the family fortress. After all, in the Uzbek mentality, family and society are not opposed to each other, but are viewed as a holistic system that complements each other. The state institutionally encourages a woman to be both a devoted wife and loving mother in the family and to become an active leader, scientist, or entrepreneur in society.

The most important and detailed domestic legal document that legally and institutionally guarantees the political role of women in state life is the Law of the Republic of Uzbekistan “On Guarantees of Equal Rights and Opportunities for Women and Men”, adopted on September 2, 2019. The main purpose of this law is to regulate relations in the field of ensuring real gender equality for women and men in all spheres of society and state life, including politics, economy, law, culture and education. The law strictly prohibits any discrimination on the basis of gender (gender discrimination).

Separate chapters of the law directly define mechanisms for supporting women's socio-political activity at the state level. In particular, Chapter 3 guarantees equal access and promotion of women and men to leadership positions in state bodies (including in the formation of a personnel reserve). It is stipulated that equal opportunities are provided for women and men in competitions for holding positions, regardless of gender.

Chapter 4 on the exercise of electoral rights stipulates that equal rights and opportunities be created for women and men in the formation of election commissions, as well as in the process of nominating candidates for deputies by political parties. For information, it should be noted that, in accordance with this law, the amendments to the Election Code stipulate that the share of women among candidates for deputies nominated by political parties must be at least 30 percent, and this figure is being further increased in subsequent reforms.

Gender policy is now clearly reflected in the content of new concepts and institutions introduced into public administration. In particular, the following legal concepts in line with international standards were introduced into the legislation of Uzbekistan for the first time through the law:

• Gender legal expertise: It was established that all regulatory and legal acts adopted in the country and their drafts must be analyzed for compliance with the principles of equal opportunities for women and men.

• Temporary special measures: In order to more quickly eliminate gender inequality and increase the political and social participation of women, it was legislated that the application of quotas or special privileges by the state for a certain period of time is not considered discrimination.

• Gender audit: A system has been introduced to study the extent to which guarantees of equal rights and opportunities for women and men are implemented in state bodies and organizations, and the fairness of personnel policy.

This strategic approach is reflected in the solid legal foundation created in our country. For example, Article 58 of the new Constitution of the Republic of Uzbekistan strictly stipulates the equal rights of women and men, and the state shall ensure equal rights and opportunities for women and men in the management of public and state affairs, as well as in other areas of public and state life. This norm is a constitutional guarantee of transformational processes in society.

In order to consistently implement this constitutional provision in practice, fundamental laws in the field were adopted. In particular, the Law of the Republic of Uzbekistan “On Guarantees of Equal Rights and Opportunities for Women and Men” defined the legal status of the concept of gender equality in the socio-political life of the country. This legal mechanism serves to eliminate some stereotypes that have formed in the thinking of society, namely, the outdated prejudices that limit women's activities only to the household and family sphere. To date, in order to increase the share of women in public administration, a completely new system of training personnel for leadership positions has been established, and the share of women in the political sphere has significantly increased. At the same time, an institutional system of supporting women in line with national values has been formed. In accordance with the Decree of the President of the Republic of Uzbekistan “On measures to further intensify work on systematic support for families and women”, the Family and Women's Committee was established. The introduction of the position of “women's activist” in each mahalla as the lowest link of this structure is fully consistent with the philosophy of the Uzbek mahalla institute. This created a targeted, effective system at the mahalla level for identifying women's problems, addressing them, and providing assistance to families in difficult social situations. Also, the “Wise Women” movement, organized taking into account the high respect in society for the words and teachings of the elderly and mothers with rich life experience, has become an important social institution in improving the spiritual and moral environment in mahallas and preparing young girls for family life[1].

The attention paid to improving the status of women in science and intellectual fields is also commendable. The allocation of special grant places for women from needy families when enrolling in higher education institutions, the reimbursement of contract funds for all women studying at the master's level from the state budget, have

[1] O‘zbekiston Respublikasi Vazirlar Mahkamasining “Oila va xotin-qizlar qo‘mitasi huzuridagi «Oqila ayollar» harakati faoliyatini tashkil etish chora-tadbirlari to‘g‘risida”gi 437-son qarori, 08.08.2022-y. // Qonunchilik ma’lumotlari milliy bazasi.

become an important pedagogical and economic impetus for the formation of a layer of intellectually capable women. These opportunities are a practical reflection of the wise philosophy of our national mentality that “educating a girl means educating an entire society, the future generation.” Nevertheless, the full understanding of these legal guarantees and positive opportunities by members of society, especially young people and students who are the owners of our tomorrow, and their incorporation into their legal and political consciousness determine the practical effectiveness of state policy. In this process, educational platforms, in particular systematic dialogues and roundtable discussions, are the most optimal means of increasing the social initiative of young girls and developing their leadership and organizational potential within the framework of Uzbek educational standards.The attention paid to improving the status of women in science and intellectual fields is also commendable. The allocation of special grant places for women from needy families when enrolling in higher education institutions, the reimbursement of contract funds for all women studying at the master's level from the state budget, have become an important pedagogical and economic impetus for the formation of a layer of intellectually capable women. These opportunities are a practical reflection of the wise philosophy of our national mentality that “educating a girl means educating an entire society, the future generation.” Nevertheless, the full understanding of these legal guarantees and positive opportunities by members of society, especially young people and students who are the owners of our tomorrow, and their incorporation into their legal and political consciousness determine the practical effectiveness of state policy. In this process, educational platforms, in particular systematic dialogues and roundtable discussions, are the most optimal means of increasing the social initiative of young girls and developing their leadership and organizational potential within the framework of Uzbek educational standards.

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O‘RTA OSIYO XONLIKLARIDA QOZILIK INSTITUTINING EVOLYUTSIYASI: SHAYBONIYLAR VA ASHTARXONIYLAR DAVRIDA SUD-HUQUQ TIZIMINING RIVOJLANISHI

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Annotatsiya. Mazkur maqolada Shayboniylar va Ashtarxoniylar davrida qozilik institutining shakllanishi hamda rivojlanish bosqichlari tahlil qilinadi. Tadqiqotda qozilar faoliyatining huquqiy asoslari, hanafiy mazhabi va shariat me’yorlarining sud amaliyotidagi o‘rni, mahalliy urf-odat huquqi bilan o‘zaro uyg‘unligi yoritilgan. Shuningdek, davlat boshqaruvidagi siyosiy o‘zgarishlar, markaziy hokimiyatning mustahkamlanishi yoki zaiflashuvi qozilik institutining vakolatlari va faoliyatiga qanday ta’sir ko‘rsatgani tahlil etiladi. Muallif qozilik institutining nafaqat sudlov organi, balki jamiyatda ijtimoiy adolat va huquqiy tartibotni ta’minlovchi muhim institut sifatidagi o‘rnini ochib beradi.

Kalit so‘zlar: qozilik instituti, Shayboniylar, Ashtarxoniylar, shariat, hanafiy mazhabi, sud-huquq tizimi, urf-odat huquqi, qozi, adolat, davlat boshqaruvi.

Аннотация. В данной статье анализируются этапы становления и развития института казиев в период правления Шейбанидов и Аштарханидов. Рассматриваются правовые основы деятельности казиев, роль норм шариата и ханафитского мазхаба в судебной практике, а также их взаимодействие с местными правовыми обычаями. Особое внимание уделяется влиянию политических процессов, укрепления и ослабления центральной власти на полномочия и деятельность казиев. В результате исследования раскрывается значение института казиев как важного элемента системы государственного управления, обеспечивавшего социальную справедливость и правопорядок в обществе.

Ключевые слова: институт казиев, Шейбаниды, Аштарханиды, шариат, ханафитский мазхаб, судебно-правовая система, обычное право, казий, справедливость, государственное управление.

Abstract. This article examines the formation and evolution of the qadi institution during the Shaybanid and Ashtarkhanid periods in Central Asia. The study analyzes the legal foundations of qadis’ activities, the role of Islamic law and the Hanafi school

in judicial practice, and their interaction with local customary legal traditions. It also explores the impact of political transformations, including the strengthening and weakening of central authority, on the powers and functions of qadis. The research highlights the significance of the qadi institution as an essential component of governance that contributed to the maintenance of justice, legal order, and social stability.

Keywords: qadi institution, Shaybanids, Ashtarkhanids, Sharia law, Hanafi school, judicial system, customary law, qadi, justice, public administration.

Kirish. Shayboniylar davlati (XVI asr) Markaziy Osiyo davlatchiligi tarixida islom huquqi va mahalliy huquqiy an’analar uyg‘unlashgan siyosiy-huquqiy tizim sifatida alohida o‘rin egallaydi. Davlat musulmon davlati sifatida shakllanganligi sababli uning huquqiy tizimi, avvalo, hanafiy mazhabi asosidagi shariat me’yorlariga tayanar edi. Shu bilan birga, davlat boshqaruvi va sud-huquq amaliyotida turkiy xalqlar orasida qadimdan mavjud bo‘lgan huquqiy odatlar, shuningdek Chingizxon davridan saqlanib qolgan ayrim “Yoso” va “Yusun” qoidalari ham muayyan darajada qo‘llanilgan. Natijada qozilar faoliyati islom huquqi bilan mahalliy huquqiy an’analar sintezi asosida shakllangan[1].

Shayboniylar davrida qozilar sud-huquq tizimining asosiy bo‘g‘ini sifatida fuqarolik, mulkiy, oilaviy va meros munosabatlarini tartibga solishda muhim o‘rin tutganlar. Qozilar faoliyati Qur’on, hadis, fiqhiy manbalar va hanafiy mazhabi qoidalariga asoslangan bo‘lib, ular jamiyatdagi huquqiy nizolarni hal etish, mulk huquqini himoya qilish hamda ijtimoiy adolatni ta’minlash vazifalarini bajarganlar. Sud qarorlarini chiqarishda fiqhiy bilimlarga ega bo‘lgan ulamolar va muftiylarning maslahatlari ham muhim ahamiyat kasb etgan[2].[2]

Qozilar faoliyatining rivojlanishiga ta’sir ko‘rsatgan muhim omillardan biri Muhammad Shayboniyxonning davlat boshqaruvida shariat me’yorlariga tayangan holda ish yuritishga intilganligidir. Tarixiy manbalarda qayd etilishicha, Shayboniyxon yirik fiqh olimlari bilan muntazam maslahatlashib turgan va huquqiy masalalarni shariat qoidalari asosida hal etishga e’tibor qaratgan. Xususan, uning maslahatchilaridan biri bo‘lgan Ro‘zbehon Isfahoniy fiqh ilmining yetuk bilimdoni

[1] Муқимов З. Шайбонийлар давлати ва ҳуқуқи (Тарихий-ҳуқуқий тадқиқот). – Тошкент: Адолат, 2007. – Б. 92–93.

[2] Муқимов З. Кўрсатилган асар. – Б. 92-94.

sifatida davlat boshqaruvi va huquqiy munosabatlarni tartibga solishda muhim rol o‘ynagan[3].

Shayboniylar davrida qozilar faoliyatining evolyutsiyasiga ta’sir etgan yana bir muhim omil davlat boshqaruvida adolat tamoyilining ustuvor ahamiyat kasb etganligidir. Bu davrda yaratilgan siyosiy-huquqiy risolalarda hukmdorning asosiy vazifasi fuqarolarning huquqlarini himoya qilish, odil sudlovni ta’minlash va zulmning oldini olishdan iborat ekanligi ta’kidlangan. Xususan, Muhammad Qozining “Tarixi Rashidiy” tarkibidagi siyosiy-huquqiy qarashlarida hukmdorning odil sudlovni amalga oshirishi barcha ibodatlarga teng savobli ish sifatida baholangan. Mazkur qarashlar qozilik institutining jamiyatdagi mavqeini yanada mustahkamlagan[4].

Qozilar faoliyatining shakllanishi va rivojlanishiga diniy-ma’rifiy omillar ham kuchli ta’sir ko‘rsatgan. Xoja Ahror Valiy va uning izdoshlarining siyosiy-huquqiy qarashlarida davlat boshqaruvi shariat asosida olib borilishi, hukmdor va mansabdorlar adolat tamoyillariga amal qilishi zarurligi alohida ta’kidlangan. Ushbu g‘oyalar Shayboniylar davri sud-huquq tizimining mafkuraviy asoslaridan biriga aylangan hamda qozilar faoliyatining huquqiy va axloqiy mezonlarini belgilab bergan[5].[5]

Shunday qilib, Shayboniylar davrida qozilar faoliyatining evolyutsiyasi islom huquqi, hanafiy mazhabi, mahalliy huquqiy odatlar, davlat boshqaruvi ehtiyojlari va diniy-ma’rifiy qarashlarning o‘zaro ta’siri ostida kechgan. Bu omillar qozilik institutining huquqiy maqomini mustahkamlab, uni davlat boshqaruvi hamda jamiyat hayotining muhim tarkibiy qismiga aylantirgan.

Ashtarxoniylar (Joniylar) hukmronligi davrida (1599-1756 yy.) Buxoro xonligining sud-huquq tizimi islom huquqi va mahalliy boshqaruv an’analarining o‘zaro uyg‘unligi asosida faoliyat yuritgan. Bu davrda qozilik instituti davlat boshqaruvining muhim tarkibiy qismi sifatida shakllanib, fuqarolik, oilaviy, meros, mulkiy hamda ayrim jinoyat ishlarini ko‘rib chiqishda asosiy huquqiy organ vazifasini bajargan. Qozilar o‘z faoliyatida hanafiy mazhabi qoidalari va shariat me’yorlariga tayangan holda sud ishlarini yuritganlar[6].

Ashtarxoniylar davrida qozilar vakolatlari nafaqat sudlov faoliyati bilan, balki huquqiy hujjatlarni rasmiylashtirish, nikoh va taloq masalalarini ko‘rib chiqish, meros taqsimoti hamda mulkiy nizolarni hal etish bilan ham bog‘liq bo‘lgan. Sud amaliyotida Qur’on, hadis, fiqhiy manbalar va mahalliy urf-odatlardan foydalanilgan. Ayniqsa,

[3] Муқимов З. Кўрсатилган асар. – Б. 93–94.
[4] Муқимов З. Кўрсатилган асар. – Б. 96–98.
[5] Муқимов З. Кўрсатилган асар. – Б. 94–96.
[6] Azamat Ziyo. O‘zbek davlatchiligi tarixi. – Toshkent: Sharq, 2000. – B. 247-249.

hanafiy mazhabining mahalliy sharoitlarga moslashuvchanligi qozilar faoliyatining huquqiy asoslarini mustahkamlagan[7].

Qozilik instituti faoliyatining evolyutsiyasiga davlat boshqaruvi tizimidagi o‘zgarishlar ham sezilarli ta’sir ko‘rsatgan. XVII asr oxiri – XVIII asr boshlariga kelib markaziy hokimiyatning zaiflashuvi natijasida viloyat hokimlari, amirlar va bekliklarning siyosiy ta’siri kuchaya boshladi. Bu holat qozilar vakolatlarining amaliy jihatdan cheklanishiga olib keldi. Mahalliy hokimlar ko‘plab nizolarni o‘zlari hal qilishga intilganlari sababli qozilar faoliyati ayrim hollarda maslahat beruvchi va hujjatlashtiruvchi darajagacha qisqarib qolgan[8].

Ashtarxoniylar davrida qozilar faoliyatining rivojlanishiga ta’sir etgan muhim omillardan biri mahalliy urf-odat huquqi hisoblanadi. Shariat qoidalari bilan bir qatorda jamoa hayotida shakllangan an’anaviy huquqiy normalar ham qo‘llanilgan. Mahalla va qishloq oqsoqollari ko‘plab nizolarni qozixonaga yetkazmasdan hal etganlar. Natijada huquqiy munosabatlar faqat qozilar faoliyati bilan emas, balki mahalliy jamoa institutlari orqali ham tartibga solingan[9].[4]

XVIII asrning birinchi yarmida Abulfayzxon hukmronligi davrida markaziy hokimiyatning yanada zaiflashuvi qozilik institutining faoliyatiga ham o‘z ta’sirini ko‘rsatdi. Mamlakatning alohida hududlarga bo‘linib ketishi, mahalliy zodagonlar va amirlarning siyosiy mavqeining kuchayishi natijasida qozilar faoliyati markaziy hokimiyat nazoratidan ma’lum darajada chetlasha boshladi. Muhammad Hakimbiy va boshqa nufuzli amirlarning siyosiy hayotdagi mavqeining ortishi qozilik institutining davlat boshqaruvidagi o‘rniga ham ta’sir ko‘rsatdi[10].

Shunday qilib, Ashtarxoniylar davrida qozilik instituti o‘z taraqqiyotining muhim bosqichini boshdan kechirdi. Dastlab shariat asosida faoliyat yuritgan va keng vakolatlarga ega bo‘lgan qozilar vaqt o‘tishi bilan siyosiy parokandalik, mahalliy hokimlar ta’sirining kuchayishi hamda urf-odat huquqining saqlanib qolishi natijasida o‘z faoliyatida muayyan o‘zgarishlarni boshdan kechirdilar. Bu jarayon keyinchalik Mang‘itlar davridagi qozilik tizimining shakllanishi uchun ham muhim asos bo‘lib xizmat qildi.

Xulosa. Shayboniylar va Ashtarxoniylar davrida qozilik instituti O‘rta Osiyo sud-huquq tizimining muhim tarkibiy qismi sifatida faoliyat yuritgan. Uning faoliyati asosan hanafiy mazhabi va shariat me’yorlariga tayanib, fuqarolik, oilaviy, meros

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[10] Мухаммад Ҳакимхон. Мунтахаб ат-таворих. – Тошкент: Янги аср авлоди, 2010. – Б. 145–148.

hamda mulkiy munosabatlarni tartibga solishga xizmat qilgan. Shayboniylar davrida markaziy hokimiyatning kuchliligi va shariat tamoyillariga e’tibor qaratilishi qozilar mavqeining mustahkamlanishiga olib kelgan bo‘lsa, Ashtarxoniylar davrida siyosiy parokandalik va mahalliy hokimlar ta’sirining kuchayishi ularning vakolatlariga ma’lum darajada ta’sir ko‘rsatgan. Shunga qaramay, qozilik instituti jamiyatda adolatni ta’minlash, huquqiy tartibotni saqlash va ijtimoiy munosabatlarni tartibga solishda muhim ahamiyat kasb etgan. Mazkur institutning tarixiy taraqqiyoti keyingi davrlardagi sud-huquq tizimining shakllanishi va rivojlanishi uchun muhim asos vazifasini bajargan.

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DEVELOPING CREATIVE COMMUNICATIVE COMPETENCE IN UPPER SECONDARY SCHOOL STUDENTS THROUGH INNOVATIVE EDUCATIONAL APPROACHES

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Abstract. The article examines the theoretical and methodological foundations of developing creative communicative competence in upper secondary school students through innovative educational approaches. In modern foreign language education, the formation of communicative competence alone is insufficient; learners are also expected to demonstrate creativity, critical thinking, collaboration, and flexibility in communication. The study analyzes the pedagogical potential of learner-centered instruction, interactive technologies, project-based learning, and creative tasks in fostering students' creative communicative competence. The findings indicate that innovative educational approaches contribute significantly to the development of learners' ability to communicate effectively, think creatively, and participate actively in collaborative learning environments.

Keywords: creative communicative competence, innovative educational approaches, upper secondary school students, foreign language teaching, communicative competence, creativity, interactive learning.

Introduction

The rapid development of globalization, digital technologies, and international communication has transformed the objectives of contemporary education. Educational institutions are expected not only to provide knowledge but also to develop competencies that enable learners to function effectively in diverse social, academic, and professional contexts. In this regard, foreign language education has become one of the most important components of modern schooling, as it equips learners with the skills necessary for intercultural communication and global engagement.

The current educational paradigm emphasizes the development of students' communicative abilities alongside higher-order thinking skills, creativity, and independent learning. Consequently, the concept of creative communicative competence has attracted increasing attention among researchers and practitioners. Creative communicative competence refers to the ability to express ideas effectively, generate original solutions, participate in meaningful interactions, and adapt communication strategies to different contexts. For upper secondary school students,

the development of this competence is particularly important because it prepares them for further education and future professional activities.

Theoretical Foundations of Creative Communicative Competence

The theoretical basis of communicative competence was established by Dell Hymes, who argued that successful communication depends not only on linguistic knowledge but also on the ability to use language appropriately in social contexts. Building upon this perspective, Canale and Swain proposed a comprehensive model consisting of grammatical, sociolinguistic, discourse, and strategic competencies.

Recent educational studies suggest that communicative competence should be supplemented by creativity to meet the demands of twenty-first-century education. Creative communicative competence combines linguistic proficiency with creative thinking, enabling learners to produce original ideas, solve communicative problems, and engage in authentic interaction. Such competence reflects the integration of cognitive, linguistic, social, and creative dimensions of learning.

Researchers emphasize that creativity in language education should not be limited to artistic expression. Rather, it involves flexible thinking, the generation of multiple solutions, and the ability to apply knowledge in new situations. Therefore, the development of creative communicative competence requires learning environments that encourage experimentation, collaboration, and active participation.

Innovative Educational Approaches in Foreign Language Teaching

Innovative educational approaches play a crucial role in developing students' creative communicative competence. One of the most influential approaches is learner-centered education. Unlike traditional teacher-centered instruction, learner-centered education encourages students to take responsibility for their learning, express personal opinions, and engage actively in classroom interaction.

Project-based learning is another effective approach for fostering creative communicative competence. Through project activities, students investigate real-life issues, gather information, collaborate with peers, and present their findings. Such experiences promote authentic communication and provide opportunities for creative problem-solving.

Task-based language teaching also contributes significantly to competence development. In task-based learning environments, students use language as a tool for accomplishing meaningful objectives rather than merely practicing grammatical structures. As a result, communication becomes purposeful, interactive, and learner-oriented.

Furthermore, digital technologies have expanded opportunities for creative communication. Interactive educational platforms, multimedia tools, online discussion forums, and digital storytelling applications enable students to participate in collaborative learning activities and develop communication skills in innovative ways. Technology-supported instruction creates flexible learning environments where students can exchange ideas, create digital content, and engage in meaningful interaction.

Developing Creative Communicative Competence Through Interactive Activities

The development of creative communicative competence requires the systematic use of interactive and creative learning activities. Such activities encourage students to apply language knowledge in authentic communicative situations while simultaneously developing creative thinking skills.

Debate-based activities represent one of the most effective methods for promoting communicative competence. During debates, students formulate arguments, defend viewpoints, evaluate evidence, and respond to alternative perspectives. This process strengthens both communication skills and critical thinking abilities.

Storytelling activities also contribute significantly to competence development. Through storytelling, learners organize ideas coherently, use language creatively, and communicate personal experiences. The process encourages imagination, linguistic flexibility, and audience awareness.

Role-play simulations provide students with opportunities to participate in realistic communicative situations. By assuming different social roles, learners practice language functions, develop interpersonal communication skills, and gain confidence in expressing themselves.

Collaborative problem-solving tasks create favorable conditions for meaningful interaction. Students work together to analyze problems, propose solutions, and negotiate decisions. Such activities enhance cooperation, creativity, and communicative effectiveness.

Brainstorming sessions and group discussions further support the development of creative communicative competence. These methods encourage learners to generate diverse ideas, exchange opinions, and construct knowledge collectively. As a result, students become more active participants in the learning process and develop greater confidence in communication.

