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Methodology for Developing Students' Technological Thinking Based on Art Design in a Digital Education Environment.

Burkhonova Malika Ziyodulloyevna

Bukhara State Pedagogical Institute