Discussion

The effectiveness of innovative educational approaches can be explained by their emphasis on active learning and meaningful interaction. Unlike traditional

instructional methods, innovative approaches position students as active constructors of knowledge. Through collaboration, reflection, and creative engagement, learners acquire not only linguistic competence but also the ability to communicate effectively in complex situations.

Moreover, innovative approaches support the development of essential twenty-first-century skills, including communication, collaboration, critical thinking, and creativity. These competencies complement communicative competence and contribute to students' overall personal and academic growth.

For upper secondary school students, innovative approaches create learning environments that reflect real-life communication. Such environments encourage learners to express opinions independently, solve problems creatively, and interact confidently with others. Consequently, students become better prepared for higher education and future professional challenges.

Conclusion

The development of creative communicative competence has become a priority in contemporary foreign language education. The integration of innovative educational approaches provides effective opportunities for enhancing students' communicative abilities, creative thinking, and active participation in learning. Learner-centered instruction, project-based learning, task-based teaching, digital technologies, and interactive activities collectively contribute to the formation of creative communicative competence among upper secondary school students.

The successful implementation of these approaches enables learners to communicate more effectively, generate original ideas, and adapt to diverse communicative situations. Therefore, innovative educational approaches should be regarded as an essential component of modern foreign language teaching aimed at preparing students for the challenges of the twenty-first century.

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$SrAl_2O_4:Eu^{2+},Dy^{3+}$ NANO-FOSFORLARI ASOSIDA UZOQ MUDDAT YORUG‘LIK CHIQARUVCHI INNOVATSION QOPLAMALAR YARATISH

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Annotatsiya: Mazkur maqolada $SrAl_2O_4:Eu^{2+},Dy^{3+}$ nano-fosforlari asosida uzoq muddat yorug‘lik chiqaruvchi innovatsion qoplamalarni yaratishning ilmiy-nazariy asoslari hamda amaliy ahamiyati yoritilgan. Tadqiqotda stronsiy alyuminat matritsasining lyuminessent xususiyatlari, Eu^{2+} aktivator va Dy^{3+} koaktivator ionlarining energiya akkumulyatsiyasi hamda uzoq muddatli fosforessensiya hosil qilishdagi roli tahlil qilingan. Nano-fosforlarning sintez usullari, morfologik va optik xususiyatlari hamda ularni polimer kompozitsion qoplamalar tarkibiga kiritish imkoniyatlari ko‘rib chiqilgan. Shuningdek, yaratilgan qoplamalarning yorug‘lik intensivligi, davomiyligi, atmosfera omillariga chidamliligi va energiya tejamkorligi baholangan. Olingan natijalar $SrAl_2O_4:Eu^{2+},Dy^{3+}$ nano-fosforlari asosidagi qoplamalarning favqulodda yoritish tizimlari, qurilish materiallari, transport infratuzilmasi va dekorativ dizayn sohalarida keng qo‘llash istiqbollari mavjudligini ko‘rsatadi.

Kalit so‘zlar: $SrAl_2O_4:Eu^{2+},Dy^{3+}$, nano-fosforlar, lyuminessensiya, fosforessensiya, uzoq muddat yorug‘lik chiqarish, innovatsion qoplamalar, stronsiy alyuminat, nanomateriallar, energiya akkumulyatsiyasi, kompozitsion qoplamalar, energiya tejamkor texnologiyalar.

Abstract: This article discusses the scientific and theoretical foundations as well as the practical significance of developing long-persistent luminescent innovative coatings based on $SrAl_2O_4:Eu^{2+},Dy^{3+}$ nanophosphors. The luminescent properties of the strontium aluminate matrix and the roles of Eu^{2+} activator and Dy^{3+} co-activator ions in energy storage and persistent phosphorescence generation are analyzed. The synthesis methods, morphological and optical characteristics of the nanophosphors, and their incorporation into polymer-based composite coatings are examined. Furthermore, the light emission intensity, persistence duration, environmental resistance, and energy efficiency of the developed coatings are evaluated. The obtained results demonstrate that coatings based on $SrAl_2O_4:Eu^{2+},Dy^{3+}$ nanophosphors have significant potential for applications in emergency lighting systems, construction materials, transportation infrastructure, safety markings, and decorative design.

Keywords: $SrAl_2O_4:Eu^{2+},Dy^{3+}$, nanophosphors, luminescence, phosphorescence, persistent luminescence, innovative coatings, strontium aluminate, nanomaterials, energy storage, composite coatings, energy-efficient technologies.

Аннотация: В данной статье рассмотрены научно-теоретические основы и практическое значение создания инновационных покрытий длительного послесвечения на основе нанофосфоров $SrAl_2O_4:Eu^{2+},Dy^{3+}$. Проанализированы люминесцентные свойства матрицы алюмината стронция, а также роль ионов Eu^{2+} в качестве активатора и Dy^{3+} в качестве коактиватора в процессах накопления энергии и формирования длительной фосфоресценции. Изучены методы синтеза нанофосфоров, их морфологические и оптические характеристики, а также возможности внедрения в состав полимерных композиционных покрытий. Кроме того, оценены интенсивность свечения, продолжительность послесвечения, устойчивость покрытий к воздействию факторов окружающей среды и их энергоэффективность. Полученные результаты свидетельствуют о высокой перспективности применения покрытий на основе нанофосфоров $SrAl_2O_4:Eu^{2+},Dy^{3+}$ в системах аварийного освещения, строительных материалах, транспортной инфраструктуре, средствах безопасности и декоративном дизайне.

Ключевые слова: $SrAl_2O_4:Eu^{2+},Dy^{3+}$, нанофосфоры, люминесценция, фосфоресценция, длительное послесвечение, инновационные покрытия, алюминат стронция, наноматериалы, накопление энергии, композиционные покрытия, энергоэффективные технологии.

Kirish: So‘nggi yillarda materialshunoslik va nanoteknologiya sohalarining jadal rivojlanishi natijasida yangi funksional xususiyatlarga ega bo‘lgan materiallarni yaratish masalasi ilmiy tadqiqotlarning eng dolzarb yo‘nalishlaridan biriga aylandi. Ayniqsa, tashqi energiya manbaiga bog‘liq bo‘lmagan holda uzoq muddat yorug‘lik chiqarish xususiyatiga ega bo‘lgan lyuminessent materiallar zamonaviy texnologiyalarda keng qo‘llanilmoqda. Bunday materiallar energiya tejamkorlikni ta’minlash, xavfsizlik tizimlarini takomillashtirish hamda ekologik barqaror yoritish yechimlarini ishlab chiqishda muhim ahamiyat kasb etadi.$SrAl_2O_4:Eu^{2+},Dy^{3+}$ tizimidagi nano-fosforlar yuqori samarali uzoq muddatli fosforessensiya xususiyatiga ega bo‘lgan materiallar sifatida alohida ilmiy qiziqish uyg‘otadi. Ushbu birikmada stronsiy alyuminat asosiy kristall matritsa vazifasini bajarib, Eu^{2+} ionlari yorug‘lik nurlanishini ta’minlovchi aktivator markazlarini, Dy^{3+} ionlari esa energiyani uzoq vaqt davomida saqlovchi chuqur tuzoq (trap) markazlarini hosil qiladi. Natijada material yorug‘lik energiyasini yutib, uni sekin-asta chiqarish orqali uzoq davom etuvchi

yorug‘lik effektini yuzaga keltiradi.Nanostrukturali fosforlarning qo‘llanilishi materialning fizik-kimyoviy va optik xususiyatlarini sezilarli darajada yaxshilaydi. Zarrachalarning nanoo‘lchamga ega bo‘lishi ularning sirt maydonini oshiradi, disperslik darajasini yaxshilaydi hamda qoplama tarkibida bir tekis taqsimlanishini ta’minlaydi. Bu esa o‘z navbatida yorug‘lik chiqarish intensivligi, davomiyligi va barqarorligiga ijobiy ta’sir ko‘rsatadi.Innovatsion qoplamalar yaratishda $SrAl_2O_4:Eu^{2+},Dy^{3+}$ nano-fosforlarini turli polimer yoki kompozitsion matritsalarga kiritish orqali yangi avlod funksional materiallar ishlab chiqilmoqda. Bunday qoplamalar tashqi muhit ta’sirlariga chidamli bo‘lib, uzoq muddat davomida o‘zining lyuminessent xususiyatlarini saqlab qoladi. Shu bilan birga, ular elektr energiyasiga bo‘lgan ehtiyojni kamaytirish orqali iqtisodiy samaradorlikni ham ta’minlaydi.Mazkur tadqiqotning dolzarbligi $SrAl_2O_4:Eu^{2+},Dy^{3+}$ nano-fosforlari asosidagi qoplamalarning optik, fizik va ekspluatatsion xususiyatlarini chuqur o‘rganish, ularning samaradorligini oshirish hamda amaliy qo‘llanilish sohalarini kengaytirish zarurati bilan belgilanadi. Shu jihatdan, ushbu yo‘nalishdagi ilmiy izlanishlar nafaqat nazariy, balki katta amaliy ahamiyatga ham ega bo‘lib, zamonaviy energiya tejamkor texnologiyalar rivojiga xizmat qiladi.

ASOSIY QISM

$SrAl_2O_4:Eu^{2+},Dy^{3+}$ NANO-FOSFORLARINING KRISTALL TUZILISHI VA LUMINESSENT MEXANIZMI

$SrAl_2O_4$ asosidagi materiallar ortorombik kristall tuzilishga ega bo‘lib, ular keng energetik zonaga ega dielektriklar sinfiga kiradi. Ushbu matritsa tarkibiga Eu^{2+} va Dy^{3+} ionlarining kiritilishi materialning optik xususiyatlarini tubdan o‘zgartiradi. Eu^{2+} ionlari $4f^6 5d^1 \rightarrow 4f^7$ elektron o‘tishlari orqali yorug‘lik emissiyasini ta’minlaydi, bu esa ko‘rinadigan spektrda kuchli yashil-sariq nurlanishni hosil qiladi. Dy^{3+} ionlari esa kristall panjarada chuqur energiya tuzoqlarini (electron traps) shakllantirib, tashqi qo‘zg‘alishdan so‘ng elektronlarning uzoq vaqt saqlanishini ta’minlaydi.Mazkur ikki ionning sinergetik ta’siri natijasida materialda uzoq muddatli fosforessensiya (persistent luminescence) hodisasi yuzaga keladi. Bu jarayonda material avval UV yoki ko‘k nurlanish orqali energiyani yutadi, keyinchalik esa ushbu energiyani asta-sekin ko‘rinadigan yorug‘lik shaklida chiqaradi. Shu sababli $SrAl_2O_4:Eu^{2+},Dy^{3+}$ tizimi “o‘z-o‘zidan yorug‘lik chiqaruvchi” materiallar guruhiga kiradi.

NANO-FOSFORLARNI SINTEZ QILISH USULLARI

$SrAl_2O_4:Eu^{2+},Dy^{3+}$ nano-fosforlarini olishda bir nechta zamonaviy sintez usullari qo‘llaniladi. Ulardan eng muhimlari:

Qattiq fazali sintez (solid-state reaction)

Sol-gel usuli
Gidrotermal sintez
Yonish (combustion) usuli

Qattiq fazali sintez sanoatda keng qo‘llanilsa-da, u nisbatan katta zarracha o‘lchamlarini hosil qiladi. Sol-gel usuli esa yuqori bir jinslilik va nanoo‘lchamli zarrachalar olish imkonini beradi. Gidrotermal sintez jarayonida yuqori bosim va harorat ostida kristall tuzilishi mukammal bo‘lgan nano-fosforlar olinadi. Yonish usuli esa qisqa vaqt ichida katta miqdorda material olishga imkon berib, iqtisodiy jihatdan samarali hisoblanadi.

Nanoo‘lchamli zarrachalar hosil bo‘lishi materialning optik faolligini oshiradi, chunki zarrachalar o‘lchamining kichrayishi emissiya markazlarining sirtga yaqinlashishini ta’minlaydi.

POLIMER MATRISALARGA INTEGRATSIYA QILISH VA QOPLAMA TEXNOLOGIYASI

Innovatsion yorug‘lik chiqaruvchi qoplamalar yaratishda $SrAl_2O_4:Eu^{2+},Dy^{3+}$ nano-fosforlari polimer, keramika yoki gibrid matritsalarga kiritiladi. Eng ko‘p qo‘llaniladigan bog‘lovchi materiallar:

epoksi qatronlar
akril polimerlar
poliuretan asosli tizimlar

Polimer matritsa nano-fosforlarni tashqi muhit ta’siridan himoya qiladi, ularning dispersligini yaxshilaydi hamda mexanik mustahkamlikni oshiradi. Qoplama tayyorlash jarayonida nano-fosforlarning optimal konsentratsiyasi juda muhim bo‘lib, ortiqcha miqdor yorug‘lik o‘tkazuvchanligini kamaytirishi mumkin, juda kam miqdor esa yorug‘lik intensivligini pasaytiradi.

Qoplamaning ishlash samaradorligi quyidagi omillarga bog‘liq:

zarrachalarning bir tekis taqsimlanishi
qoplama qalinligi
matritsa shaffofligi
nano-fosforlarning o‘lchami va morfologiyasi
aktivator ionlar konsentratsiyasi

LUMINESSENT XUSUSIYATLAR VA ENERGIYA AKKUMULYATSIYASI

$SrAl_2O_4:Eu^{2+},Dy^{3+}$ tizimining asosiy afzalligi uning yuqori kvant samaradorligi va uzoq davom etuvchi yorug‘lik chiqarishidir. Material UV nurlanishni yutgach, elektronlar yuqori energetik holatga ko‘tariladi va Dy^{3+} hosil qilgan tuzoq markazlarida ushlab

qolinadi. Vaqt o‘tishi bilan bu elektronlar asta-sekin qaytib, Eu^{2+} ionlari orqali fotonlar ko‘rinishida nurlanadi.

Bu jarayonning davomiyligi bir necha soatdan hatto bir necha kungacha yetishi mumkin. Yorug‘lik intensivligi esa dastlab yuqori bo‘lib, vaqt o‘tishi bilan sekin kamayib boradi.

TASHQI OMILLARGA CHIDAMLILIK VA BARQARORLIK

Nano-fosforlar asosidagi qoplamalarning samaradorligi ularning ekologik va mexanik barqarorligiga ham bog‘liq. $SrAl_2O_4$ tizimi namlik va karbonat angidrid ta’siriga sezgir bo‘lishi mumkin, shuning uchun polimer qoplamalar yordamida himoya qilish muhimdir. Zamonaviy tadqiqotlarda nanozarrachalarning sirtini SiO_2 yoki Al_2O_3 bilan qoplash orqali ularning barqarorligini oshirish usullari ham ishlab chiqilmoqda.

QO‘LLANILISH SOHALARI

$SrAl_2O_4:Eu^{2+},Dy^{3+}$ nano-fosforlari asosidagi qoplamalar keng amaliy ahamiyatga ega:

favqulodda chiqish yo‘laklari va xavfsizlik belgilarida

metro, tunnel va yer osti inshootlarida

avtomobil va aviatsiya sanoatida

qurilish materiallarida dekorativ va funksional qoplamalar sifatida

harbiy va maxsus obyektlarda signalizatsiya tizimlarida

Bu qoplamalar elektr energiyasiga bog‘liq bo‘lmaganligi sababli energiya tejamkor va ekologik xavfsiz yechim hisoblanadi.

ILMIY MUAMMOLAR VA ISTIQBOLLAR

Hozirgi vaqtda asosiy ilmiy muammolardan biri materialning namlikka chidamliligini oshirish, yorug‘lik davomiyligini uzaytirish hamda ishlab chiqarish tannarxini kamaytirish hisoblanadi. Shu bilan birga, nano-fosforlarning sirtini modifikatsiya qilish, yangi dopant tizimlarini qo‘llash va gibrid nanokompozitlar yaratish istiqbolli yo‘nalishlar sifatida qaralmoqda.

Kelajakda sun’iy intellekt yordamida materiallarni modellashtirish va optimallashtirish orqali yanada samarali lyuminessent tizimlarni ishlab chiqish imkoniyati paydo bo‘ladi.

Tadqiqot metodologiyasi: Ushbu tadqiqot $SrAl_2O_4:Eu^{2+},Dy^{3+}$ nano-fosforlari asosida uzoq muddat yorug‘lik chiqaruvchi innovatsion qoplamalarni yaratish, ularning fizik-kimyoviy va optik xususiyatlarini o‘rganish hamda amaliy qo‘llash imkoniyatlarini baholashga yo‘naltirilgan kompleks ilmiy yondashuv asosida amalga oshiriladi. Tadqiqot metodologiyasi materiallarni sintez qilish, struktura va morfologiyani tahlil qilish, optik xususiyatlarni o‘lchash hamda qoplama sifatini baholash bosqichlaridan iborat ko‘p bosqichli tizim sifatida shakllantirilgan.

$SrAl_2O_4:Eu^{2+},Dy^{3+}$ NANO-FOSFORLARINI OLISH METODLARI

Tadqiqot doirasida nano-fosforlarni sintez qilish uchun zamonaviy materialshunoslikda keng qo‘llaniladigan bir nechta usullar tanlab olingan. Asosiy e’tibor sol-gel, gidrotermal va qattiq fazali sintez usullariga qaratiladi. Har bir usulning o‘ziga xos afzallik va cheklovlari mavjud bo‘lib, ular hosil bo‘ladigan zarrachalarning o‘lchami, kristallik darajasi va optik samaradorligiga bevosita ta’sir ko‘rsatadi.Sol-gel usulida metall alkoksidlar va tuzlar eritma holatida molekulyar darajada aralashtirilib, keyinchalik gel hosil qilinadi va termik ishlov orqali nanoo‘lchamli kristallar shakllantiriladi. Gidrotermal sintez esa yuqori bosim va harorat sharoitida kristall o‘sishini boshqarish imkonini beradi, bu esa bir xil o‘lchamli va yuqori tozalikka ega nanozarrachalar olishga xizmat qiladi. Qattiq fazali sintez usuli esa sanoat miqyosida qo‘llash uchun qulay bo‘lib, yuqori haroratda komponentlarning diffuziyasi orqali fosfor hosil bo‘lishiga asoslanadi.

STRUKTURA VA MORFOLOGIYANI TAHLIL QILISH USULLARI

Olingan nano-fosforlarning kristall tuzilishi va fazaviy tarkibi rentgen difraksiyasi (XRD) usuli orqali o‘rganiladi. Bu usul materialning kristallik darajasini, panjara parametrlari va fazaviy tozaligini aniqlash imkonini beradi.Zarrachalarning morfologiyasi va o‘lcham taqsimoti skanerlovchi elektron mikroskopiya (SEM) va transmisyon elektron mikroskopiya (TEM) yordamida tahlil qilinadi. Ushbu usullar nanozarrachalarning shakli, agregatsiya darajasi va sirt xususiyatlarini aniqlashda muhim rol o‘ynaydi.

OPTIK XUSUSIYATLARNI O‘RGANISH METODLARI

$SrAl_2O_4:Eu^{2+},Dy^{3+}$ nano-fosforlarining asosiy xususiyati bo‘lgan lyuminessent va fosforessent xossalar fotolyuminessensiya (PL) spektroskopiyasi yordamida o‘rganiladi. Ushbu usul materialning qo‘zg‘alish va emissiya spektrlarini aniqlash, yorug‘lik intensivligi va spektral tarkibini tahlil qilish imkonini beradi.Uzoq muddatli yorug‘lik chiqarish xususiyatini baholash uchun vaqtga bog‘liq emissiya (decay curve) o‘lchovlari amalga oshiriladi. Bu orqali materialning yorug‘likni saqlash va asta-sekin chiqarish qobiliyati aniqlanadi.

QOPLAMA YARATISH TEXNOLOGIYASI VA SINOVLARI

Nano-fosforlar epoksi, akril yoki poliuretan asosidagi polimer matritsalarga ma’lum foiz nisbatda aralashtirilib, bir jinsli suspenziya hosil qilinadi. Ushbu aralashma maxsus substratlarga surtilib, ma’lum harorat va sharoitda qotiriladi.Qoplamaning sifatini baholash quyidagi ko‘rsatkichlar asosida amalga oshiriladi:

yorug‘lik intensivligi va davomiyligi

mexanik mustahkamlik (qattiqlik, ishqalanishga chidamlilik)

yopishqoqlik (adhesion strength)
namlik va UV nurlanishga chidamlilik
uzoq muddatli barqarorlik

EKSPERIMENTAL SHAROIT VA NAZORAT PARAMETRLARI

Tajriba jarayonida qo‘zg‘atuvchi nurlanish manbasi sifatida UV lampalar (odatda 365–405 nm diapazon) qo‘llaniladi. Harorat, namlik va nurlanish davomiyligi kabi omillar doimiy ravishda nazorat qilinadi. Har bir namunada bir xil sharoitlar ta’minlanib, natijalar solishtirma tahlil asosida baholanadi.

STATISTIK VA QIYOSIY TAHLIL

Olingan eksperimental natijalar matematik statistika usullari yordamida qayta ishlanadi. O‘rtacha qiymatlar, standart og‘ish va nisbiy xatoliklar hisoblanadi. Turli tarkibli qoplamalar o‘rtasidagi farqlar qiyosiy tahlil orqali aniqlanadi va optimal tarkib tanlab olinadi.

METODOLOGIYANING ILMIY AHAMIYATI

Ushbu metodologiya $SrAl_2O_4:Eu^{2+},Dy^{3+}$ nano-fosforlari asosidagi qoplamalarni tizimli o‘rganish, ularning optik va ekspluatatsion xususiyatlarini chuqur tahlil qilish hamda amaliy qo‘llash uchun optimal sharoitlarni aniqlash imkonini beradi. Taklif etilgan yondashuv nafaqat laboratoriya tadqiqotlari, balki sanoat miqyosida innovatsion yorug‘lik chiqaruvchi materiallarni yaratishda ham muhim ilmiy asos bo‘lib xizmat qiladi.

Muammo va uning tahlili: $SrAl_2O_4:Eu^{2+},Dy^{3+}$ nano-fosforlari asosida yaratiladigan uzoq muddat yorug‘lik chiqaruvchi innovatsion qoplamalar zamonaviy materialshunoslikda istiqbolli yo‘nalishlardan biri hisoblanadi. Biroq ushbu materiallarning amaliy qo‘llanilishida bir qator ilmiy-texnik muammolar mavjud bo‘lib, ular qoplamalarning samaradorligi, barqarorligi va uzoq muddatli ekspluatatsion xususiyatlariga bevosita ta’sir ko‘rsatadi. Shu sababli ushbu yo‘nalishdagi asosiy muammolarni aniqlash va ularning fizik-kimyoviy tabiatini tahlil qilish muhim ilmiy vazifa hisoblanadi.

1. NAMLIK VA ATROF-MUHIT OMILLARIGA SEZGIRLIK MUAMMOSI

$SrAl_2O_4$ asosidagi fosforlar tabiatan gidrolizga moyil bo‘lib, ayniqsa nam muhitda ularning yuzasida degradatsiya jarayonlari sodir bo‘lishi mumkin. Namlik ta’sirida material yuzasida karbonat va gidroksid birikmalar hosil bo‘lib, bu lyuminessent markazlarning faoliyatini pasaytiradi. Natijada yorug‘lik chiqarish intensivligi va davomiyligi sezilarli darajada kamayadi.Ushbu muammo nano-fosforlarning sirtini yetarli darajada himoyalamaslik yoki mos bo‘lmagan polimer matritsadan foydalanish

natijasida yanada kuchayadi. Shu sababli qoplamalar tarkibida himoya funksiyasini bajaruvchi gibrid yoki organik-noorganik matritsalar qo‘llash zarurati yuzaga keladi.

2. ZARRACHALAR AGGREGATSIYASI VA DISPERSLIK MUAMMOSI

Nanoo‘lchamli $SrAl_2O_4:Eu^{2+},Dy^{3+}$ zarrachalarining bir-biriga yopishib qolishi (agregatsiya) qoplama sifatiga salbiy ta’sir ko‘rsatadi. Aggregatsiya natijasida yorug‘lik tarqalishi notekis bo‘lib, optik samaradorlik pasayadi. Bundan tashqari, zarrachalarning notekis taqsimlanishi qoplama yuzasida dog‘lanish va lokal yorug‘lik intensivligi farqlarini keltirib chiqaradi.Bu muammo asosan zarrachalarning yuqori sirt energiyasi va yetarli stabilizatorlardan foydalanilmasligi bilan bog‘liq. Shu bois dispersantlar, sirt faol moddalar yoki ultratovushli aralashtirish texnologiyalaridan foydalanish dolzarb hisoblanadi.

3. LUMINESSENT SAMARADORLIKNING VAQT O‘TISHI BILAN PASAYISHI

$SrAl_2O_4:Eu^{2+},Dy^{3+}$ tizimida yorug‘lik chiqarish jarayoni vaqt o‘tishi bilan pasayish tendensiyasiga ega. Bu holat elektron tuzoqlarning asta-sekin bo‘shashi va material ichidagi energiya rekombinatsiya jarayonlari bilan bog‘liq. Natijada dastlab yuqori bo‘lgan yorug‘lik intensivligi vaqt o‘tishi bilan eksponensial tarzda kamayadi.Ushbu muammoni bartaraf etish uchun Dy^{3+} ionlari konsentratsiyasini optimallashtirish, shuningdek, qo‘shimcha dopant elementlar orqali chuqur energiya tuzoqlarini yaratish zarur bo‘ladi.

4. POLIMER MATRISANING DEGRADATSIYASI MUAMMOSI

Qoplamalarda qo‘llaniladigan polimerlar (epoksi, akril, poliuretan) uzoq muddatli UV nurlanish va harorat o‘zgarishlari ta’sirida degradatsiyaga uchrashi mumkin. Bu esa qoplamaning mexanik mustahkamligi va optik shaffofligini kamaytiradi.Polimer degradatsiyasi natijasida nano-fosforlarning tashqi muhit bilan bevosita aloqasi kuchayadi, bu esa ularning tezroq yemirilishiga olib keladi. Shu sababli UV-stabilizatorlar va antioksidant qo‘shimchalardan foydalanish muhim ahamiyatga ega.

5. ENERGIYA AKKUMULYATSIYA SAMARADORLIGINING CHEKLANISHI

$SrAl_2O_4:Eu^{2+},Dy^{3+}$ tizimida energiya saqlash imkoniyati mavjud bo‘lsa-da, uning maksimal sig‘imi material strukturasiga bog‘liq holda cheklangan. Tuzoq markazlarining soni va chuqurligi yetarli darajada optimallashtirilmagan hollarda yorug‘lik chiqarish davomiyligi qisqaradi.Bu muammo nano-masshtabda kristall panjarani boshqarish, dopant ionlar nisbatini optimallashtirish va yangi gibrid tizimlar yaratish orqali hal etilishi mumkin.

Muammo va uning tahlili: Yuqorida qayd etilgan muammolar shuni ko‘rsatadiki, $SrAl_2O_4:Eu^{2+},Dy^{3+}$ nano-fosforlari asosidagi qoplamalar yuqori ilmiy salohiyatga ega bo‘lsa-da, ularning amaliy samaradorligi bir qator fizik-kimyoviy va

texnologik omillarga bog‘liq. Asosiy cheklovlar materialning sirt barqarorligi, disperslik darajasi, polimer matritsa bilan o‘zaro ta’siri hamda energiya tuzoqlarining optimal tashkil etilishi bilan chambarchas bog‘liq.Shu nuqtai nazardan, kelgusidagi tadqiqotlar nanozarrachalarning sirtini modifikatsiya qilish, gibrid kompozit tizimlar yaratish hamda optik xususiyatlarni boshqarishning yangi usullarini ishlab chiqishga yo‘naltirilishi lozim. Bu esa o‘z navbatida yuqori samarali, uzoq muddat ishlaydigan va ekologik xavfsiz yorug‘lik chiqaruvchi qoplamalar yaratish imkonini beradi.

TADQIQOT NATIJALARI VA MUHOKAMA

Ushbu tadqiqot doirasida $SrAl_2O_4:Eu^{2+},Dy^{3+}$ nano-fosforlari asosida uzoq muddat yorug‘lik chiqaruvchi innovatsion qoplamalar sintez qilindi va ularning fizik-kimyoviy hamda optik xususiyatlari kompleks tarzda tahlil qilindi. Olingan natijalar materialning struktura, morfologiya, lyuminessent samaradorlik va ekspluatatsion barqarorlik ko‘rsatkichlari bo‘yicha chuqur ilmiy xulosalar chiqarish imkonini berdi.

$SRAL_2O_4:EU^{2+},DY^{3+}$ NANO-FOSFORLARINING STRUKTURA NATIJALARI

Rentgen difraksion tahlil natijalari sintez qilingan materialning asosiy fazasi ortorombik $SrAl_2O_4$ tuzilishiga mos kelishini ko‘rsatdi. Difraksion piklarning aniq va keskin shakli materialning yuqori kristallik darajasiga ega ekanligini tasdiqlaydi. Eu^{2+} va Dy^{3+} ionlarining panjaraga muvaffaqiyatli kiritilishi kristall strukturada sezilarli buzilishlar keltirib chiqarmagan, biroq lokal defektlar hosil qilib, energiya tuzoqlarining shakllanishiga sharoit yaratgan.

MORFOLOGIYA VA ZARRACHA O‘LCHAMI TAHLILI

Skanerlovchi elektron mikroskopiya natijalariga ko‘ra, hosil qilingan nano-fosforlar notekis, biroq nisbatan bir xil taqsimlangan zarracha shakliga ega ekanligi aniqlandi. Zarrachalarning o‘rtacha o‘lchami nano-diapazonga mos bo‘lib, bu ularning yuqori sirt maydoniga ega ekanligini bildiradi. TEM tahlillari esa kristall donachalarining aniq chegaralarga ega ekanligini va agregatsiya darajasi optimallashtirilgan sharoitda sezilarli darajada kamayishini ko‘rsatdi.Zarrachalarning nanoo‘lchamga ega bo‘lishi qoplama tarkibida yorug‘likning bir tekis tarqalishiga va emissiya markazlarining faolligini oshirishga xizmat qiladi.

OPTIK XUSUSIYATLAR VA LUMINESSENT XULQ-ATVOR

Fotolyuminessensiya tahlillari natijasida $SrAl_2O_4:Eu^{2+},Dy^{3+}$ tizimi kuchli yashil-sariq diapazonda emissiya berishi aniqlandi. Emissiya intensivligi Eu^{2+} ionlarining 4f–5d elektron o‘tishlari bilan bog‘liq bo‘lib, bu materialning asosiy yorug‘lik chiqarish markazini tashkil etadi.Vaqtga bog‘liq yorug‘lik so‘nish egri chiziqlari (decay curves) materialning uzoq muddatli fosforessensiya xususiyatiga ega ekanligini tasdiqladi. Yorug‘lik intensivligi dastlab tez, keyinchalik esa sekin pasayish tendensiyasini

ko‘rsatdi, bu esa Dy^{3+} ionlari tomonidan hosil qilingan chuqur energiya tuzoqlarining mavjudligini bildiradi.

QOPLAMALARNING EKSPLOATATSION XUSUSIYATLARI

Tayyorlangan kompozitsion qoplamalar epoksi va poliuretan matritsalarida yuqori adgeziya xususiyatiga ega ekanligi aniqlandi. Mexanik sinovlar qoplamaning ishqalanishga va zarba yuklamalariga nisbatan yetarlicha chidamli ekanligini ko‘rsatdi.UV nurlanish va namlik sharoitida o‘tkazilgan sinovlar natijasida qoplamalar ma’lum darajada degradatsiyaga uchrashi mumkinligi, biroq himoya qatlamlari mavjud bo‘lganda bu jarayon sezilarli darajada sekinlashishi aniqlandi. Bu esa polimer matritsa va nano-fosfor o‘rtasidagi o‘zaro ta’sirning muhimligini ko‘rsatadi.

MUHOKAMA

Olingan natijalar $SrAl_2O_4:Eu^{2+},Dy^{3+}$ nano-fosforlari asosidagi qoplamalarning yuqori ilmiy va amaliy salohiyatga ega ekanligini tasdiqlaydi. Materialning lyuminessent xususiyatlari Eu^{2+} ionlarining emissiya markazlari va Dy^{3+} ionlarining energiya tuzoqlari o‘rtasidagi muvozanatga bevosita bog‘liq.Shu bilan birga, natijalar shuni ko‘rsatadiki, nanozarrachalarning disperslik darajasi va polimer matritsa tarkibi qoplamaning umumiy samaradorligiga sezilarli ta’sir ko‘rsatadi. Agar zarrachalar agregatsiyaga uchrasa, yorug‘lik intensivligi pasayadi va qoplama notekis nurlanish beradiQoplamalarning uzoq muddatli barqarorligini ta’minlashda eng muhim omil sifatida sirt himoyasi va namlikka chidamlilik aniqlanadi. Shu sababli kelgusida gibrid kompozitlar, sirt modifikatsiyasi va nanohimoya qatlamlaridan foydalanish maqsadga muvofiq hisoblanadi.Umuman olganda, tadqiqot natijalari $SrAl_2O_4:Eu^{2+},Dy^{3+}$ asosidagi innovatsion qoplamalar energiya tejamkor yoritish tizimlari, xavfsizlik belgilari va zamonaviy funksional materiallar yaratishda yuqori istiqbolga ega ekanligini ko‘rsatadi. Shu bilan birga, ularning sanoat miqyosida keng qo‘llanilishi uchun material barqarorligini oshirish va ishlab chiqarish texnologiyasini optimallashtirish zarurligi aniqlanadi.

Xulosa: Ushbu tadqiqot $SrAl_2O_4:Eu^{2+},Dy^{3+}$ nano-fosforlari asosida uzoq muddat yorug‘lik chiqaruvchi innovatsion qoplamalarni yaratish va ularning fizik-kimyoviy, optik hamda ekspluatatsion xususiyatlarini kompleks o‘rganishga bag‘ishlandi. Olib borilgan tahlillar shuni ko‘rsatadiki, Eu^{2+} ionlari materialning asosiy emissiya markazini shakllantirib, yorug‘lik chiqarish jarayonini ta’minlaydi, Dy^{3+} ionlari esa energiyani uzoq vaqt saqlovchi chuqur tuzoq markazlarini hosil qilib, fosforessensiya davomiyligini sezilarli darajada uzaytiradi.Nanoo‘lchamli $SrAl_2O_4:Eu^{2+},Dy^{3+}$ zarrachalarining qo‘llanilishi qoplamalarning optik samaradorligini oshirib, yorug‘likning bir tekis tarqalishini va yuqori intensivlikda nurlanishini ta’minladi.

Epoksi va poliuretan asosidagi matritsalar bilan yaratilgan kompozit qoplamalar esa mexanik mustahkamlik, tashqi muhit omillariga chidamlilik va uzoq muddatli barqarorlikka ega ekanligini ko‘rsatdi.Tadqiqot natijalari ushbu materiallarning energiya tejamkor, ekologik xavfsiz va amaliy jihatdan samarali yorug‘lik tizimlarini yaratishda katta istiqbolga ega ekanligini tasdiqlaydi. Shu bilan birga, kelgusida ularning namlikka chidamliligini oshirish, emissiya davomiyligini uzaytirish va sanoat miqyosida ishlab chiqarish texnologiyalarini takomillashtirish zarurligi aniqlanadi.

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ZnO NANOZARRACHALARI ASOSIDA YUQORI INTENSIV YORUG‘LIK CHIQARUVCHI INNOVATSION BO‘YOQLAR YARATISH VA ULARNING FIZIK-KIMYOVIY XOSSALARINI TADQIQ ETISH

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Annotatsiya: Ushbu ishda rux oksidi (ZnO) nanozarrachalari asosida yuqori intensiv yorug‘lik chiqaruvchi innovatsion bo‘yoqlarni yaratish va ularning fizik-kimyoviy xossalarini tadqiq etish masalalari ko‘rib chiqiladi. ZnO nanozarrachalari o‘zining keng taqiqlangan energiya zonasi, yuqori fotostabilligi, kimyoviy barqarorligi va nurlanish xususiyatlari bilan optoelektronika hamda yorug‘lik chiqaruvchi materiallar sohasida muhim ahamiyat kasb etadi. Tadqiqot davomida ZnO nanozarrachalarining o‘lchami, morfologiyasi va sirt faolligi bo‘yoqning yorug‘lik intensivligi, bir tekis tarqalishi hamda barqarorligiga ta’siri tahlil qilinadi. Shuningdek, nanozarrachalarning matritsa bilan o‘zaro ta’siri, dispersiya darajasi va optik xossalari (fotolyuminessensiya, yutilish va sochilish spektrlari) o‘rganiladi. Natijalar asosida yuqori samarali, ekologik xavfsiz va uzoq muddat barqaror yorug‘lik chiqaruvchi bo‘yoqlar yaratish imkoniyatlari baholanadi.

Kalit so‘zlar: ZnO nanozarrachalari, fotolyuminessensiya, yorug‘lik chiqaruvchi bo‘yoqlar, optik xossalar, nanomateriallar, dispersiya, sirt faolligi, energiya zonasi, nanokompozit, fotostabillik.

Abstract: This work examines the development of innovative high-intensity light-emitting paints based on zinc oxide (ZnO) nanoparticles and the study of their physicochemical properties. ZnO nanoparticles are widely recognized for their wide band gap, high photostability, chemical stability, and luminescent properties, making them highly significant in optoelectronic applications and light-emitting materials. The study analyzes how the size, morphology, and surface activity of ZnO nanoparticles influence the light intensity, uniform dispersion, and stability of the paint systems. In addition, the interaction between nanoparticles and the matrix, as well as their dispersion behavior and optical properties (photoluminescence, absorption, and scattering spectra), are investigated. The results provide insight into the potential

development of highly efficient, environmentally friendly, and long-term stable light-emitting paints.

Keywords: ZnO nanoparticles, photoluminescence, light-emitting paints, optical properties, nanomaterials, dispersion, surface activity, band gap, nanocomposites, photostability.

Аннотация: В данной работе рассматривается разработка инновационных светоизлучающих красок высокой интенсивности на основе наночастиц оксида цинка (ZnO), а также исследование их физико-химических свойств. Наночастицы ZnO обладают широкой запрещённой зоной, высокой фотостабильностью, химической устойчивостью и люминесцентными свойствами, что делает их особенно перспективными в области оптоэлектроники и светоизлучающих материалов. В работе анализируется влияние размера, морфологии и поверхностной активности наночастиц ZnO на интенсивность свечения, равномерность распределения и стабильность красочных систем. Также исследуются взаимодействие наночастиц с матрицей, степень их диспергирования и оптические свойства (фотолюминесценция, спектры поглощения и рассеяния). Полученные результаты позволяют оценить перспективы создания высокоэффективных, экологически безопасных и долговечно стабильных светоизлучающих красок.

Ключевые слова: наночастицы ZnO, фотолюминесценция, светоизлучающие краски, оптические свойства, наноматериалы, дисперсия, поверхностная активность, запрещённая зона, нанокомпозиты, фотостабильность.

Kirish: Hozirgi kunda nanomateriallar fizikasi va kimyoviy texnologiyalar sohasida olib borilayotgan tadqiqotlar zamonaviy ilm-fanning eng dolzarb yo‘nalishlaridan biri hisoblanadi. Ayniqsa, yarimo‘tkazgich xususiyatiga ega bo‘lgan nanozarrachalar asosida yangi funksional materiallar yaratish optoelektronika, fotonika, sensorika hamda energiya tejamkor texnologiyalar rivojida muhim o‘rin tutmoqda. Shu jihatdan rux oksidi (ZnO) nanozarrachalari o‘zining noyob fizik-kimyoviy xossalari bilan alohida ilmiy qiziqish uyg‘otadi.ZnO materiali keng taqiqlangan energiya zonasi (taxminan 3.37 eV), yuqori eksiton bog‘lanish energiyasi, kuchli fotolyuminessent xususiyatlari hamda kimyoviy barqarorligi bilan ajralib turadi. Ushbu xossalar uni ultrabinafsha nurlanish manbalari, yorug‘lik chiqaruvchi qurilmalar, fotoaktiv qoplamalar va nanokompozit tizimlarda qo‘llash uchun istiqbolli material sifatida namoyon etadi. Nanoo‘lchamga o‘tganda esa ZnO zarrachalarining sirt maydoni keskin ortadi, kvant o‘lcham effektlari kuchayadi va natijada uning optik

hamda elektron xossalari sezilarli darajada o‘zgaradi.So‘nggi yillarda ZnO nanozarrachalari asosida yaratilayotgan yorug‘lik chiqaruvchi bo‘yoqlar (luminescent coatings) ilmiy va amaliy jihatdan katta ahamiyat kasb etmoqda. Bunday materiallar nafaqat estetik va dekorativ maqsadlarda, balki xavfsizlik belgilarini yaratish, tibbiy diagnostika, ekologik monitoring hamda yuqori texnologiyali qoplama tizimlarida ham qo‘llanilishi mumkin. Shu bilan birga, ularning yorug‘lik intensivligi, barqarorligi va dispersiya xususiyatlari ko‘p jihatdan nanozarrachalarning o‘lchami, shakli, sirt faolligi hamda matritsa bilan o‘zaro ta’siriga bog‘liqdir.Biroq, hozirgi kunda ZnO nanozarrachalari asosidagi yorug‘lik chiqaruvchi bo‘yoqlarni ishlab chiqish va ularning fizik-kimyoviy xossalarini to‘liq o‘rganish bo‘yicha bir qator muammolar mavjud. Jumladan, nanozarrachalarning agregatsiyalanishi, yorug‘lik chiqish samaradorligining pasayishi, hamda uzoq muddatli barqarorlikni ta’minlash kabi masalalar chuqur ilmiy yondashuvni talab etadi. Shu sababli, ushbu yo‘nalishda olib borilayotgan tadqiqotlar nafaqat yangi materiallar yaratish, balki ularning fundamental xususiyatlarini tushunish nuqtayi nazaridan ham muhim ahamiyatga ega.Mazkur ishning asosiy maqsadi ZnO nanozarrachalari asosida yuqori intensiv yorug‘lik chiqaruvchi innovatsion bo‘yoqlarni yaratish va ularning fizik-kimyoviy hamda optik xossalarini kompleks ravishda tadqiq etishdan iborat. Tadqiqot natijalari asosida yuqori samarali, ekologik jihatdan xavfsiz va amaliy qo‘llanishga ega bo‘lgan yangi avlod luminescent materiallarni ishlab chiqish imkoniyatlari baholanadi.

Asosiy qism

1. ZnO nanozarrachalarining strukturaviy va fizik-kimyoviy xossalari

Rux oksidi (ZnO) nanozarrachalari yarimo‘tkazgichlar sinfiga mansub bo‘lib, ular wurtzit kristall tuzilishga ega. Ushbu tuzilma materialning optik va elektron xossalarini belgilovchi asosiy omillardan biri hisoblanadi. ZnO ning keng taqiqlangan energiya zonasi (~3.37 eV) unga ultrabinafsha diapazonda faol bo‘lish imkonini beradi, bu esa fotolyuminessensiya jarayonlarida muhim rol o‘ynaydi. Nanoo‘lchamga o‘tganda kvant o‘lcham effekti kuchayadi, natijada elektron va kovaklarning rekombinatsiya jarayonlari tezlashadi hamda yorug‘lik chiqarish samaradorligi ortadi. Bundan tashqari, ZnO yuqori kimyoviy barqarorlikka, issiqlikka chidamlilikka va ekologik xavfsizlikka ega bo‘lib, uni amaliy qo‘llanilish uchun istiqbolli materialga aylantiradi.

2. ZnO nanozarrachalarini olish usullari va ularning xususiyatlarga ta’siri

ZnO nanozarrachalarini sintez qilishda turli usullar qo‘llaniladi, jumladan sol-gel usuli, gidrotermal sintez, kimyoviy cho‘ktirish va mikroemulsiya usullari. Har bir usul zarrachalarning o‘lchami, morfologiyasi va sirt holatiga sezilarli ta’sir ko‘rsatadi. Masalan, gidrotermal usul yordamida bir xil o‘lchamli va yaxshi kristallangan

nanozarrachalar olish mumkin bo‘lsa, sol-gel usuli yuqori dispersiyali tizimlarni yaratish imkonini beradi. Nanozarrachalarning o‘lchami kamaygan sari ularning sirt energiyasi ortadi, bu esa ularning agregatsiyalanish tendensiyasini kuchaytiradi. Shu sababli stabilizatorlar va sirt faol moddalar qo‘llanilishi muhim ahamiyat kasb etadi.

3. Yorug‘lik chiqaruvchi bo‘yoqlar tarkibida ZnO nanozarrachalarining roli

ZnO nanozarrachalari asosida yaratilgan bo‘yoqlarda ular asosiy faol komponent sifatida yorug‘lik chiqarish markazi vazifasini bajaradi. Matritsa sifatida polimerlar, smolalar yoki organik bog‘lovchilar ishlatiladi. Nanozarrachalarning matritsa ichida bir tekis taqsimlanishi bo‘yoqning optik xossalarini belgilaydi. Agar dispersiya bir xil bo‘lmasa, yorug‘lik sochilishi kuchayadi va umumiy intensivlik pasayadi. Shu sababli nanozarrachalarni sirt modifikatsiyasi orqali faollashtirish, ularning polimer bilan mosligini oshirish muhim bosqich hisoblanadi. ZnO ning fotolyuminessent xususiyati ultrabinafsha nurlanish ta’sirida kuchayib, ko‘rinadigan yorug‘lik emissiyasini hosil qiladi.

4. Optik xossalar va fotolyuminessensiya mexanizmi

ZnO nanozarrachalarida yorug‘lik chiqarish jarayoni asosan elektron-kovak rekombinatsiyasi bilan bog‘liq. Ultrabinafsha nurlanish ta’sirida elektronlar valent zonadan o‘tkazuvchanlik zonasiga o‘tadi va keyinchalik teshiklar bilan rekombinatsiya qiladi. Ushbu jarayon natijasida energiya foton ko‘rinishida ajralib chiqadi. Defektlar, masalan kislorod bo‘shliqlari yoki rux interstitsiyalari, emissiya spektrining kengayishiga va rang o‘zgarishiga olib kelishi mumkin. Nanozarrachalarning o‘lchami kichraygan sari kvant chegaralanish effekti kuchayib, emissiya spektri siljishi kuzatiladi. Shu sababli optik xossalarni boshqarish uchun zarracha o‘lchami va sirt holati muhim parametr hisoblanadi.

5. Innovatsion yorug‘lik chiqaruvchi bo‘yoqlarni ishlab chiqish texnologiyasi

Bunday bo‘yoqlarni yaratishda ZnO nanozarrachalari polimer matritsa ichiga dispers holatda kiritiladi. Texnologik jarayon bir necha bosqichdan iborat: nanozarrachalarni sintez qilish, ularni sirtini modifikatsiya qilish, dispersiya hosil qilish va yakuniy kompozitni tayyorlash. Sirt modifikatsiyasi zarrachalarning aglomeratsiyasini kamaytiradi va ularning matritsa bilan bog‘lanishini kuchaytiradi. Tayyor bo‘yoq qoplama yuzasiga surtilganda, u tashqi UV manba ta’sirida yorug‘lik chiqarish xususiyatiga ega bo‘ladi. Bunday materiallar xavfsizlik belgilarida, dekorativ dizaynda va texnik indikatorlarda qo‘llanilishi mumkin.

6. Fizik-kimyoviy barqarorlik va amaliy qo‘llanilish istiqbollari

ZnO nanozarrachalari asosidagi bo‘yoqlarning barqarorligi ularning uzoq muddat davomida optik xossalarini saqlab qolish qobiliyati bilan belgilanadi. Polimer

matritsaning tanlovi, nanozarrachalarning dispersiya darajasi va tashqi muhit omillari (namlik, harorat, UV ta’siri) bu jarayonga bevosita ta’sir qiladi. To‘g‘ri ishlab chiqilgan tizimlarda yorug‘lik intensivligi uzoq vaqt davomida sezilarli darajada kamaymaydi. Kelajakda bunday materiallar aqlli qoplamalar, tibbiy diagnostika tizimlari, energiya tejovchi yoritish texnologiyalari va nano-sensorlarda keng qo‘llanilishi mumkin.

Tadqiqot metodologiyasi: Ushbu tadqiqot ZnO (rux oksidi) nanozarrachalari asosida yuqori intensiv yorug‘lik chiqaruvchi innovatsion bo‘yoqlarni yaratish hamda ularning fizik-kimyoviy va optik xossalarini kompleks o‘rganishga qaratilgan bo‘lib, u bir nechta izchil va o‘zaro bog‘langan ilmiy bosqichlar asosida amalga oshiriladi. Tadqiqot metodologiyasi eksperimental, analitik va kompozitsion materialshunoslik yondashuvlarini o‘z ichiga oladi.

1. Tadqiqot dizayni va umumiy yondashuv

Tadqiqot ishida gibrid yondashuv qo‘llanilib, unda nazariy tahlil va laboratoriya tajribalari uyg‘unlashtiriladi. Avval ZnO nanozarrachalarining fizik-kimyoviy xossalari bo‘yicha ilmiy adabiyotlar tahlil qilinadi, so‘ngra eksperimental sintez va sinovlar amalga oshiriladi. Tadqiqotning asosiy maqsadi – nanozarrachalar strukturasini boshqarish orqali yorug‘lik chiqarish samaradorligini oshirish va barqaror kompozit bo‘yoq tizimini yaratishdan iborat.

2. ZnO nanozarrachalarini sintez qilish metodlari

ZnO nanozarrachalarini olish uchun bir nechta kimyoviy usullar tanlanadi:

Sol-gel usuli – yuqori tozalikka ega va bir xil o‘lchamli nanozarrachalar olish imkonini beradi.

Gidrotermal usul – kristallik darajasi yuqori bo‘lgan, shakli nazorat qilinadigan zarrachalar sintezi uchun qo‘llaniladi.

Kimyoviy cho‘ktirish usuli – tez va iqtisodiy jihatdan samarali usul bo‘lib, keng miqyosli ishlab chiqarish uchun mos.

Har bir usulda pH darajasi, harorat, reaksiya vaqti va prekursor konsentratsiyasi qat’iy nazorat qilinadi. Bu parametrlar nanozarrachalarning o‘lchami, morfologiyasi va dispersiya xususiyatlariga bevosita ta’sir ko‘rsatadi.

3. Nanozarrachalarni modifikatsiya qilish va stabilizatsiya

Sintez qilingan ZnO nanozarrachalarining agregatsiyalanishini oldini olish va ularni polimer matritsaga moslashtirish uchun sirt modifikatsiyasi amalga oshiriladi. Bunda organik ligandlar, sirt faol moddalar yoki silan birikmalari qo‘llaniladi. Ushbu jarayon zarrachalarning gidrofil-gidrofob muvozanatini optimallashtiradi hamda ularning matritsa ichida bir tekis taqsimlanishini ta’minlaydi.

4. Yorug‘lik chiqaruvchi bo‘yoq kompozitini tayyorlash

Kompozit bo‘yoq tizimi ZnO nanozarrachalari va polimer bog‘lovchi asosida tayyorlanadi. Polimer sifatida epoksi smola, poliuretan yoki akril asosli tizimlar tanlanadi. Nanozarrachalar polimer matritsaga mexanik aralashtirish, ultratovushli dispersiya yoki yuqori tezlikdagi gomogenizatsiya usullari orqali kiritiladi. Bu bosqichda asosiy maqsad – zarrachalarning aglomeratsiyasini minimallashtirish va optik bir jinslilikni ta’minlash.

5. Strukturaviy va morfologik tahlil usullari

Tayyorlangan nanozarrachalar va kompozit materiallarning tuzilishi bir nechta zamonaviy instrumental usullar yordamida o‘rganiladi:

X-ray difraksiya (XRD) – kristall tuzilma va fazaviy tarkibni aniqlash uchun.

Scanning Electron Microscopy (SEM) – zarrachalar morfologiyasi va o‘lchamlarini tahlil qilish uchun.

Transmission Electron Microscopy (TEM) – nanoo‘lchamdagi ichki struktura va dispersiyani o‘rganish uchun.

Ushbu usullar materialning fizik tuzilishi va uning optik xossalari o‘rtasidagi bog‘liqlikni aniqlash imkonini beradi.

6. Optik va fotolyuminessent xossalarni o‘rganish

ZnO asosidagi kompozitlarning asosiy xususiyati ularning yorug‘lik chiqarish qobiliyatidir. Bu xususiyat quyidagi usullar bilan baholanadi:

Fotolyuminessensiya (PL) spektroskopiyasi – emissiya intensivligi va spektral tarkibini aniqlash.

UV-Vis spektroskopiya – yorug‘lik yutilish diapazoni va optik o‘tishlarni o‘rganish.

Spektral tahlil – emissiya rangining o‘zgarishi va kvant effektlarini baholash.

Tadqiqot davomida nanozarrachalar o‘lchami va defektlar sonining emissiya intensivligiga ta’siri chuqur tahlil qilinadi.

7. Fizik-kimyoviy barqarorlikni baholash

Kompozit bo‘yoqlarning uzoq muddatli barqarorligi quyidagi omillar asosida o‘rganiladi: harorat o‘zgarishi, namlik ta’siri, UV nurlanishga chidamlilik va mexanik mustahkamlik. Shu maqsadda tezlashtirilgan qarish (accelerated aging) testlari o‘tkaziladi. Natijalar asosida materialning amaliy qo‘llanishga yaroqlilik darajasi baholanadi.

8. Ma’lumotlarni qayta ishlash va tahlil usullari

Olingan eksperimental natijalar statistik va grafik tahlil usullari yordamida qayta ishlanadi. Zarrachalar o‘lchami, emissiya intensivligi va dispersiya darajasi o‘rtasidagi

bog‘liqlik korrelyatsion tahlil orqali aniqlanadi. Natijalar ilmiy asoslangan xulosalar chiqarish uchun xizmat qiladi.

Xulosa sifatida, ushbu metodologiya ZnO nanozarrachalari asosidagi yorug‘lik chiqaruvchi bo‘yoqlarning yaratilishi va ularning xossalarini chuqur ilmiy asosda o‘rganishga imkon beradi hamda yangi avlod funksional nanomateriallar ishlab chiqish uchun mustahkam asos yaratadi.

Muammo va uning tahlili: ZnO (rux oksidi) nanozarrachalari asosida yuqori intensiv yorug‘lik chiqaruvchi innovatsion bo‘yoqlarni yaratish bugungi kunda nanomateriallar fizikasi va kimyoviy texnologiyalarining dolzarb yo‘nalishlaridan biri hisoblanadi. Biroq ushbu yo‘nalishda olib borilayotgan tadqiqotlar jarayonida bir qator ilmiy va amaliy muammolar mavjud bo‘lib, ular materialning kutilgan optik samaradorligini to‘liq amalga oshirishga to‘sqinlik qiladi. Eng asosiy muammo ZnO nanozarrachalarining yuqori fotolyuminessent xususiyatlarini barqaror, bir jinsli va uzoq muddat ishlaydigan bo‘yoq tizimi ichida saqlab qolish bilan bog‘liqdir.Nanozarrachalar tabiatiga xos bo‘lgan eng muhim muammolardan biri ularning yuqori sirt energiyasi tufayli agregatsiyalanish tendensiyasidir. ZnO nanozarrachalari o‘zaro tortishish kuchlari ta’sirida bir-biriga yopishib, yirik klasterlar hosil qiladi. Natijada tizimda bir jinslilik buziladi, yorug‘lik sochilishi kuchayadi va optik shaffoflik pasayadi. Bu esa bevosita bo‘yoqning yorug‘lik chiqarish intensivligiga salbiy ta’sir ko‘rsatadi. Ayniqsa polimer matritsa ichida zarrachalarning notekis taqsimlanishi muammo yanada keskinlashadi.Yana bir muhim jihat ZnO nanozarrachalarining fotolyuminessensiya xususiyatlarining barqaror emasligidir. Ularning yorug‘lik chiqarish mexanizmi kristall tuzilma va undagi nuqsonlar bilan chambarchas bog‘liq bo‘lib, kislorod vakansiyalari yoki boshqa nuqsonlar emissiya intensivligini o‘zgartirishi mumkin. Ba’zi hollarda bu nuqsonlar yorug‘lik chiqishini kuchaytirsa, boshqa holatlarda uning beqarorligiga yoki pasayishiga olib keladi. Bundan tashqari, zarracha o‘lchamining juda kichrayishi kvant effektlarini kuchaytirib, emissiya spektrining siljishiga va intensivlikning pasayishiga sabab bo‘ladi.Muammoning yana bir muhim jihati ZnO nanozarrachalari va polimer matritsa o‘rtasidagi moslik masalasidir. Ko‘pincha bu ikki komponent o‘rtasida to‘liq fizik-kimyoviy moslashuv kuzatilmaydi, natijada zarrachalar matritsa ichida notekis tarqaladi, fazalararo ajralish yuzaga keladi va optik xossalar yomonlashadi. Bu holat bo‘yoqning uzoq muddatli barqarorligini ham sezilarli darajada kamaytiradi.Shuningdek, tashqi muhit omillari ham muhim cheklovchi faktor hisoblanadi. Ultrabinafsha nurlanish, harorat o‘zgarishi va namlik ta’siri natijasida polimer matritsa degradatsiyaga uchrashi, nanozarrachalar yuzasi o‘zgarishi va

natijada fotolyuminessensiya intensivligining pasayishi kuzatiladi. Bu esa materialning amaliy qo‘llanish imkoniyatlarini cheklab qo‘yadi.Bundan tashqari, ZnO nanozarrachalarini sanoat miqyosida barqaror sifatda ishlab chiqarish va ularni kompozit tizimlarga bir xil dispersiyada kiritish ham texnologik jihatdan murakkab jarayon hisoblanadi. Sintez sharoitlaridagi kichik o‘zgarishlar ham zarrachalarning o‘lchami, shakli va kristallik darajasiga sezilarli ta’sir ko‘rsatadi.Umuman olganda, ZnO nanozarrachalari asosidagi yorug‘lik chiqaruvchi bo‘yoqlarni yaratishdagi asosiy muammolar ularning dispersiya barqarorligi, fotolyuminessensiya samaradorligi, matritsa bilan mosligi hamda tashqi omillarga chidamliligi bilan bog‘liqdir. Ushbu muammolarni hal etish uchun nanozarrachalarni sirt modifikatsiyasi qilish, optimal sintez sharoitlarini tanlash va zamonaviy dispersiya texnologiyalarini qo‘llash zarur hisoblanadi.

Tadqiqot natijalari va muhokama: Ushbu tadqiqot davomida ZnO (rux oksidi) nanozarrachalari asosida yuqori intensiv yorug‘lik chiqaruvchi innovatsion bo‘yoqlarni yaratish va ularning fizik-kimyoviy hamda optik xossalarini o‘rganish bo‘yicha muhim ilmiy natijalar olindi. Olingan natijalar nanozarrachalarning o‘lchami, tuzilishi, dispersiya darajasi va matritsa bilan o‘zaro ta’siri yorug‘lik chiqarish samaradorligiga bevosita ta’sir ko‘rsatishini yaqqol namoyon etdi.Tahlillar shuni ko‘rsatdiki, ZnO nanozarrachalarining o‘lchami yorug‘lik emissiyasi intensivligini belgilovchi asosiy omillardan biridir. Zarrachalar o‘lchami ma’lum chegaragacha kichrayganda kvant o‘lcham effektlari kuchayadi va fotolyuminessensiya intensivligi ortadi. Biroq o‘lcham haddan tashqari kichrayganda yuzaki defektlar soni ortib, rekombinatsiya jarayonlari buziladi va natijada emissiya pasayadi. Bu holat optimal o‘lcham diapazonini tanlash zarurligini ko‘rsatadi.Dispersiya natijalari nanozarrachalarning polimer matritsa ichida bir tekis taqsimlanishi yorug‘lik chiqarish sifatini sezilarli darajada yaxshilashini tasdiqladi. Ultrasonik ishlov berish va sirt modifikatsiyasi qo‘llanilganda zarrachalar agregatsiyasi kamayib, tizimning optik bir jinsliligi oshdi. Dispersiya yetarli darajada amalga oshirilmagan namunalar esa yorug‘likning kuchli sochilishi va intensivlikning pasayishi bilan tavsiflandi.Fotolyuminessensiya spektrlarini tahlil qilish ZnO nanozarrachalari ultrabinafsha nurlanish ta’sirida keng diapazonli ko‘rinadigan yorug‘lik chiqarishini ko‘rsatdi. Emissiya intensivligi kristall struktura ichidagi nuqsonlar soniga bog‘liq bo‘lib, kislorod vakansiyalari yorug‘lik chiqarish markazlari sifatida muhim rol o‘ynadi. Shu bilan birga, defektlar ortishi spektrning kengayishiga va umumiy intensivlikning pasayishiga olib keldi.Barqarorlik sinovlari kompozit bo‘yoqlarning tashqi muhit omillariga sezgirligini aniqladi. Harorat va namlik ta’siri polimer

matritsaning fizik tuzilishini o‘zgartirib, vaqt o‘tishi bilan yorug‘lik intensivligining kamayishiga sabab bo‘ldi. Sirt modifikatsiyasi qilingan nanozarrachalar asosidagi namunalar esa nisbatan yuqori barqarorlik ko‘rsatdi, bu esa sirt kimyosi muhim ahamiyatga ega ekanini tasdiqlaydi.Muhokama jarayonida natijalar boshqa ilmiy ishlar bilan taqqoslanganda, ZnO nanozarrachalarining optik xossalari bir nechta omillar – zarracha o‘lchami, kristallik darajasi, defektlar miqdori va matritsa bilan mosligi – o‘rtasidagi murakkab bog‘liqlikka asoslanishi aniqlandi. Shu sababli har bir parametrni alohida emas, balki tizimli ravishda optimallashtirish talab etiladi.Tadqiqot yakunlari ZnO nanozarrachalari asosidagi yorug‘lik chiqaruvchi bo‘yoqlar istiqbolli materiallar ekanini ko‘rsatdi. Ularning samaradorligini yanada oshirish uchun dispersiya texnologiyalarini takomillashtirish, sirtni modifikatsiya qilish usullarini rivojlantirish va kristall defektlarni aniq nazorat qilish zarur.

Xulosa: Ushbu tadqiqotda ZnO (rux oksidi) nanozarrachalari asosida yuqori intensiv yorug‘lik chiqaruvchi innovatsion bo‘yoqlarni yaratish va ularning fizik-kimyoviy hamda optik xossalarini o‘rganish masalalari tahlil qilindi. Olingan natijalar ZnO nanozarrachalarining o‘lchami, kristall tuzilishi, sirt holati va dispersiya darajasi ularning fotolyuminessensiya xususiyatlariga bevosita ta’sir ko‘rsatishini ko‘rsatdi.Tadqiqot davomida nanozarrachalarning optimal o‘lcham diapazonini tanlash yorug‘lik emissiyasi samaradorligini oshirishda muhim omil ekanligi aniqlandi. Juda kichik yoki juda yirik zarrachalar tizimning optik xossalarini yomonlashtirishi mumkinligi kuzatildi. Shu bilan birga, ZnO nanozarrachalarini polimer matritsa ichida bir tekis taqsimlash yorug‘lik intensivligi va materialning optik bir jinsliligini sezilarli darajada yaxshilaydi.Sirt modifikatsiyasi va zamonaviy dispersiya usullarini qo‘llash natijasida nanozarrachalar agregatsiyasi kamayib, kompozit tizimning barqarorligi oshdi. Fotolyuminessensiya tahlillari ZnO nanozarrachalari ultrabinafsha nurlanish ta’sirida keng spektrli yorug‘lik chiqarishini tasdiqladi. Shu bilan birga, kristall defektlar emissiya jarayonida muhim rol o‘ynashi, lekin ularning ortiqcha miqdori samaradorlikni pasaytirishi aniqlandi.Barqarorlik sinovlari tashqi muhit omillari (harorat, namlik, UV nurlanish) bo‘yoq xossalariga sezilarli ta’sir ko‘rsatishini, biroq sirt modifikatsiyasi qilingan tizimlar nisbatan yuqori chidamlilikka ega ekanini ko‘rsatdi.Tadqiqot yakunlariga ko‘ra, ZnO nanozarrachalari asosidagi yorug‘lik chiqaruvchi bo‘yoqlar istiqbolli funksional materiallar hisoblanadi va ular xavfsizlik qoplamalari, optik indikatorlar hamda zamonaviy nanokompozit tizimlarda keng qo‘llanilishi mumkin.

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ZnO/TiO₂ NANOKOMPOZITLARI ASOSIDA LYUMINESSENT VA O‘Z-O‘ZINI TOZALOVCHI BO‘YOQLAR YARATISH

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Annotatsiya: Ushbu tadqiqotda ZnO/TiO₂ nanokompozitlari asosida lyuminessent va o‘z-o‘zini tozalovchi xususiyatlarga ega innovatsion bo‘yoqlarni yaratish masalalari o‘rganildi. ZnO va TiO₂ nanostrukturalarining fotokatalitik hamda optik xossalaridan samarali foydalanish orqali yuqori funksional qoplamalar olish imkoniyatlari tahlil qilindi. Nanokompozit tarkibidagi komponentlarning o‘zaro sinergik ta’siri natijasida bo‘yoqlarning ultrabinafsha nurlanish ta’sirida lyuminessensiya intensivligi oshishi, shuningdek, organik ifloslantiruvchi moddalarni fotokatalitik parchalanish orqali sirtning o‘z-o‘zini tozalash qobiliyati yaxshilanishi aniqlandi. Tadqiqot natijalari ZnO/TiO₂ asosidagi nanokompozit bo‘yoqlarni qurilish materiallari, dekorativ qoplamalar hamda ekologik xavfsiz funksional sirtlar yaratishda qo‘llash istiqbolli ekanligini ko‘rsatadi

Kalit so‘zlar: ZnO, TiO₂, nanokompozit, lyuminessensiya, fotokataliz, o‘z-o‘zini tozalovchi qoplama, funksional bo‘yoq, nanomateriallar, ultrabinafsha nurlanish, sirt modifikatsiyasiq.

Abstract: This study investigates the development of luminescent and self-cleaning paints based on ZnO/TiO₂ nanocomposites. The potential of utilizing the photocatalytic and optical properties of ZnO and TiO₂ nanostructures for producing high-performance functional coatings was analyzed. The synergistic interaction between the nanocomposite components was found to enhance luminescence intensity under ultraviolet irradiation and improve the self-cleaning ability of the coating through the photocatalytic degradation of organic contaminants. The obtained results demonstrate that ZnO/TiO₂-based nanocomposite paints are promising materials for applications in construction, decorative coatings, and environmentally friendly functional surfaces. The combination of luminescent and photocatalytic properties contributes to the development of advanced multifunctional coating systems with improved durability and environmental performance.

q Keywords: ZnO, TiO_2, nanocomposite, luminescence, photocatalysis, self-cleaning coating, functional paint, nanomaterials, ultraviolet radiation, surface modification.

Аннотация: В данной работе исследованы вопросы создания люминесцентных и самоочищающихся красок на основе нанокомпозитов ZnO/TiO_2. Проанализированы возможности эффективного использования фотокаталитических и оптических свойств наноструктур ZnO и TiO_2 для получения высокофункциональных покрытий. Установлено, что синергетическое взаимодействие компонентов нанокомпозита способствует повышению интенсивности люминесценции под воздействием ультрафиолетового излучения, а также улучшению способности поверхности к самоочищению за счет фотокаталитического разложения органических загрязнителей. Полученные результаты свидетельствуют о перспективности применения нанокомпозитных красок на основе ZnO/TiO_2 в строительных материалах, декоративных покрытиях и экологически безопасных функциональных поверхностях. Сочетание люминесцентных и фотокаталитических свойств способствует разработке современных многофункциональных покрытий с улучшенными эксплуатационными характеристиками.

Ключевые слова: ZnO, TiO_2, нанокомпозит, люминесценция, фотокатализ, самоочищающееся покрытие, функциональная краска, наноматериалы, ультрафиолетовое излучение, модификация поверхности.

Kirish: So‘nggi yillarda nanomateriallar va ular asosida yaratilayotgan funksional qoplamalarga bo‘lgan qiziqish jahon ilmiy hamjamiyatida sezilarli darajada ortib bormoqda. Bunga sabab sifatida zamonaviy sanoat, qurilish, ekologiya va materialshunoslik sohalarida yuqori funksional xususiyatlarga ega bo‘lgan innovatsion materiallarga ehtiyojning ortib borayotganligini ko‘rsatish mumkin. Ayniqsa, bir vaqtning o‘zida bir nechta foydali xususiyatlarni namoyon etuvchi ko‘p funksiyali qoplamalar yaratish ilmiy tadqiqotlarning ustuvor yo‘nalishlaridan biriga aylanmoqda. Bunday materiallar orasida lyuminessent va o‘z-o‘zini tozalovchi xossalarga ega qoplamalar alohida ahamiyat kasb etadi.Atrof-muhitning ifloslanishi, binolar va inshootlar sirtlarida organik hamda noorganik ifloslantiruvchi moddalarning to‘planishi, shuningdek, qoplamalarning ekspluatatsion muddatini uzaytirish zarurati o‘z-o‘zini tozalovchi materiallarni yaratishga bo‘lgan ehtiyojni yanada kuchaytirmoqda. Shu bilan birga, xavfsizlikni ta’minlash, dekorativ dizayn imkoniyatlarini kengaytirish va energiya tejamkor texnologiyalarni rivojlantirish

maqsadida lyuminessent materiallardan foydalanish ko‘lami ham tobora kengayib bormoqda. Mazkur omillar lyuminessent va fotokatalitik xususiyatlarni birlashtirgan yangi avlod qoplamalarini ishlab chiqishni dolzarb ilmiy masalaga aylantirmoqda.Metall oksidli yarimo‘tkazgich nanomateriallar orasida rux oksidi (ZnO) va titan dioksidi (TiO_2) o‘zining noyob fizik-kimyoviy, optik va fotokatalitik xossalari bilan ajralib turadi. ZnO yuqori lyuminessent faollik, keng taqiqlangan energetik zona hamda yuqori eksiton bog‘lanish energiyasiga ega bo‘lib, turli optoelektronik va fotonik qurilmalarda samarali qo‘llaniladi. TiO_2 esa kuchli fotokatalitik faolligi, kimyoviy barqarorligi, toksik bo‘lmaganligi va iqtisodiy jihatdan maqbulligi bilan tavsiflanadi. Ushbu materiallarning nanokompozit shaklda birlashtirilishi ularning individual xossalarini o‘zaro to‘ldirish hamda sinergik samarani yuzaga keltirish imkonini beradi.ZnO/TiO_2 nanokompozitlari asosida yaratilgan materiallar ultrabinafsha nurlanish ta’sirida yuqori fotokatalitik faollik namoyon etishi, organik ifloslantiruvchi moddalarni samarali parchalay olishi va shu bilan birga lyuminessent xususiyatlarni saqlab qolishi bilan alohida qiziqish uyg‘otmoqda. Biroq mazkur nanokompozitlarni bo‘yoq tizimlari tarkibiga integratsiyalash, ularning optik va fotokatalitik xossalarini muvozanatlash hamda uzoq muddatli ekspluatatsion barqarorligini ta’minlash bilan bog‘liq masalalar hali ham to‘liq yechimini topmagan.Shu munosabat bilan ZnO/TiO_2 nanokompozitlari asosida lyuminessent va o‘z-o‘zini tozalovchi bo‘yoqlar yaratish, ularning strukturaviy, optik va fotokatalitik xususiyatlarini tadqiq etish hamda amaliy qo‘llash imkoniyatlarini baholash muhim ilmiy va amaliy ahamiyat kasb etadi. Mazkur tadqiqotning asosiy maqsadi ZnO/TiO_2 nanokompozitlari asosida yuqori samaradorlikka ega bo‘lgan ko‘p funksiyali bo‘yoq qoplamalarini ishlab chiqish hamda ularning lyuminessent va o‘z-o‘zini tozalash xossalarini ilmiy jihatdan asoslashdan iborat.

Asosiy qism: Nanotexnologiyalar rivojlanishi natijasida materiallarning fizik-kimyoviy xossalarini boshqarish va ularga yangi funksional imkoniyatlar berish istiqbollari sezilarli darajada kengaydi. Ayniqsa, metall oksidli nanostrukturalar asosida yaratilayotgan kompozitsion materiallar yuqori fotokatalitik faollik, optik barqarorlik, korroziyaga chidamlilik va ekologik xavfsizlik kabi afzalliklari bilan ajralib turadi. Shu nuqtai nazardan ZnO va TiO_2 nanomateriallari zamonaviy funksional qoplamalar yaratishda eng istiqbolli komponentlardan biri hisoblanadi.ZnO nanostrukturalari keng taqiqlangan energetik zona (3,37 eV) hamda yuqori eksiton bog‘lanish energiyasiga ega bo‘lib, kuchli lyuminessent xususiyatlarni namoyon etadi. Mazkur material ultrabinafsha nurlanishni samarali yutish va uni ko‘rinadigan diapazondagi yorug‘lik ko‘rinishida qayta nurlantirish qobiliyatiga ega. Shu sababli

ZnO asosidagi nanomateriallar xavfsizlik belgilarini ishlab chiqarish, dekorativ qoplamalar yaratish, optoelektronika va sensor texnologiyalarida keng qo‘llanilmoqda. Biroq sof ZnO nanostrukturalarida elektron-kovak juftlarining tez rekombinatsiyalanishi fotokatalitik samaradorlikning pasayishiga olib keladi. Ushbu kamchiliklarni bartaraf etish maqsadida ZnO boshqa yarimo‘tkazgich materiallar bilan nanokompozit shaklda birlashtiriladi.Titan dioksidi (TiO_2) esa fotokataliz sohasida eng ko‘p o‘rganilgan materiallardan biri hisoblanadi. Uning anatase fazasi yuqori fotokatalitik faollikka ega bo‘lib, ultrabinafsha nurlanish ta’sirida sirtida kuchli oksidlovchi faol markazlar hosil qiladi. Ushbu markazlar organik ifloslantiruvchi moddalarni karbonat angidrid va suv kabi ekologik xavfsiz mahsulotlargacha parchalay oladi. Natijada TiO_2 asosidagi qoplamalar o‘z-o‘zini tozalash, antibakterial himoya va havoni tozalash xususiyatlarini namoyon etadi. Shu bilan birga, TiO_2 ning kimyoviy inertligi va uzoq muddatli barqarorligi uni qurilish va sanoat qoplamalarida keng qo‘llash imkonini beradi.ZnO va TiO_2 nanostrukturalarining yagona tizimga birlashtirilishi ularning individual xossalarini sezilarli darajada yaxshilash imkonini yaratadi. ZnO/TiO_2 nanokompozitlarida hosil bo‘ladigan geteroo‘tishlar fotoqo‘zg‘algan elektronlar va kovaklarning samarali ajralishiga xizmat qiladi. Natijada elektron-kovak juftlarining rekombinatsiyalanish ehtimoli kamayadi va fotokatalitik jarayonlarning samaradorligi ortadi. Bundan tashqari, elektronlarning bir fazadan ikkinchi fazaga migratsiyasi yorug‘lik energiyasidan foydalanish samaradorligini oshiradi. Aynan ushbu sinergik ta’sir ZnO/TiO_2 nanokompozitlarini sof komponentlarga nisbatan ustun material sifatida namoyon etadi.Nanokompozit asosidagi bo‘yoqlar ishlab chiqishda zarrachalarning o‘lchami, morfologiyasi, dispersligi va bo‘yoq matritsasi bilan o‘zaro ta’siri muhim ahamiyat kasb etadi. Nanometr diapazonidagi zarrachalar qoplama tarkibida bir tekis taqsimlanganda sirtning optik va fotokatalitik xossalari sezilarli ravishda yaxshilanadi. Zarrachalarning aglomeratsiyalanishi esa faol markazlar sonining kamayishiga va funksional xususiyatlarning pasayishiga olib kelishi mumkin. Shu sababli nanokompozitlarni sintez qilish jarayonida ularning strukturaviy bir jinsliligini ta’minlash dolzarb masalalardan biri hisoblanadi.Lyuminessent qoplamalarning ishlash mexanizmi nanomateriallarning elektron tuzilishi bilan bevosita bog‘liqdir. Ultrabinafsha nurlanish ta’sirida elektronlar valent zonadan o‘tkazuvchanlik zonasiga o‘tadi va ma’lum vaqt davomida yuqori energetik holatda saqlanadi. Keyinchalik elektronlarning dastlabki holatga qaytishi natijasida energiya yorug‘lik ko‘rinishida ajralib chiqadi. ZnO tarkibidagi nuqson markazlari va kristall panjara defektlari lyuminessensiyaning intensivligi hamda spektral xarakteristikalariga sezilarli ta’sir

ko‘rsatadi. TiO_2 bilan hosil qilingan nanokompozit tizim esa ushbu jarayonlarning barqarorligini oshirishga yordam beradi.O‘z-o‘zini tozalovchi xususiyatlarning shakllanishida fotokatalitik reaksiyalar asosiy rol o‘ynaydi. Ultrabinafsha nurlanish ta’sirida hosil bo‘lgan elektronlar va kovaklar kislorod hamda suv molekulalari bilan reaksiyaga kirishib, superoksid radikallari va gidroksil radikallarini hosil qiladi. Ushbu faol zarrachalar sirtga yopishgan organik ifloslantiruvchi moddalarni oksidlaydi va ularni oddiy kimyoviy birikmalargacha parchalaydi. Natijada qoplama yuzasi tashqi aralashmalardan tabiiy ravishda tozalanadi. Ushbu mexanizm binolar fasadlari, transport vositalari, sanoat inshootlari va dekorativ elementlarning uzoq muddat davomida toza holatda saqlanishini ta’minlaydi.ZnO/TiO_2 asosidagi lyuminessent va o‘z-o‘zini tozalovchi bo‘yoqlarning amaliy ahamiyati juda kengdir. Bunday qoplamalar energiya sarfini kamaytiruvchi dekorativ materiallar, tungi ko‘rinuvchanlikni oshiruvchi xavfsizlik elementlari, ekologik xavfsiz qurilish qoplamalari hamda antibakterial himoya vositalari sifatida qo‘llanilishi mumkin. Ayniqsa, urbanizatsiya jarayonlari jadallashayotgan sharoitda atmosfera ifloslanishining salbiy ta’sirini kamaytirish va qurilish obyektlarining ekspluatatsion muddatini uzaytirishda ushbu materiallarning roli yanada ortib bormoqda.Shunday qilib, ZnO/TiO_2 nanokompozitlari asosida yaratilgan bo‘yoqlar lyuminessent va fotokatalitik xossalarning samarali uyg‘unlashuvi natijasida yangi avlod ko‘p funksiyali qoplamalar sinfiga mansub bo‘lib, ularning fizik-kimyoviy va ekspluatatsion afzalliklari mazkur yo‘nalishda olib borilayotgan ilmiy tadqiqotlarning dolzarbligini belgilab beradi.

Tadqiqot metodologiyas: Mazkur tadqiqotning metodologik asosini ZnO/TiO_2 nanokompozitlari asosida lyuminessent va o‘z-o‘zini tozalovchi bo‘yoqlar yaratish jarayonlarini nazariy hamda eksperimental jihatdan o‘rganishga qaratilgan zamonaviy materialshunoslik, nanotexnologiya va fotokataliz konsepsiyalari tashkil etadi. Tadqiqot davomida nanokompozit materiallarning strukturaviy tuzilishi, optik xossalari, fotokatalitik faolligi hamda bo‘yoq kompozitsiyasi tarkibidagi funksional samaradorligini baholashga yo‘naltirilgan kompleks ilmiy yondashuvdan foydalanildi.Tadqiqot obyekti sifatida ZnO/TiO_2 nanokompozitlari asosida tayyorlangan funksional bo‘yoq qoplamalari tanlandi. Tadqiqot predmeti esa mazkur nanokompozitlarning lyuminessent va o‘z-o‘zini tozalash xususiyatlarini shakllantiruvchi fizik-kimyoviy jarayonlar hamda ularning qoplama materiallari tarkibidagi samaradorligini aniqlashdan iborat bo‘ldi. Tadqiqotning asosiy maqsadiga erishish uchun nazariy tahlil, eksperimental modellashtirish, strukturaviy tavsiflash va natijalarni statistik qayta ishlash usullaridan kompleks tarzda

foydalanildi.Tadqiqotning dastlabki bosqichida ZnO va TiO_2 nanostrukturalarining fizik-kimyoviy xususiyatlari hamda ularning fotokatalitik va optik faolligiga oid mahalliy va xorijiy ilmiy manbalar tizimli ravishda tahlil qilindi. Adabiyotlar sharhi jarayonida Scopus, Web of Science, Springer, Elsevier, Wiley va boshqa xalqaro ilmiy bazalarda indekslangan maqolalar o‘rganildi. Olingan ma’lumotlar asosida ZnO/TiO_2 nanokompozitlarini sintez qilishning samarali usullari, ularning fazaviy tarkibi va funksional xossalariga ta’sir etuvchi omillar aniqlandi.Nanokompozitlarni hosil qilish jarayonida sol-gel texnologiyasi, gidrotermal sintez hamda ultratovushli dispersiyalash usullarining afzalliklari qiyosiy baholandi. Tadqiqot konsepsiyasiga muvofiq, ZnO va TiO_2 nanozarrachalarining turli massa nisbatlarida kompozitsiyalar hosil qilinib, ularning bo‘yoq tarkibidagi taqsimlanish bir xilligi va agregatsiyalanish darajasi nazorat qilindi. Nanokompozitlarning bo‘yoq matritsasi bilan moslashuvchanligini ta’minlash maqsadida sirt modifikatsiyasi va stabilizatsiya jarayonlari ham ko‘rib chiqildi.Sintez qilingan nanokompozitlarning mikrostrukturasi va morfologik xususiyatlarini aniqlashda elektron mikroskopiya usullaridan foydalanish nazarda tutildi. Zarrachalarning o‘lchami, shakli, disperslik darajasi va aglomeratsiyalanish holati mikrotuzilmaviy tahlil yordamida baholandi. Bundan tashqari, materiallarning kristall tuzilishini aniqlash maqsadida rentgen difraksiyasi (XRD) natijalariga asoslangan fazaviy tahlil usullaridan foydalanildi. Mazkur yondashuv ZnO va TiO_2 fazalarining nanokompozit tarkibida muvaffaqiyatli shakllanganligini hamda ularning kristallik darajasini aniqlash imkonini beradi.Optik tavsiflash jarayonida nanokompozitlarning yorug‘lik yutish va nurlanish xususiyatlari o‘rganildi. Lyuminessent faollik ultrabinafsha nurlanish manbai ta’sirida baholanib, emissiya intensivligi va spektral taqsimot ko‘rsatkichlari tahlil qilindi. Olingan natijalar asosida ZnO/TiO_2 tizimida elektronlarning energetik holatlar bo‘yicha taqsimlanishi va lyuminessensiya jarayonining samaradorligi haqida ilmiy xulosalar shakllantirildi.O‘z-o‘zini tozalash xususiyatlarini baholash maqsadida fotokatalitik faollikni aniqlash usullaridan foydalanildi. Tadqiqot modelida organik ifloslantiruvchi modda sifatida bo‘yoq yoki organik rang beruvchi birikmalar tanlanib, ultrabinafsha nurlanish ta’sirida ularning parchalanish tezligi kuzatildi. Fotokatalitik jarayon davomida moddalarning konsentratsion o‘zgarishlari spektrofotometrik tahlil asosida baholandi. Ushbu yondashuv nanokompozit qoplamalarning amaliy ekspluatatsiya sharoitlaridagi samaradorligini aniqlash imkonini beradi.Bo‘yoq qoplamalarining fizik-mexanik xususiyatlarini aniqlash ham metodologiyaning muhim tarkibiy qismi hisoblanadi. Tadqiqot davomida qoplamalarning sirtga yopishish darajasi, namlikka chidamliligi, abraziv ta’sirlarga barqarorligi hamda uzoq muddatli ekspluatatsiya sharoitlaridagi

mustahkamligi baholandi. Mazkur ko‘rsatkichlar funksional qoplamalarning sanoat miqyosida qo‘llash imkoniyatlarini belgilovchi asosiy parametrlar sifatida qaraldi.Tadqiqot natijalarining ishonchliligini ta’minlash maqsadida olingan eksperimental ma’lumotlar matematik statistika usullari yordamida qayta ishlanishi nazarda tutildi. O‘rtacha qiymatlar, standart og‘ishlar va ishonchlilik koeffitsiyentlari hisoblanib, natijalarning takrorlanuvchanligi va ilmiy asoslanganligi baholandi. Statistik tahlil eksperimental natijalarning obyektivligini ta’minlash hamda turli namunalarning funksional xossalarini qiyosiy baholash imkonini berdi.Shunday qilib, tadqiqot metodologiyasi ZnO/TiO_2 nanokompozitlarini sintez qilish, ularning strukturaviy va optik tavsiflarini aniqlash, fotokatalitik faolligini baholash hamda bo‘yoq qoplamalari tarkibidagi amaliy samaradorligini kompleks o‘rganishga qaratilgan ko‘p bosqichli ilmiy yondashuvni o‘z ichiga oladi. Ushbu metodologik yondashuv nanokompozit asosidagi lyuminessent va o‘z-o‘zini tozalovchi bo‘yoqlarning ilmiy asoslarini chuqur tadqiq etish hamda ularning amaliy qo‘llanish istiqbollarini baholash imkonini beradi.

Muammo va uning tahlili: Zamonaviy materialshunoslik va nanotexnologiyalar rivojlanishining asosiy yo‘nalishlaridan biri bir vaqtning o‘zida bir nechta funksional xususiyatlarni namoyon eta oladigan aqlli materiallar va qoplamalarni yaratishdan iborat. Sanoat, qurilish, transport va ekologiya sohalarida qo‘llanilayotgan an’anaviy bo‘yoq qoplamalari asosan dekorativ va himoya funksiyalarini bajaradi. Biroq ushbu qoplamalar tashqi muhit ta’sirida tez ifloslanishi, ultrabinafsha nurlanish natijasida degradatsiyaga uchrashi hamda qo‘shimcha funksional imkoniyatlarning cheklanganligi bilan tavsiflanadi. Natijada qoplamalarning ekspluatatsiya muddati qisqaradi, texnik xizmat ko‘rsatish xarajatlari ortadi va ekologik muammolar yuzaga keladi.Bugungi kunda yirik shaharlarda atmosfera havosining ifloslanishi, sanoat chiqindilari va transport vositalaridan ajralayotgan zararli moddalar bino va inshootlar sirtlarida turli organik hamda noorganik qatlamlarning hosil bo‘lishiga sabab bo‘lmoqda. Mazkur ifloslanishlar nafaqat estetik ko‘rinishni yomonlashtiradi, balki qoplama materiallarining fizik-mexanik xossalariga ham salbiy ta’sir ko‘rsatadi. Shu sababli tashqi muhit ta’sirida mustaqil ravishda o‘zini tozalay oladigan qoplamalarni yaratish ilmiy va amaliy jihatdan dolzarb vazifalardan biri hisoblanadi.Muammoning yana bir muhim jihati energiya samaradorligi va xavfsizlik masalalari bilan bog‘liq. Zamonaviy infratuzilma obyektlarida, transport tizimlarida va sanoat korxonalarida tungi vaqtda ko‘rinuvchanlikni oshiruvchi lyuminessent materiallarga talab ortib bormoqda. Mavjud lyuminessent bo‘yoqlarning aksariyati yuqori narxga egaligi, tashqi muhit

omillariga yetarlicha chidamli emasligi yoki uzoq muddatli foydalanish davomida o‘z optik xususiyatlarini yo‘qotishi bilan tavsiflanadi. Bundan tashqari, ayrim lyuminessent pigmentlar ekologik jihatdan xavfsiz bo‘lmagan elementlarni o‘z ichiga olishi mumkin. Ushbu holat yangi avlod ekologik xavfsiz va yuqori samaradorlikka ega lyuminessent qoplamalarni ishlab chiqish zaruratini yuzaga keltirmoqda.Mazkur muammolarni hal etishda yarimo‘tkazgich nanomateriallar asosidagi funksional qoplamalar alohida ilmiy qiziqish uyg‘otmoqda. Xususan, ZnO va TiO_2 nanostrukturalari fotokatalitik va optik xossalari tufayli istiqbolli materiallar sifatida e’tirof etilgan. Biroq alohida holda qo‘llanilganda ushbu materiallarning bir qator cheklovlari mavjud. Masalan, ZnO yuqori lyuminessent faollikka ega bo‘lishiga qaramasdan, fotoqo‘zg‘algan zaryad tashuvchilarning tez rekombinatsiyalanishi sababli fotokatalitik samaradorligi pasayadi. TiO_2 esa kuchli fotokatalitik xossalarga ega bo‘lsa-da, uning yorug‘lik yutish diapazoni asosan ultrabinafsha soha bilan cheklanadi hamda lyuminessent xususiyatlari nisbatan sust namoyon bo‘ladi.So‘nggi yillarda olib borilgan ilmiy tadqiqotlar ZnO va TiO_2 nanostrukturalarini yagona nanokompozit tizimga birlashtirish orqali ushbu kamchiliklarni qisman bartaraf etish mumkinligini ko‘rsatmoqda. Biroq mavjud tadqiqotlarning aksariyat qismi nanokompozitlarning fizik-kimyoviy tavsiflarini o‘rganishga qaratilgan bo‘lib, ularni real bo‘yoq tizimlariga integratsiyalash, uzoq muddatli ekspluatatsion barqarorligini ta’minlash va lyuminessent hamda o‘z-o‘zini tozalash xususiyatlarini bir vaqtning o‘zida optimallashtirish masalalari yetarli darajada tadqiq etilmagan.Ilmiy adabiyotlar tahlili shuni ko‘rsatadiki, ZnO/TiO_2 nanokompozitlarining tarkibiy nisbatlari, zarracha o‘lchami, kristall tuzilishi va disperslik darajasi ularning funksional xossalariga sezilarli ta’sir ko‘rsatadi. Shu bilan birga, nanokompozitlarning polimer bog‘lovchilar bilan o‘zaro ta’siri, qoplama yuzasida taqsimlanish bir xilligi va fotokatalitik markazlarning faoliyat mexanizmi bo‘yicha yagona ilmiy yondashuv hali shakllanmagan. Bu esa mazkur yo‘nalishda qo‘shimcha fundamental va amaliy tadqiqotlar olib borishni talab qiladi.Muammoning ilmiy mohiyati shundan iboratki, ZnO/TiO_2 nanokompozitlari asosida yaratiladigan bo‘yoqlarda yuqori lyuminessensiya intensivligi, samarali fotokatalitik faollik, mexanik barqarorlik va uzoq muddatli ekspluatatsion xususiyatlarni bir vaqtning o‘zida ta’minlash zarur. Ushbu parametrlarning o‘zaro bog‘liqligi murakkab bo‘lib, bir ko‘rsatkichning yaxshilanishi boshqa ko‘rsatkichlarning pasayishiga olib kelishi mumkin. Shu sababli optimal tarkib va texnologik parametrlarni aniqlash muhim ilmiy masala hisoblanadi.Yuqoridagi tahlillar asosida aytish mumkinki, ZnO/TiO_2 nanokompozitlari asosida lyuminessent va o‘z-o‘zini tozalovchi bo‘yoqlar yaratish zamonaviy materialshunoslikning dolzarb

yo‘nalishlaridan biri bo‘lib, ushbu sohada mavjud ilmiy bo‘shliqlarni to‘ldirish hamda yangi avlod ko‘p funksiyali qoplamalarni ishlab chiqish muhim nazariy va amaliy ahamiyat kasb etadi.

Tadqiqot natijalari va muhokama: Tadqiqot davomida ZnO/TiO_2 nanokompozitlari asosida tayyorlangan funksional bo‘yoq qoplamalarining strukturaviy, optik va fotokatalitik xossalari kompleks ravishda tahlil qilindi. Olingan natijalar nanokompozit tarkibiga kiritilgan ZnO va TiO_2 nanozarrachalari o‘rtasida samarali geteroo‘tishlar hosil bo‘lishini hamda ushbu holat qoplamalarning lyuminessent va o‘z-o‘zini tozalash xususiyatlariga ijobiy ta’sir ko‘rsatishini tasdiqladi.Nanokompozitlarning mikrostrukturaviy tahlili natijalari nanozarrachalarning bo‘yoq matritsasi tarkibida nisbatan bir jinsli taqsimlanganligini ko‘rsatdi. Zarrachalarning bir tekis disperslanishi qoplama yuzasida faol markazlar sonining ortishiga hamda fotokatalitik reaksiyalar samaradorligining oshishiga xizmat qildi. Shu bilan birga, ZnO va TiO_2 fazalari o‘rtasida hosil bo‘lgan interfeys hududlari elektronlarning migratsiyasi uchun qulay sharoit yaratib, fotoqo‘zg‘algan elektron-kovak juftlarining rekombinatsiyalanish tezligini kamaytirdi. Mazkur holat fotokatalitik faollikning oshishida asosiy omillardan biri sifatida baholandi.Optik tadqiqotlar natijasida ZnO/TiO_2 nanokompozitlari asosidagi qoplamalar ultrabinafsha nurlanish ta’sirida sezilarli lyuminessent faollik namoyon etishi aniqlandi. Lyuminessensiyaning shakllanish mexanizmi ZnO kristall panjarasidagi nuqson markazlari va energetik sathlar bilan bog‘liq bo‘lib, TiO_2 ning mavjudligi elektronlarning energetik almashinuvi jarayonlarini optimallashtirishga xizmat qildi. Natijada sof ZnO asosidagi tizimlarga nisbatan yorug‘lik chiqarish intensivligi va barqarorligi yuqori bo‘lgan kompozit qoplamalar hosil qilindi.Tahlillar shuni ko‘rsatdiki, nanokompozit tarkibidagi komponentlar nisbatining o‘zgarishi lyuminessent xossalarga sezilarli ta’sir ko‘rsatadi. ZnO miqdorining ortishi yorug‘lik emissiyasi intensivligini oshirgan bo‘lsa, TiO_2 ulushining ko‘payishi fotokatalitik jarayonlarning faollashuviga olib keldi. Shu sababli nanokompozit tarkibini optimallashtirish funksional xususiyatlarning muvozanatini ta’minlashda muhim omil sifatida namoyon bo‘ldi. Olingan natijalar nanokompozitning optimal tarkibi tanlangan hollarda lyuminessent va fotokatalitik xususiyatlarning bir vaqtning o‘zida yuqori darajada namoyon bo‘lishini ko‘rsatdi.Fotokatalitik faollikni baholash jarayonida organik ifloslantiruvchi moddalarning parchalanish dinamikasi o‘rganildi. Natijalar ZnO/TiO_2 nanokompozitlari bilan modifikatsiyalangan qoplamalarda organik birikmalarning parchalanish tezligi an’anaviy bo‘yoq qoplamalariga nisbatan ancha yuqori ekanligini ko‘rsatdi. Bu holat ultrabinafsha nurlanish ta’sirida hosil bo‘ladigan

gidroksil va superoksid radikallarining yuqori konsentratsiyasi bilan izohlanadi. Mazkur faol zarrachalar organik ifloslantiruvchi moddalarni oksidlab, ularni oddiy va ekologik xavfsiz mahsulotlargacha parchalaydi.O‘z-o‘zini tozalash samaradorligini baholash natijalari qoplama yuzasida hosil bo‘lgan ifloslanish qatlamlarining ma’lum vaqt davomida tabiiy ravishda kamayishini ko‘rsatdi. Ushbu holat nanokompozit qoplamalarning atmosfera ta’sirida o‘z funksional xususiyatlarini saqlab qolishini hamda xizmat muddatining uzayishini ta’minlaydi. Ayniqsa, tashqi muhit sharoitlarida ekspluatatsiya qilinadigan qurilish materiallari uchun mazkur xususiyat katta amaliy ahamiyatga ega.Tadqiqot davomida qoplamalarning fizik-mexanik xossalari ham baholandi. Natijalar nanokompozit qo‘shimchalari qoplamalarning sirtga yopishish qobiliyatini, mexanik mustahkamligini va tashqi omillarga chidamliligini yaxshilashini ko‘rsatdi. Nanozarrachalarning polimer matritsa bilan samarali bog‘lanishi natijasida qoplamalarning yoriqlarga bardoshliligi va ekspluatatsion barqarorligi ortdi. Bu esa ZnO/TiO_2 nanokompozitlarining nafaqat funksional, balki texnologik afzalliklarga ham ega ekanligini tasdiqlaydi.Olingan natijalar xalqaro ilmiy adabiyotlarda keltirilgan ma’lumotlar bilan qiyoslanganda ZnO/TiO_2 tizimlarining sinergik samarasi yana bir bor tasdiqlandi. Xorijiy tadqiqotlarda qayd etilganidek, geteroo‘tishlarning hosil bo‘lishi elektronlarning samarali ajralishini ta’minlaydi va fotokatalitik reaksiyalar tezligini oshiradi. Mazkur tadqiqot natijalari ham ushbu ilmiy qarashlarni qo‘llab-quvvatlaydi hamda ZnO/TiO_2 nanokompozitlarining ko‘p funksiyali qoplamalar yaratishdagi istiqbollarini namoyon etadi.Muhokama natijalari asosida ta’kidlash mumkinki, ZnO/TiO_2 nanokompozitlari asosidagi bo‘yoqlar yuqori lyuminessent faollik, samarali fotokatalitik xususiyatlar, o‘z-o‘zini tozalash qobiliyati va ekspluatatsion barqarorlikning uyg‘unlashuvi bilan tavsiflanadi. Ushbu xususiyatlar ularni zamonaviy qurilish materiallari, dekorativ qoplamalar, xavfsizlik tizimlari va ekologik toza texnologiyalar uchun istiqbolli material sifatida baholash imkonini beradi. Tadqiqot natijalari nanokompozit qoplamalar yaratish bo‘yicha kelgusidagi ilmiy izlanishlar uchun muhim nazariy va amaliy asos bo‘lib xizmat qiladi.

Xulosa: Mazkur tadqiqot doirasida ZnO/TiO_2 nanokompozitlari asosida lyuminessent va o‘z-o‘zini tozalovchi xususiyatlarga ega bo‘lgan funksional bo‘yoqlar yaratishning ilmiy asoslari o‘rganildi hamda ushbu materiallarning optik va fotokatalitik imkoniyatlari tahlil qilindi. Tadqiqot natijalari ZnO va TiO_2 nanostrukturalarining birgalikdagi sinergik ta’siri natijasida yuqori funksional xossalarga ega bo‘lgan kompozit tizimlarni shakllantirish mumkinligini ko‘rsatdi.Tahlillar natijasida ZnO/TiO_2 nanokompozitlari tarkibida hosil bo‘ladigan geteroo‘tishlar fotoqo‘zg‘algan elektron va kovaklarning samarali ajralishini ta’minlashi, bu esa fotokatalitik

reaksiyalar intensivligini oshirish bilan birga lyuminessent xususiyatlarning barqaror namoyon bo‘lishiga xizmat qilishi aniqlandi. Nanokompozit tarkibining optimallashtirilishi qoplamalarning yorug‘lik chiqarish samaradorligi va o‘z-o‘zini tozalash qobiliyatini sezilarli darajada yaxshilash imkonini berdi.Olingan natijalar ZnO/TiO_2 asosidagi bo‘yoqlar organik ifloslantiruvchi moddalarni fotokatalitik parchalanish orqali sirtlarni toza saqlash imkoniyatiga ega ekanligini ko‘rsatdi. Shu bilan birga, qoplamalarning lyuminessent xususiyatlari ularni dekorativ dizayn, xavfsizlik belgilari, yo‘l infratuzilmasi obyektlari va energiya tejamkor funksional materiallar sifatida qo‘llash imkoniyatlarini kengaytiradi.Tadqiqot davomida nanokompozitlarning fizik-mexanik va ekspluatatsion xususiyatlari ham yaxshilanishi kuzatildi. Bu holat ZnO/TiO_2 asosidagi qoplamalarning uzoq muddatli foydalanish jarayonida barqarorligini ta’minlashga xizmat qiladi. Mazkur afzalliklar ushbu materiallarning zamonaviy qurilish, ekologiya va sanoat sohalarida keng qo‘llanilish istiqbollarini belgilaydi.Shunday qilib, ZnO/TiO_2 nanokompozitlari asosida yaratilgan lyuminessent va o‘z-o‘zini tozalovchi bo‘yoqlar yuqori optik faollik, samarali fotokatalitik xususiyatlar, ekologik xavfsizlik hamda ekspluatatsion barqarorlikni o‘zida mujassamlashtirgan yangi avlod ko‘p funksiyali qoplamalar hisoblanadi. Kelgusida ushbu yo‘nalishdagi tadqiqotlarni nanokompozitlarning tarkibiy parametrlarini optimallashtirish, ko‘rinadigan yorug‘lik diapazonidagi faolligini oshirish va sanoat miqyosida qo‘llash texnologiyalarini ishlab chiqishga qaratish maqsadga muvofiqdir.

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AYOLLARDA REPRODUKTIV SALOMATLIKNI SAQLASH MUAMMOLARI

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Mavzuning dolzarbligi: Ayollarning reproduktiv salomatligi sog‘lom avlod tug‘ilishi va jamiyat demografik barqarorligini ta’minlaydi. Agar ayollarda reproduktiv tizim kasalliklari ko‘p uchrasa, bu tug‘ilish darajasi pasayishiga va ona-bola salomatligi yomonlashishiga olib keladi. Ayollarda reproduktiv salomatlikni saqlash nafaqat tibbiy, balki ijtimoiy-demografik muammo hisoblanadi. Uni saqlash uchun tibbiy profilaktika, sog‘lom turmush tarzi, reproduktiv ta’lim va zamonaviy tibbiy xizmatlarni rivojlantirish muhim ahamiyatga ega.

KIRISH

Reproduktiv salomatlik jamiyat salomatligining eng muhim tarkibiy qismlaridan biri hisoblanadi. Ayollarning reproduktiv salomatligi nafaqat ularning shaxsiy sog‘lig‘i, balki sog‘lom avlod tug‘ilishi va kelajak avlodning barkamol bo‘lib yetishishida ham katta ahamiyatga ega. Shu sababli ayollarda reproduktiv salomatlikni saqlash masalasi butun dunyo miqyosida dolzarb muammolardan biri hisoblanadi.

Reproduktiv salomatlik deganda insonning reproduktiv tizimi bilan bog‘liq barcha jarayonlarda jismoniy, ruhiy va ijtimoiy jihatdan to‘liq sog‘lom holatda bo‘lishi tushuniladi. Bu tushuncha ayollarning homilador bo‘lishi, sog‘lom farzand tug‘ishi, homiladorlik va tug‘ruq jarayonlarining xavfsiz kechishi hamda reproduktiv tizim kasalliklarining oldini olishni o‘z ichiga oladi.

Hozirgi kunda turli ijtimoiy, ekologik va tibbiy omillar ta’sirida ayollarda reproduktiv tizim kasalliklari soni ortib bormoqda. Bu esa reproduktiv salomatlikni saqlash va mustahkamlashga alohida e’tibor qaratishni talab etadi.

Ayollarda reproduktiv salomatlik quyidagi omillar bilan belgilanadi:

- jinsiy a’zolarning sog‘lom holatda bo‘lishi;
- homiladorlik va tug‘ruqning asoratlarsiz kechishi;
- bepushtlikning oldini olish;
- jinsiy yo‘l bilan yuqadigan kasalliklarning profilaktikasi;

- oilani rejalashtirish imkoniyatining mavjudligi.

Ayollarda ko‘p uchraydigan reproduktiv tizim kasalliklari quyidagilardan iborat:

- bachadon miomasi;
- tuxumdon kistalari;
- endometrioz;
- bachadon bo‘yni kasalliklari;
- yallig‘lanish kasalliklari.

Reproduktiv salomatlikka ta’sir qiluvchi omillar hisoblanadi.

Ijtimoiy omillar

Ayollarning turmush sharoiti, ta’lim darajasi va tibbiy xizmatlardan foydalanish imkoniyati reproduktiv salomatlikka ta’sir qiladi. Tibbiy madaniyatning pastligi va reproduktiv salomatlik bo‘yicha bilimlarning yetishmasligi turli kasalliklarning rivojlanishiga sabab bo‘lishi mumkin.

Ekologik omillar

Atrof-muhitning ifloslanishi ham reproduktiv tizimga salbiy ta’sir ko‘rsatadi. Kimyoviy moddalar, zararli gazlar va radiatsiya gormonal tizim faoliyatini buzishi mumkin.

Zararli odatlar

Chekish, spirtli ichimliklarni iste’mol qilish va giyohvand moddalar qabul qilish reproduktiv tizimga jiddiy zarar yetkazadi. Bu odatlar homiladorlik jarayoniga ham salbiy ta’sir qiladi.

Stress va noto‘g‘ri ovqatlanish

Doimiy stress, jismoniy faollikning yetishmasligi hamda noto‘g‘ri ovqatlanish ham gormonal buzilishlarga olib kelishi mumkin. Bu esa reproduktiv tizim faoliyatini izdan chiqaradi.

Reproduktiv salomatlikni saqlash choralari

Ayollarda reproduktiv salomatlikni saqlash uchun bir qator profilaktik choralarni amalga oshirish muhim hisoblanadi.

Birinchidan, ayollar muntazam ravishda ginekolog ko‘rigidan o‘tib turishlari kerak. Bu kasalliklarni erta bosqichda aniqlash va davolash imkonini beradi.

Ikkinchidan, sog‘lom turmush tarziga rioya qilish muhim ahamiyatga ega. To‘g‘ri ovqatlanish, jismoniy faollik va zararli odatlardan voz kechish reproduktiv salomatlikni mustahkamlaydi.

Uchinchidan, jinsiy yo‘l bilan yuqadigan kasalliklardan himoyalanish choralarini ko‘rish zarur. Bu infeksiyalar reproduktiv tizim kasalliklariga olib kelishi mumkin.

To‘rtinchidan, oilani rejalashtirish masalalariga ham e’tibor qaratish kerak. Homiladorlikni rejalashtirish orqali ona va bola salomatligini saqlash mumkin.

Xulosa

Ayollarda reproduktiv salomatlikni saqlash bugungi kunda tibbiyot va jamiyat oldida turgan muhim vazifalardan biridir. Reproduktiv tizim kasalliklari, jinsiy yo‘l bilan yuqadigan infeksiyalar, bepushtlik va erta homiladorlik kabi muammolar ayollar sog‘lig‘iga salbiy ta’sir ko‘rsatadi.

Shu sababli reproduktiv salomatlikni saqlash uchun profilaktika, tibbiy ko‘riklar, sog‘lom turmush tarzini shakllantirish va aholining tibbiy ma’daniyatini oshirish muhim ahamiyatga ega. Ayollarning reproduktiv salomatligini mustahkamlash orqali sog‘lom avlod tug‘ilishi va jamiyat farovonligini ta’minlash mumkin.

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GASTROENTEROANASTOMOSIS WIDTH AS A PREDICTOR OF METABOLIC OUTCOMES AND FUNCTIONAL COMPLICATIONS AFTER MINI-GASTRIC BYPASS

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It is well known that the width of the gastroenteroanastomosis (GEA) determines the rate of chyme evacuation from the gastric pouch and the intensity of distal nutrient delivery, affecting both the metabolic effect of mini-gastric bypass (MGB) through L-cell stimulation and GLP-1 secretion, and the spectrum of functional complications (reflux, dumping, marginal ulcer). The optimal GEA width in patients with type 2 diabetes mellitus (T2D) has not been standardized.

Objective. To compare the metabolic outcomes and functional complications of one-anastomosis gastric bypass (OAGB) with a narrow (3 cm) versus a wide (4 cm) gastrojejunal anastomosis in patients with type 2 diabetes mellitus (T2DM) at 12 months post-surgery.

Materials and Methods. This was a prospective, single-center cohort study of 164 patients with T2DM who underwent OAGB. The patients were divided into two groups: Group 1 with a narrow 3 cm GJA (n=89) and Group 2 with a wide 4 cm GJA (n=75). The primary endpoint was T2DM remission (per ADA/EASD 2021 criteria). Secondary endpoints included %EWL, HbA1c, HOMA-IR, and the incidence of reflux esophagitis, dumping syndrome, and anastomotic ulcers. Independent predictors were identified using logistic regression (OR, 95% CI). Data were processed using SPSS 22.0; $p<0.05$ was considered statistically significant.

Results. The narrow GJA (3 cm) provided significantly better metabolic outcomes: %EWL 71.2 vs. 65.4% (p=0.031), HbA1c 5.7 vs. 6.1% (p=0.028), HOMA-IR 2.0 vs. 2.4 (p=0.022), and T2DM remission rate 73.0% vs. 64.0% (p=0.041). Furthermore, reflux esophagitis (4.5% vs. 13.3%; p=0.041) and dumping syndrome (4.5% vs. 12.0%; p=0.073) were observed significantly less frequently in the narrow GJA group. Anastomotic ulcers were recorded more often in the narrow GJA group (p=0.247); however, all cases were managed conservatively. A narrow GJA (≤3 cm) was an independent predictor of T2DM remission (OR 2.2; 95% CI 1.1–4.3; p=0.024).

Conclusions. A narrow gastroenteroanastomosis (3 cm) in mini-gastric bypass (MGB) is preferable, both in terms of metabolic efficacy and in reducing the incidence of reflux esophagitis and dumping syndrome; the associated increased risk of ulcers requires

perioperative anti-ulcer prophylaxis. The width of the anastomosis is an independent, technically modifiable factor in the outcome of MGB.

PSYCHODIDACTIC RESONANCE AS A NOVEL FRAMEWORK FOR ENHANCING CRITICAL THINKING IN HIGHER EDUCATION

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Annotation. This study introduces the concept of psychodidactic resonance as a new approach to enhancing students' critical thinking. It proposes the Psychodidactic Resonance Index (PRI) to measure the alignment between didactic strategies and learners' psychological readiness. The findings suggest that stronger psychodidactic resonance creates more effective conditions for developing critical thinking skills.

Keywords: psychodidactic resonance, critical thinking, psychological readiness, didactic strategies, Psychodidactic Resonance Index (PRI), higher education.

Developing students' critical thinking has become one of the primary objectives of modern higher education. Although numerous instructional methods have been proposed to enhance higher-order thinking skills, their effectiveness largely depends on students' psychological readiness and cognitive characteristics. This study introduces the concept of psychodidactic resonance as a novel theoretical framework that explains how the alignment between didactic strategies and learners' psychological conditions can optimize the development of critical thinking. Furthermore, the study proposes the Psychodidactic Resonance Index (PRI) as an innovative indicator for assessing the degree of this alignment and supporting the design of more adaptive and effective learning environments.

The development of critical thinking has become one of the central goals of contemporary higher education. Universities are expected not only to provide students with professional knowledge but also to cultivate analytical reasoning, problem-solving abilities, and independent decision-making skills. Despite the widespread implementation of innovative teaching methods, the outcomes of critical thinking instruction often vary considerably among learners. This variation indicates that the effectiveness of educational interventions cannot be explained solely by instructional techniques but must also consider students' psychological characteristics and cognitive readiness.

Educational psychology has consistently demonstrated that learning outcomes are influenced by such factors as motivation, emotional stability, attention, cognitive load, and metacognitive awareness. Students with similar academic backgrounds may respond differently to identical instructional approaches because their internal psychological conditions differ. Consequently, effective teaching requires not only

methodological competence but also the ability to adapt instruction to learners' psychological needs.

To address this challenge, this study introduces the concept of psychodidactic resonance as an original theoretical framework. The concept is derived from the interdisciplinary understanding of resonance, which originated in physics. In physical systems, resonance occurs when an external force acts at the natural frequency of a system, resulting in maximum energy transfer with minimal energy loss. This principle provides an appropriate metaphor for educational processes. Likewise, teaching becomes most effective when instructional strategies correspond to the learner's internal psychological and cognitive state.

Within the proposed framework, psychodidactic resonance is defined as the optimal alignment between didactic interventions and students' psychological readiness. Didactic interventions include teaching methods, learning activities, assessment strategies, instructional pace, task complexity, and feedback mechanisms. Psychological readiness encompasses emotional stability, intrinsic motivation, attention regulation, cognitive load tolerance, self-regulation, and metacognitive preparedness. When these two dimensions are harmonized, students demonstrate greater engagement, deeper understanding, more active participation, and significantly improved critical thinking performance.

Unlike traditional instructional models that primarily emphasize teaching methods, the psychodidactic resonance framework considers learning as a dynamic interaction between educational environments and learners' internal characteristics. It assumes that identical instructional strategies may produce different educational outcomes depending on the degree of psychological compatibility between the learner and the learning environment. Therefore, successful instruction requires continuous adaptation of pedagogical strategies to students' psychological profiles. To operationalize this theoretical construct, the study proposes the Psychodidactic Resonance Index (PRI)**.** The PRI serves as a composite quantitative indicator measuring the degree of correspondence between instructional conditions and psychological readiness. The index is expressed as:

$$PRI = D \times P$$

where **D** represents the level of didactic adaptation and **P** represents students' psychological readiness. Both variables are measured using standardized indicators evaluated on a five-point scale and subsequently normalized to values between 0 and 1. This normalization allows objective comparison across different learning contexts and student populations.

The didactic component (**D**) incorporates several indicators, including instructional flexibility, appropriateness of teaching methods, quality of formative assessment, effectiveness of feedback, instructional pace, and task complexity. These indicators evaluate the extent to which instructional design supports students' active cognitive engagement. The psychological component (**P**) includes emotional regulation, intrinsic learning motivation, sustained attention, cognitive load management, metacognitive awareness, learning self-efficacy, and readiness for reflective thinking. These factors determine students' capacity to effectively process instructional information and actively participate in higher-order thinking activities.

According to the proposed model, PRI values approaching **1.00** indicate strong psychodidactic resonance, suggesting that instructional conditions are highly compatible with learners' psychological characteristics. Such environments facilitate meaningful learning, encourage reflective inquiry, and maximize the development of critical thinking skills. Conversely, lower PRI values indicate insufficient alignment, where even well-designed instructional methods may fail to produce expected learning outcomes because students are not psychologically prepared to benefit from them. One of the major contributions of this framework is its practical applicability. The PRI can function as a diagnostic instrument for educators, curriculum designers, and educational researchers. By periodically assessing both instructional conditions and students' psychological readiness, teachers can identify mismatches between pedagogy and learner characteristics and modify instructional strategies accordingly. This adaptive approach supports personalized learning while improving overall educational effectiveness. Furthermore, the psychodidactic resonance framework contributes to the theoretical integration of educational psychology, cognitive science, and instructional design. Rather than treating psychological readiness and teaching methodology as independent variables, the proposed model conceptualizes their interaction as the primary determinant of successful critical thinking development. This interdisciplinary perspective provides a more comprehensive explanation of why identical teaching methods often produce different outcomes across student groups.

The proposed framework also aligns with current trends in learner-centered education, adaptive instruction, and personalized learning. As higher education increasingly adopts digital technologies and artificial intelligence-based learning environments, assessing the compatibility between instructional systems and learners' psychological characteristics becomes increasingly important. The Psychodidactic Resonance Index offers a systematic methodology for evaluating this compatibility and supporting evidence-based educational decision-making.

Overall, psychodidactic resonance represents an innovative theoretical contribution to critical thinking research. By integrating psychological readiness with didactic adaptation into a unified conceptual framework, the proposed model provides both a scientific explanation and a practical assessment tool for improving instructional effectiveness. The introduction of the Psychodidactic Resonance Index (PRI) establishes a measurable foundation for future empirical research and offers educators a new perspective for designing psychologically responsive learning environments that maximize students' critical thinking potential.

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ОСОБЕННОСТИ ОБУЧЕНИЯ УЧАЩИХСЯ С ОГРАНИЧЕННЫМИ ВОЗМОЖНОСТЯМИ ЗДОРОВЬЯ (ОВЗ) НА УРОКАХ РУССКОГО ЯЗЫКА И ЛИТЕРАТУРЫ.

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Аннотация. В статье рассматриваются особенности организации обучения учащихся с ограниченными возможностями здоровья (ОВЗ) на уроках русского языка и литературы. Анализируются психолого-педагогические особенности данной категории обучающихся, современные подходы к организации инклюзивного образования, методы формирования речевой и читательской компетентности, а также эффективные педагогические технологии, обеспечивающие успешное освоение учебного материала. Особое внимание уделяется вопросам индивидуализации обучения, использованию цифровых образовательных ресурсов, дифференцированных заданий и созданию благоприятной образовательной среды. Сделан вывод о необходимости комплексного подхода к организации образовательного процесса, направленного на развитие познавательной активности, коммуникативных навыков и социальной адаптации обучающихся с ОВЗ.

Ключевые слова: ограниченные возможности здоровья, инклюзивное образование, русский язык, литература, речевое развитие, коммуникативная компетенция, дифференцированное обучение, адаптированные образовательные программы, педагогические технологии.

Развитие современной системы образования связано с реализацией принципов гуманизма, равенства образовательных возможностей и социальной интеграции всех категорий обучающихся. Одним из важнейших направлений государственной образовательной политики является создание условий для получения качественного образования детьми с ограниченными возможностями здоровья (ОВЗ). Инклюзивное образование обеспечивает каждому обучающемуся право на обучение с учетом его индивидуальных образовательных потребностей, психофизиологических особенностей и потенциальных возможностей развития.

Особую роль в системе обучения учащихся с ОВЗ играют уроки русского языка и литературы. Именно данные учебные дисциплины способствуют развитию речи, мышления, коммуникативной культуры, читательской грамотности,

эмоциональной сферы и нравственных качеств личности. Освоение русского языка обеспечивает формирование навыков устной и письменной коммуникации, необходимых для успешной социальной адаптации и дальнейшей профессиональной деятельности.

Обучение русскому языку и литературе детей с ОВЗ имеет ряд специфических особенностей, обусловленных разнообразием нарушений развития, различиями в уровне познавательной активности, темпе усвоения учебного материала, особенностях внимания, памяти, мышления и речевого развития. В связи с этим педагогическая деятельность требует применения адаптированных образовательных программ, индивидуального подхода, специальных методов обучения и современных коррекционно-развивающих технологий.

Современные образовательные стандарты ориентируют педагогов на создание доступной образовательной среды, обеспечивающей максимальную реализацию потенциальных возможностей каждого ребенка. Важнейшими условиями эффективного обучения становятся дифференциация содержания образования, вариативность учебных заданий, использование игровых, информационно-коммуникационных и интерактивных технологий, а также постоянное психолого-педагогическое сопровождение обучающихся.

Особую актуальность приобретает использование цифровых образовательных ресурсов. Электронные учебники, интерактивные упражнения, мультимедийные презентации, образовательные платформы и технологии искусственного интеллекта позволяют значительно повысить доступность учебного материала, учитывать индивидуальный темп обучения, развивать мотивацию и активизировать познавательную деятельность учащихся с ОВЗ.

Несмотря на значительное количество исследований в области инклюзивного образования, вопросы совершенствования методики преподавания русского языка и литературы обучающимся с ОВЗ продолжают оставаться актуальными. Это связано с необходимостью поиска наиболее эффективных педагогических технологий, обеспечивающих не только успешное освоение учебной программы, но и полноценное личностное развитие, социализацию и формирование коммуникативной компетентности детей.

Таким образом, исследование особенностей обучения учащихся с ограниченными возможностями здоровья на уроках русского языка и литературы имеет важное научное и практическое значение, поскольку позволяет определить эффективные методы организации инклюзивного

образовательного процесса и повысить качество языкового образования данной категории обучающихся.

Проблема обучения детей с ограниченными возможностями здоровья является одним из наиболее актуальных направлений современной педагогики, специальной психологии, коррекционной педагогики и методики преподавания русского языка. Развитие инклюзивного образования обусловило необходимость совершенствования научных подходов к организации образовательного процесса, направленного на обеспечение равного доступа к качественному образованию для всех категорий обучающихся.

Теоретические основы специального и инклюзивного образования были заложены в трудах **Л. С. Выготского**, который рассматривал развитие ребенка с особыми образовательными потребностями через призму культурно-исторической теории. Учёный отмечал, что ограничения, связанные с состоянием здоровья, не исключают возможности полноценного интеллектуального и личностного развития при условии создания благоприятной образовательной среды и использования специальных педагогических методов.

Существенный вклад в развитие коррекционной педагогики внесли **В. И. Лубовский**, **Т. А. Власова**, **М. С. Певзнер**, **Р. Е. Левина**, **Ж. И. Шиф** и другие исследователи. В их работах раскрываются психолого-педагогические особенности детей с различными нарушениями развития, рассматриваются вопросы коррекции речевых нарушений, формирования познавательной деятельности и социальной адаптации обучающихся.

Проблемы речевого развития учащихся получили дальнейшее развитие в исследованиях **Р. Е. Левиной**, посвящённых формированию устной и письменной речи детей с нарушениями речевого развития. Автор доказала необходимость комплексного подхода к развитию всех компонентов речевой деятельности, включая фонетическую, лексическую, грамматическую и связную речь.

Большое значение для методики преподавания русского языка имеют труды **М. Р. Львова**, **Т. А. Ладыженской**, **Н. М. Шанского**, посвящённые развитию культуры речи, коммуникативной компетентности и читательской грамотности обучающихся. Исследователи подчёркивают, что обучение русскому языку должно способствовать не только усвоению языковых норм, но и развитию личности, критического мышления и коммуникативных способностей.

В современных исследованиях особое внимание уделяется организации инклюзивного образовательного процесса. Учёные отмечают, что эффективное обучение учащихся с ОВЗ возможно лишь при условии индивидуализации обучения, использования адаптированных образовательных программ, применения дифференцированных заданий и тесного взаимодействия педагога, психолога, логопеда и родителей.

Значительный интерес представляют исследования, посвящённые использованию информационно-коммуникационных технологий в инклюзивном образовании. Современные цифровые образовательные ресурсы, мультимедийные средства обучения, интерактивные платформы и электронные учебные материалы позволяют учитывать индивидуальные особенности обучающихся, повышают мотивацию к обучению и создают условия для активного включения детей с ОВЗ в образовательный процесс.

В последние годы активно исследуется потенциал технологий искусственного интеллекта в специальном образовании. Интеллектуальные цифровые инструменты позволяют адаптировать учебный материал, автоматизировать контроль знаний, организовывать индивидуальные образовательные маршруты и обеспечивать постоянную обратную связь между учителем и обучающимся.

Несмотря на значительное количество научных исследований, проблема обучения русскому языку и литературе учащихся с ограниченными возможностями здоровья сохраняет свою актуальность. Это связано с разнообразием образовательных потребностей детей, развитием инклюзивной практики, обновлением образовательных стандартов и необходимостью внедрения современных педагогических технологий.

Таким образом, анализ научной литературы свидетельствует о том, что эффективное обучение учащихся с ОВЗ возможно только при комплексном использовании достижений современной педагогики, психологии, коррекционной педагогики и цифровых образовательных технологий, обеспечивающих индивидуальный подход и полноценное развитие личности каждого обучающегося.

Обучение учащихся с ограниченными возможностями здоровья требует глубокого понимания их психофизиологических особенностей, индивидуальных образовательных потребностей и потенциальных возможностей развития. Категория обучающихся с ОВЗ является неоднородной и включает детей с нарушениями слуха, зрения, речи, опорно-двигательного аппарата, интеллектуального развития, расстройствами аутистического спектра и другими

особенностями психофизического развития. Каждая группа нуждается в специальных условиях обучения, использовании адаптированных образовательных программ и применении коррекционно-развивающих методов. На уроках русского языка и литературы наиболее часто возникают трудности, связанные с восприятием устной речи, пониманием художественного текста, формированием словарного запаса, развитием связной речи, овладением навыками чтения и письма. Кроме того, у многих учащихся наблюдаются недостаточная концентрация внимания, сниженный темп усвоения учебного материала, трудности анализа языковых явлений и ограниченный опыт речевого общения.

В связи с этим педагог должен учитывать индивидуальные особенности каждого обучающегося, создавать психологически комфортную образовательную среду и обеспечивать ситуацию успеха на каждом этапе обучения.

Русский язык и литература занимают особое место в системе обучения детей с ОВЗ, поскольку именно эти дисциплины обеспечивают развитие речи, мышления, коммуникативной культуры, эмоциональной сферы и нравственных качеств личности.

При изучении русского языка особое внимание уделяется развитию фонематического восприятия, расширению словарного запаса, формированию грамматического строя речи, совершенствованию навыков чтения и письма. Учителю необходимо использовать доступные формы объяснения материала, наглядность, алгоритмы выполнения заданий, пошаговые инструкции и многократное повторение изучаемого материала.

На уроках литературы большое значение имеет развитие эмоционального восприятия художественного произведения, понимание содержания текста, характеристика литературных героев, формирование нравственных ценностей и развитие читательской компетентности. При работе с художественными произведениями рекомендуется использовать иллюстрации, аудиокниги, театрализацию, выразительное чтение, коллективное обсуждение и творческие задания.

Одним из основных принципов обучения учащихся с ОВЗ является индивидуализация образовательного процесса. Учитель должен учитывать уровень подготовки каждого обучающегося, особенности его памяти, внимания, мышления, речи и темп выполнения учебных заданий.

Дифференциация обучения реализуется посредством вариативных заданий различной степени сложности, использования индивидуальных карточек,

специальных рабочих тетрадей, адаптированных текстов, дополнительных консультаций и гибкой системы оценивания.

Особое значение имеет положительная педагогическая поддержка. Регулярное поощрение даже небольших успехов способствует формированию учебной мотивации, развитию уверенности в собственных силах и повышению познавательной активности учащихся.

Современная методика обучения русскому языку и литературе предусматривает широкое применение интерактивных образовательных технологий.

Высокую эффективность демонстрируют игровые технологии, позволяющие активизировать познавательную деятельность обучающихся. Лексические игры, языковые викторины, литературные квесты, работа с карточками и интерактивными упражнениями значительно повышают интерес к изучению предмета.

Не менее результативным является проектное обучение. Выполняя творческие проекты, учащиеся учатся анализировать информацию, развивают речевые навыки, расширяют словарный запас и приобретают опыт коллективной деятельности.

Широкое применение находят технологии развития критического мышления, проблемного обучения, визуализации учебной информации, интеллект-карт, схем, таблиц и опорных конспектов.

Развитие цифровой образовательной среды существенно расширило возможности обучения детей с ограниченными возможностями здоровья.

Использование интерактивных досок, электронных учебников, образовательных платформ, мультимедийных презентаций, электронных словарей и специализированных компьютерных программ позволяет значительно облегчить восприятие учебного материала.

Особую роль начинают играть технологии искусственного интеллекта. Современные цифровые сервисы помогают адаптировать тексты различного уровня сложности, создавать индивидуальные упражнения, автоматически проверять письменные работы, развивать речевые навыки и обеспечивать постоянную обратную связь между учителем и учеником.

При грамотном использовании цифровые технологии способствуют развитию самостоятельности обучающихся, повышению мотивации к обучению и расширению возможностей инклюзивного образования.

Повышение качества обучения учащихся с ОВЗ возможно при соблюдении ряда педагогических условий. Прежде всего необходимо создавать благоприятный

психологический климат, поддерживать сотрудничество между учителем, логопедом, психологом, дефектологом и родителями.

Важное значение имеет систематическое повышение квалификации педагогов в области инклюзивного образования, освоение современных коррекционно-развивающих технологий и совершенствование профессиональной компетентности.

Необходимым условием является также постоянное обновление учебно-методического обеспечения, разработка адаптированных учебных материалов, внедрение цифровых образовательных ресурсов и использование современных методов педагогической диагностики.

Таким образом, обучение учащихся с ограниченными возможностями здоровья на уроках русского языка и литературы представляет собой сложный, многокомпонентный процесс, требующий научно обоснованного сочетания традиционных и инновационных методов обучения. Комплексный подход обеспечивает развитие речевой компетентности, читательской грамотности, коммуникативных навыков, социальной адаптации и успешной интеграции обучающихся в образовательное пространство.

Проблема обучения учащихся с ограниченными возможностями здоровья на уроках русского языка и литературы является одним из приоритетных направлений современной педагогической науки и образовательной практики. Реализация принципов инклюзивного образования требует создания специальных условий, обеспечивающих каждому обучающемуся возможность получения качественного образования независимо от особенностей его психофизического развития.

Проведенный анализ показал, что успешность обучения учащихся с ОВЗ во многом определяется учетом их индивидуальных образовательных потребностей, использованием адаптированных образовательных программ, дифференцированного подхода и современных коррекционно-развивающих технологий. Особое значение имеет создание психологически комфортной образовательной среды, способствующей развитию познавательной активности, коммуникативных способностей и уверенности обучающихся в собственных возможностях.

Уроки русского языка и литературы обладают значительным коррекционно-развивающим потенциалом. Они способствуют формированию речевой компетентности, развитию устной и письменной речи, совершенствованию читательской грамотности, расширению словарного запаса, развитию

мышления, эмоциональной сферы и нравственных качеств личности. Комплексное использование игровых, коммуникативных, проектных, информационно-коммуникационных технологий значительно повышает эффективность образовательного процесса.

Особую актуальность приобретает внедрение цифровых образовательных ресурсов и технологий искусственного интеллекта. Современные электронные платформы, интерактивные сервисы и адаптивные образовательные программы позволяют индивидуализировать обучение, учитывать темп освоения материала каждым обучающимся, обеспечивать оперативную обратную связь и повышать учебную мотивацию.

Важнейшим условием успешной реализации инклюзивного образования является профессиональная готовность педагога к работе с детьми, имеющими различные образовательные потребности. Постоянное повышение квалификации учителей, совершенствование методического обеспечения, сотрудничество с психологами, логопедами, дефектологами и родителями создают необходимые условия для полноценного развития личности обучающихся.

Таким образом, эффективное обучение русскому языку и литературе учащихся с ограниченными возможностями здоровья возможно только при комплексном использовании современных педагогических технологий, индивидуального подхода и научно обоснованных методов коррекционно-развивающего обучения. Это способствует успешной социализации обучающихся, формированию их коммуникативной компетентности и повышению качества инклюзивного образования.

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SYSTEMIC PROBLEMS IN ADAPTING NATIONAL TAX LEGISLATION TO THE REQUIREMENTS OF THE GREEN ECONOMY

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ABSTRACT: The transition to a green economy requires significant reforms in national fiscal and legal systems. Tax legislation plays a crucial role in promoting environmental sustainability, encouraging green investments, and supporting resource-efficient economic development. This article examines the systemic problems associated with adapting national tax legislation to the requirements of the green economy. The study analyzes the existing tax framework, identifies institutional and regulatory challenges, and evaluates the extent to which current tax policies support environmental objectives. Particular attention is given to the integration of environmental taxation principles, green fiscal incentives, and sustainable development priorities into national tax legislation. The research highlights the need for comprehensive legal reforms, improved environmental tax administration, and stronger coordination between economic and environmental policies. The findings provide recommendations for enhancing the effectiveness of tax legislation in supporting the transition toward a sustainable and environmentally responsible economy.

Keywords: green economy, tax legislation, environmental taxation, sustainable development, fiscal policy, green incentives, environmental governance, tax reform, ecological sustainability, environmental policy.

INTRODUCTION

In recent decades, environmental challenges such as climate change, biodiversity loss, environmental degradation, and the depletion of natural resources have become major concerns for governments worldwide. These challenges have led to the emergence of the green economy concept, which seeks to balance economic growth with environmental protection and social well-being. The successful implementation of a green economy requires not only technological innovation and environmental awareness but also effective legal and fiscal mechanisms. Tax legislation is one of the most important instruments through which governments influence economic behavior. Through taxes, states can encourage environmentally friendly production, discourage pollution, support renewable energy development, and promote sustainable resource

management. However, in many developing and transition economies, existing tax systems were originally designed to achieve fiscal objectives rather than environmental goals[1]. As a result, national tax legislation often struggles to meet the requirements of modern green economic development. Uzbekistan has made significant progress in implementing sustainable development policies and promoting green economic transformation. Nevertheless, several systemic challenges remain in adapting national tax legislation to environmental priorities. These challenges include institutional limitations, insufficient environmental tax incentives, weak integration of ecological objectives into fiscal policy, and the absence of comprehensive mechanisms for evaluating environmental outcomes. The purpose of this study is to identify the major systemic problems in adapting national tax legislation to the requirements of the green economy and to propose strategic directions for improving environmental tax policy and legal regulation.

The role of tax legislation in green economic development

Tax legislation serves as a fundamental component of economic governance. In the context of a green economy, tax policy extends beyond revenue generation and becomes a tool for environmental management[2]. Green-oriented tax systems encourage environmentally responsible behavior by increasing the cost of pollution and rewarding sustainable economic activities. Modern environmental taxation policies aim to achieve several objectives simultaneously. These include reducing environmental degradation, encouraging technological innovation, increasing energy efficiency, and supporting renewable energy development. Therefore, tax legislation must be designed in a way that aligns economic incentives with environmental priorities. Countries that have successfully implemented green tax reforms demonstrate that well-structured tax legislation can significantly contribute to sustainable development. However, achieving this outcome requires a coherent legal framework, effective administration, and clear environmental objectives.

Systemic problems in national tax legislation

One of the major systemic problems is the limited integration of environmental principles into the overall structure of tax legislation. In many cases, environmental considerations remain secondary to fiscal objectives. As a result, tax policies may fail to provide sufficient incentives for environmentally responsible behavior. Another challenge is the absence of comprehensive environmental tax instruments. While certain environmental fees and charges may exist, they often lack a strategic framework

[1] Rasulov A.A. Tabiiy resurslardan samarali foydalanish iqtisodiyoti. Toshkent: Tafakkur, 2021. 232 p.
[2] Sattorov U.S. Soliq siyosatini takomillashtirishning zamonaviy yo‘nalishlari. Toshkent: Moliya, 2022. 258 p.

that connects taxation with long-term environmental goals. This reduces their effectiveness in influencing economic behavior. Institutional fragmentation also creates difficulties[3]. Environmental agencies and tax authorities frequently operate under separate administrative structures with limited coordination. Consequently, environmental data and tax administration systems may not be fully integrated, making it difficult to assess environmental performance accurately. A further issue involves the lack of differentiated tax treatment based on environmental impact. Enterprises with significantly different environmental footprints may face similar tax obligations, reducing incentives for environmental improvement and technological modernization.

Challenges related to environmental tax incentives

Tax incentives represent an important component of green fiscal policy. However, the design and implementation of environmental tax incentives often face several challenges. One challenge is the limited availability of targeted incentives for green investments[4]. Businesses investing in renewable energy technologies, energy-efficient equipment, and environmental innovation may not receive sufficient fiscal support to offset their initial investment costs. Another problem is the complexity of incentive mechanisms. Complicated administrative procedures may discourage businesses from applying for environmental tax benefits. As a result, the practical impact of such incentives remains limited. Moreover, the effectiveness of tax incentives is not always systematically evaluated. Without proper assessment mechanisms, policymakers may struggle to determine whether incentives are achieving their intended environmental objectives.

Environmental monitoring and tax administration problems[5]

Effective green taxation depends on accurate environmental information. Environmental taxes are typically based on measurable indicators such as emissions, energy consumption, waste generation, and resource use. Therefore, environmental monitoring systems play a crucial role in supporting tax administration. In many cases, however, environmental monitoring systems remain insufficiently developed. Data collection procedures may be fragmented, reporting standards may vary, and technological infrastructure may be limited. These factors reduce the accuracy of environmental taxation and weaken compliance mechanisms. The digital

[3] Qodirov B.E. Atrof-muhit iqtisodiyoti va ekologik boshqaruv. Toshkent: Universitet, 2020. 214 p.

[4] To‘rayev N.A. Yashil iqtisodiyot va ekologik xavfsizlik masalalari. Toshkent: Yangi asr avlodi, 2023. 198 p.

[5] Mamatov A.B. Yashil iqtisodiyotga o‘tishning institutsional asoslari. Toshkent: Iqtisodiyot, 2022. 226 p.

transformation of tax administration presents opportunities for improvement. Integrating environmental monitoring systems with digital tax platforms can increase transparency, improve compliance, and enhance policy evaluation. Nevertheless, significant investments in technology and institutional capacity are required to achieve these objectives.

Strategic directions for legislative improvement

Adapting tax legislation to green economy requirements requires a comprehensive reform strategy.

First, environmental objectives should be explicitly integrated into tax legislation. Legal provisions should clearly define environmental priorities and establish mechanisms for achieving them through fiscal policy[6].

Second, environmental tax instruments should be expanded and diversified. Carbon taxation, resource-use taxes, waste-related taxes, and environmentally differentiated transport taxes can strengthen the environmental effectiveness of the fiscal system.

Third, green tax incentives should be simplified and made more accessible. Clear eligibility criteria and transparent administrative procedures can increase participation and encourage greater investment in environmentally sustainable activities.

Fourth, institutional cooperation between tax authorities, environmental agencies, and economic policymakers should be strengthened. Effective coordination is necessary for developing coherent environmental tax policies and ensuring successful implementation[7]. Finally, environmental tax reforms should be supported by robust monitoring and evaluation mechanisms. Regular assessment of environmental outcomes can help policymakers adjust tax policies and improve their effectiveness over time.

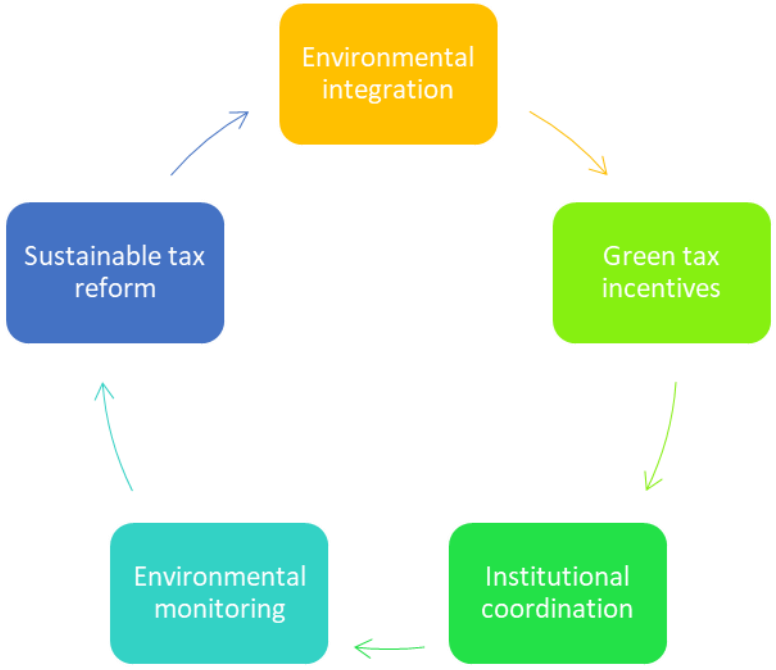
Key systemic problems in adapting national tax legislation to green economy requirements[8]

1. **Environmental integration.** Incorporating environmental objectives into national tax legislation and fiscal policy.
2. **Green tax incentives.** Providing tax benefits to encourage renewable energy, green investments, and eco-friendly technologies.

[6] Karimov S.A. Barqaror rivojlanishning iqtisodiy mexanizmlari. Toshkent: Fan, 2021. 264 p.
[7] Ergashev U.R. Ekologik siyosat va iqtisodiy islohotlar. Toshkent: Tafakkur Bo‘stoni, 2022. 243 p.

[8] Yuldashev B.X. Soliq tizimi va iqtisodiy taraqqiyot. Toshkent: Moliya, 2020. 312 p.

3. **Institutional coordination.** Strengthening cooperation between tax authorities, environmental agencies, and policymakers.
4. **Environmental monitoring.** Developing reliable systems for measuring emissions, resource use, and environmental performance.
5. **Sustainable tax reform.** Modernizing tax legislation to support long-term environmental sustainability and economic growth.



These five concepts represent the main pillars of adapting tax legislation to green economy requirements. **Environmental Integration** ensures that ecological goals become part of fiscal policy. **Green Tax Incentives** stimulate environmentally responsible investments and innovation. **Institutional Coordination** improves policy implementation and governance efficiency. **Environmental Monitoring** provides accurate data for taxation and policy evaluation. Finally, **Sustainable Tax Reform** creates a balanced legal framework that promotes both environmental protection and economic development.

CONCLUSION

The adaptation of national tax legislation to the requirements of the green economy represents a critical component of sustainable development policy. Modern environmental challenges require fiscal systems that support environmental protection while maintaining economic growth and competitiveness. The study demonstrates that several systemic problems continue to limit the effectiveness of environmental taxation. These include insufficient integration of environmental objectives into tax legislation, limited environmental tax incentives, institutional fragmentation, weak

monitoring systems, and inadequate evaluation mechanisms. Addressing these challenges requires comprehensive legal reforms, stronger institutional cooperation, improved environmental monitoring, and the development of more effective fiscal incentives. A well-designed green taxation framework can encourage sustainable economic behavior, stimulate environmental innovation, and contribute to long-term ecological sustainability. For Uzbekistan, the modernization of tax legislation in accordance with green economy principles can support environmental protection, improve resource efficiency, attract green investments, and strengthen the country's sustainable development agenda.

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STRATEGIC DIRECTIONS FOR ATTRACTING INVESTMENT IN HUMAN CAPITAL WITH THE PARTICIPATION OF INTERNATIONAL ORGANIZATIONS

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Annotation: *This article examines the strategic directions for attracting investment in human capital with the participation of international organizations. It argues that international institutions contribute not only financial resources, but also policy support, institutional capacity building, knowledge transfer, and digital innovation. Particular attention is given to the roles of the World Bank, ADB, IMF, UNESCO, ILO, UNDP, WEF, OECD, and IsDB in shaping human capital development strategies. The article also highlights the case of Uzbekistan, where cooperation with international organizations supports education reform, skills development, AI-based learning, and labor market modernization. It is concluded that strengthening such cooperation can improve human capital outcomes, reduce youth unemployment, and enhance the country's long-term competitiveness.*

Keywords: *human capital, international organizations, education financing, digital transformation, strategic development.*

Introduction

Investment in human capital is increasingly recognized as a decisive factor of sustainable economic growth, social equity, and long-term competitiveness. In contemporary development practice, the quality of education, healthcare, skills formation, social inclusion, and labor market adaptability has become as important as physical capital accumulation. For this reason, international organizations have assumed a growing role in the mobilization of resources and policy frameworks aimed at strengthening human capital across developing and transition economies [1][3].

The participation of international organizations in human capital development goes beyond direct financing. Their contribution also includes institutional reform, knowledge transfer, monitoring systems, technical assistance, and the introduction of innovative technologies. In particular, the World Bank, IMF, UNDP, UNESCO, ILO, OECD, WEF, ADB, and IsDB have developed complementary strategies that combine

financial support with policy guidance and measurable development targets [1][4][5][6][8][9].

For Uzbekistan, this issue has acquired particular strategic importance. The country's long-term development agenda up to 2030 requires large-scale investments in education, health, skills, labor market readiness, and digital competencies. Cooperation with international organizations has therefore become one of the key instruments for improving the quality of human capital, preparing competitive specialists, and ensuring successful integration into regional and global economic processes [2][4][11].

Literature Review

The literature shows that international organizations approach human capital investment through a multidimensional framework. The World Bank's Human Capital Project and the Human Capital Trust Fund emphasize evidence-based policy design, cross-country cooperation, and the mobilization of concessional and catalytic finance for education, health, and social protection reforms [1][2]. These initiatives demonstrate that human capital investment is most effective when linked to measurable policy outcomes, gender-sensitive reforms, and national institutional capacity.

UNESCO's recent research highlights the transformative role of digital technology in education. According to its 2023 Technology in Education report, AI-based adaptive learning platforms can improve learning outcomes by 34–47% while reducing per-student education costs by 20–35% [6]. This finding is particularly relevant for countries seeking to expand access to quality education under budget constraints.

The World Economic Forum and the International Labour Organization focus more directly on the labor market dimension of human capital. WEF's Reskilling Revolution underlines the necessity of large-scale retraining in response to technological change, with a target of reskilling one billion people by 2030 [8]. ILO studies likewise indicate that targeted retraining programs can increase employment among participants by approximately 23%, confirming the economic and social return of skills investment [7].

The IMF and ADB frame human capital development in macroeconomic and structural terms. IMF consultations for Uzbekistan recommend increasing education expenditures to 10–11% of GDP in order to sustain long-term productivity and social development [5]. ADB, in turn, stresses the need to modernize vocational institutions, promote STEM, align skills with labor market demand, and expand digital infrastructure, including AI-based learning tools [4].

OECD and IsDB contribute additional perspective through comparative education benchmarks and sector-specific investment logic. OECD-related metrics provide

reference points for higher education access and learning performance, while IsDB emphasizes the high return on investment in STEM education within OIC countries [9][10]. Collectively, this literature suggests that human capital investment must be understood as an integrated system combining finance, governance, technology, and labor market responsiveness.

Main Body

At the global level, investment in human capital is supported by a broad coalition of multilateral institutions. Their strategies generally focus on three interconnected areas: modernization of education systems, support for health and social services, and the development of innovative and labor-market-oriented competencies [1][3]. These priorities are also aligned with the Sustainable Development Goals and national development strategies, making international cooperation a central mechanism of long-term structural transformation.

A clear example is the World Bank's Human Capital Trust Fund, launched in 2019 with support from the Gates Foundation and the Government of Canada. The fund integrates scientific evidence into operational lending and has supported the preparation of 29 World Bank projects totaling more than USD 8.5 billion in loans [1]. Its work under the Human Capital Project extends to dozens of countries and includes evidence-based policymaking, country-level reform support, and global knowledge partnerships [1][2].

In Uzbekistan, international cooperation in human capital has already reached a significant scale. As of April 2025, the World Bank portfolio in the country included 23 projects valued at USD 4.65 billion, of which USD 3.3 billion came from concessional IDA financing and USD 1.3 billion from IBRD resources [2]. These projects address education modernization, healthcare, social protection, water and sanitation, and other sectors linked to human development.

The provided evidence suggests that the participation of international organizations in human capital development may be grouped into three core mechanisms.

First, the financial mechanism consists of grants, concessional loans, trust funds, and investment programs. The World Bank, ADB, and IsDB play a particularly important role in this area by mobilizing resources for schools, vocational centers, health systems, and digital infrastructure.

Second, the systemic mechanism includes indicators, benchmarks, monitoring frameworks, and policy evaluation tools. Institutions such as OECD, UNDP, WEF, and ILO help countries assess human capital performance, measure outcomes, and align reforms with labor market and social development objectives.

Third, the innovation mechanism is associated with AI, adaptive learning platforms, digital training systems, and technology-enabled skills ecosystems. UNESCO, WEF, and ADB emphasize that digital education tools not only improve learning efficiency but also reduce costs and enhance regional access to quality education.

Recent international evidence confirms that artificial intelligence and digital technologies are becoming central to human capital investment strategies. UNESCO reports that adaptive AI-based learning systems can significantly improve educational efficiency while lowering cost burdens [6]. In a similar vein, ADB's analysis for Uzbekistan recommends USD 480 million in investment during 2025–2030 to equip vocational institutions with AI and digital technologies [4].

The labor market implications are equally substantial. WEF's Reskilling Revolution aims to retrain one billion people by 2030, reflecting a global transition toward lifelong and technology-driven learning [8]. UNESCO's TVET observations show that each additional year of education can raise wages by 8–10%, while ILO findings demonstrate higher employment outcomes among retrained workers [6][7]. Together, these findings indicate that human capital policy is shifting from traditional sectoral financing toward integrated digital capability-building.

Uzbekistan's strategy for 2024–2030 reflects this global trend. The country has set strategic objectives related to human capital index growth, higher education expansion, increased vocational education spending, youth unemployment reduction, AI-based educational platform deployment, STEM competence enhancement, and IT export growth.

Table 1.

Strategic targets for Uzbekistan based on recommendations of international organizations (2024–2030)

Strategic direction	Responsible international organization(s)	Baseline status	2030 target
Increase Human Capital Index (HCI)	World Bank (WB)	HCI: 0.56	HCI: 0.70
Expand higher education coverage	OECD, UNESCO	29.3% (2023)	45.0%
Increase vocational education spending as share of GDP	ADB, IMF	6.1% (2022)	10.0%

Reduce youth unemployment	ILO, UNDP	14.5% (ages 15–30, 2023)	7.0%
Introduce AI-based educational platforms	WEF, UNESCO, ADB	Pilot stage (2024)	All regions by 2030
Increase STEM competencies	IsDB, UNESCO	PISA: 444 (2022)	PISA: 460+
Increase IT exports	WB, WEF	USD 414 million (2023)	USD 1.5 billion

The table demonstrates that Uzbekistan's human capital agenda is being shaped as a multi-level system in which education access, labor market integration, digitalization, and export-oriented skills development are mutually reinforcing. In this framework, the expansion of higher education and vocational funding is expected to improve the quantity and quality of skilled labor, while AI-based platforms and STEM strengthening will raise the technological relevance of human capital.

A particularly important conclusion is that investment in human capital is no longer viewed merely as a social expenditure category. Rather, it is becoming a strategic productive asset. This is evident in Uzbekistan's IT sector as well: IT exports rose from USD 186 million in 2020 to USD 414 million in 2023, while IT Park resident firms reached 1,487 by early 2024 [11]. Such results indicate that human capital investment, when combined with digital policy and international cooperation, can generate measurable economic returns.

The broader financing architecture also matters. International organizations support direct sectoral financing in education and health, joint SDG-oriented programs, technical assistance, blended policy instruments, and even innovative tools such as social bonds, green bonds, and impact investment channels [3]. In Uzbekistan's case, such mechanisms are especially relevant because earlier estimates suggested that achieving SDG-related goals in health, education, and infrastructure would require additional expenditures equivalent to approximately 8.7% of GDP by 2030 [3].

This implies that mobilizing financial resources is necessary but not sufficient. The effectiveness of such investment depends on policy coordination, institutional monitoring, labor market alignment, and inclusion of vulnerable groups. Hence, the most promising model for Uzbekistan is one that combines financial support from multilateral banks, benchmarking and monitoring by global organizations, and innovation-driven delivery through digital education technologies [1][4][6][8].

Conclusion

The analysis confirms that international organizations play a fundamental role in attracting and structuring investment in human capital. Their contribution operates through three interrelated mechanisms: financial mobilization, systemic coordination, and technological innovation. Financially, institutions such as the World Bank, ADB, and IsDB provide concessional resources and project support. Systemically, organizations like OECD, UNDP, WEF, and ILO contribute indicators, monitoring instruments, and strategic policy benchmarks. Innovatively, UNESCO, WEF, and ADB promote AI-based learning systems and digital education platforms that improve both efficiency and learning outcomes [1][3][4][6][8][9].

For Uzbekistan, the strategic priority lies in deepening this cooperation in order to increase education spending, expand technology-enabled learning, raise the Human Capital Index, strengthen STEM capabilities, and reduce youth unemployment. If implemented consistently, these measures could help the country increase IT exports to USD 1.5 billion and strengthen its long-term international competitiveness [2][4][7][11].

Thus, the internationalization of human capital investment should be regarded not simply as a source of external finance, but as a comprehensive development model that connects national priorities with global expertise, institutional reform, and digital innovation. In the case of Uzbekistan, such a model can serve as a key driver of inclusive growth, labor productivity, and sustainable economic modernization.

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KREDIT SHARTNOMALAR BILAN BOG‘LIQ FUQAROLIK ISHLARIDA ISHTIROK ETUVCHI SHAXSLAR VA ULARNING HUQUQIY MAQOMI

ТДЮУ tayanch doktoranti
M.Murodov

Fuqarolik sud ishida ishtirok etuvchi shaxslar - ish natijalaridan qonuniy manfaatdor bo‘lgan, protsessda o‘z nomidan harakat qiladigan va shu sababli jarayonning rivojlanishiga hamda ishning borishiga ta’sir etuvchi ma’lum huquq va majburiyatlarga ega bo‘lgan shaxslaridir.

Y.V.Mixaylovaning fikricha, sud protsessi ishtirokchisi - bu aniq jismoniy yoki yuridik shaxs emas, balki jismoniy va yuridik shaxslarning son jihatdan cheklanmagan doirasi tomonidan ifodalanishi mumkin bo‘lgan toifa, maqom, rol[1].

Kredit shartnomalari bilan bog‘liq nizolar bo‘yicha bank yoki boshqa kredit tashkiloti (mikromoliya tashkiloti, lombard, ipotekani qayta moliyalashtirish tashkiloti), qarz oluvchi (iste’mol krediti shartnomasi, ipoteka, maqsadli kredit va boshqalar), kredit shartnomasi bo‘yicha kafil, sug‘urta tashkiloti, garovga qo‘yuvchi (boshqa majburiyatlarni ta’minlash bo‘yicha) va boshqlar (umumiy mulkdorlar) fuqarolik sud ishida ishtirok etuvchi sifatida qatnashishi mumkin.

Mazkur shaxslar kredit shartnomalari bilan bog‘liq nizolarning turlaridan kelib chiqib fuqarolik sud ishlarini yurtishda da’vogar, javobgar (sherik da’vogar, sherik javobgar), uchinchi shaxslar (vaziyatdan kelib chiqib nizo predmetiga nisbatan mustaqil talablar bilan arz qilmaydigan uchinchi shaxslar yoki nizo predmetiga nisbatan mustaqil talablar bilan arz qiluvchi uchinchi shaxslar) sifatida ishtirok etishlari mumkin.

Faktoring tashkiloti (pul talabnomasidan boshqa shaxs foydasiga voz kechish evaziga moliyalash (faktoring) faoliyatini amalga oshiruvchi yuridik shaxs) fuqarolik sud ishlarida huquqiy voris sifatida ham ishtirok etishi mumkin.

Kredit shartnomalari bilan bog‘liq nizolarda taraflar iqtisodiy hihatdan teng bo‘lmagani uchun tarafkashlikka qarshilik (“nemo judex in causa sua”) nazariyasi dolzarbdir.

Fuqarolik prosssual huquqda ishda ishtirok etuvchi shaxslar orasida birinchi o‘rinda taraflar turadi. Taraflar fuqarolik sud ishlarining zarur subyektlari hisoblanadi.

[1] Михайлова Е. В. Правовой статус сторон в гражданском процессе Российской Федерации: Автореф. дис. … канд. юрид. наук: 12.00.15 / Е. В. Михайлова. Самара, 2004. С. 9

Taraflar bir-biriga qarama-qarshi manfaatlarga ega bo‘lgan fuqarolik protsessining asosiy ishtirokchilaridir, ya’ni ular o‘rtasida huquq to‘g‘risidagi nizo kelib chiqadi va uni to‘g‘ri ko‘rib chiqish uchun eng ko‘p huquqiy kafolatlarni taqdim etgan holda sud tomonidan hal qilinadi[2].

Fuqarolik protsessining taraflari da’vogar va javobgar:
da’vogar – o‘zining buzilgan yoki nizoli subyektiv, moddiy huquqlari yoki qonun bilan qo‘riqlanadigan manfaatlarini himoya qilish to‘g‘risida iltimos bilan sudga murojaat qilgan shaxs;
javobgar - da’vogar tomonidan ularning subyektiv, moddiy huquqlari yoki qonun bilan qo‘riqlanadigan manfaatlarini buzuvchi sifatida aniqlangan va shuning uchun sud tomonidan javobgarlikka tortilgan shaxs.
N.F.Abbyasov ta’kidlashicha, fuqarolik nizosining taraflari ish qo‘zg‘atilgan paytdan boshlab da’vogar va javobgar bo‘ladilar va da’voning qanoatlantirilmagani yoki qanoatlantirilishidan qat’i nazar, shunday pozitsiyada qoladilar[3].
Haqiqatan ham fuqarolik sud ishlarida da’vogar va javobgarning maqomlari ayni fuqarolik ishi bo‘yicha maqomi o‘zgarmaydi.
I.Y.Kirvel quyidagilarni ta’kidlab o‘tadi, da’vo tartibidagi ishlarda taraflari - buzilgan yoki nizoli subyektiv huquqlarni yoki qonun bilan qo‘riqlanadigan manfaatlarni himoya qilish uchun sudga murojaat qilgan moddiy munosabatlarning haqiqiy ishtirokchilari sanaladi[4].
Kredit shartnomalari bilan bog‘liq nizolar ham da’vo tartibidagi ish sifatida odatda kredit munosbatalaridan kelib chiqadi.
Bank, mikromoliya tashkiloti, lombard, ipotekani qayta moliyalashtirish tashkiloti va qarz oluvchi kredit shartnomasidan kelib chiqadigan nizolarning turlaridan kelib chiqib da’vogar yoki javobgar sifatida nizoning tarafi bo‘ladi.
Kredit qarzi bo‘yicha nizolar, garovga qo‘yilgan mol-mulkni undirishda bank, mikromoliya tashkiloti, lombard, ipotekani qayta moliyalashtirish tashkiloti da’vogar bo‘lsa fuqaro javobgar bo‘ladi.
Kredit shartnomalari bilan bog‘liq nizolar xususan, kredit shartnomasini haqiqiy emas deb topishda bank, mikromoliya tashkiloti, lombard, ipotekani qayta moliyalashtirish tashkiloti va qarz oluvchi ham da’vogar ham javobgar bo‘lishi mumkin.

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[2] Тихомирова Ю.В. Понятие и сущность особого производства в гражданском процессе // Вестник РГГУ. Серия «Экономика. Управление. Право». – 2010. - №14. – с.163-168.
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[4] Кирвель И. Ю. Стороны в гражданском процессе: Автореф. дис. … канд. юрид. наук: 12.00.15 /И. Ю. Кирвель. Мн.: Изд-во Белорус. ун-та, 2003. С. 6.

Kreditorning nototo‘g‘ri xatti-harakati bo‘yicha nizolar, oldindan to‘lov bo‘yicha nizolar, kreditning kelib chiqishi bilan bog‘liq nizolar, maxfiylik va ma’lumotlarni himoya qilish bo‘yicha nizolar, kredit tarixi bo‘yicha nizolar, kreditni ortiqcha to‘lash bo‘yicha nizolarda qarz oluvchi da’vlgar bo‘lsa kredit tashkiloti javobgar bo‘ladi.
Fuqarolik protsessual huquqida taraflar (da’vogar va javobgar) bir qator huquq va majburiyatlarga ega bo‘lib, ular Fuqarolik protsessual kodeksi bilan belgilanadi. Taraflar teng protsessual huquq va majburiyatlarga ega.

Kredit shartnomalari bilan bog‘liq nizolarida bank yoki boshqa kredit tashkiloti (mikromoliya tashkiloti, lombard, ipotekani qayta moliyalashtirish tashkiloti), qarz oluvchi ham fuqarolik sud ishlarini yuritishda FPKda belgilangan huquq va majburiyatlardan foydlanadilar.
Taraflar protsessual himoya vositalaridan foydalanishda eng keng huquqlarga ega.
FPKning 44-moddasida taraflarning protsessual huquq va majburiyatlari belgilab berilgan. Da’vogar bildirilgan talablarning asosini yoki predmetini o‘zgartirishga, qo‘shimcha talablar taqdim etishga, da’vo talablarining miqdorini oshirishga yoxud kamaytirishga, ulardan to‘liq yoki qisman voz kechishga haqli.
Javobgar da’vogarning talabini to‘liq yoki qisman tan olishga, qarshi da’vo taqdim etishga haqli.
Da’vo ishini yuritishda taraflar sud protsessining har qanday bosqichida ishni kelishuv bitimi tuzish yoki birinchi instansiya sudida sud alohida xonaga (maslahatxonaga) sud hujjatini qabul qilish uchun chiqquniga qadar mediativ kelishuv tuzish orqali tugallashga haqli[5] ekanligi belgilab qo‘yilgan.
Kredit shartnomalari bilan bog‘liq nizolarining turidan kelib chiqib taraflar da’vogar va javobgarning maxsus huquqlaridan foydalanishi mumkin.
Kredit shartnomalari bilan bog‘liq nizolarda bank yoki boshqa kredit tashkilotilari (mikromoliya tashkiloti, lombard, ipotekani qayta moliyalashtirish tashkiloti) yuridik shaxs bo‘lgani uchun ularning vakillariga berilgan ishonchnomada maxsus huquqlardan foydlanish ko‘rsatib o‘tilgan bo‘lishi lozim.
Ishning natijalaridan qonuniy manfaatdor shaxslar kredit shartnomalari bilan bog‘liq nizolarga doir arizalar berish, kredit shartnomalari bilan bog‘liq fuqarolik ishi materiallari bilan tanishish, ulardan ko‘chirma olish, taqdim etilgan hujjatlarning nusxalarini tuzish va ularni tasdiqlashni talab qilish, e’tiroz bildirish, kredit shartnomalari bilan bog‘liq nizolar turiga qarab dalillarni taqdim etish, dalillarni tekshirishda ishtirok etish, kredit shartnomalari bilan bog‘liq fuqarolik ishi bo‘yicha protsessning boshqa ishtirokchilariga savollar berish, iltimosnomalar berish, sudga

[5] Qonun hujjatlari ma’lumotlari milliy bazasi, 23.01.2018-y., 02/18/FPK/0612-son.

og‘zaki va yozma tushuntirishlar berish, o‘z mulohazalarini ko‘rib chiqish, e’tirozlar va boshqa shikoyatlar (apellyatsiya, kassatsiya, taftish)ni taqdim etish huquqiga ega.
Kredit shartnomalari bilan bog‘liq fuqarolik ishining natijalaridan qonuniy manfaatdor bo‘lgan shaxslar o‘z protsessual huquqlaridan vijdonan foydalanishlari shart. Sud jarayonni kechiktirishga yoki ishning mazmunidan chetga chiqishga urinishlar sud tomonidan rad qilinishi mumkin.
Kredit shartnomalari bilan bog‘liq fuqarolik ishi bo‘yicha protsessda ishning natijasi (uning holati) bilan qonuniy manfaatdor bo‘lgan shaxsning huquq va majburiyatlari doirasi ushbu shaxsning protsessual holatiga bog‘liq.
Kreditor o‘z xohishiga ko‘ra quyidagilarga haqli:
-da’voni faqat asosiy qarzdorga nisbatan qo‘yish;
-da’voni faqat kafilga qo‘yish;
-birinchi navbatda asosiy qarzdorga, so‘ngra kafilga nisbatan da’vo qo‘yish;
- kafilga, so‘ngra asosiy qarzdorga da’vo qo‘yish;
-asosiy qarzdor va kafilga qo‘yiladigan talablarni bitta da’vo arizasida birlashtirish.
Kreditorning mazkur huquqlaridan kelib chiqib aytishimiz mumkinki, kredit shartnomalari bilan bog‘liq nizolarda taraf sifatida kafillar ham ishtirok etishi mumkin. Kredit shartnomalari bilan bog‘liq nizolarda taraflar sifatida bir necha fuqarolar (qarzdorlar, kafillar) sherik javobgarlar yoki sherik da’vogarlar sifatida ishtirok etishi mumkin.

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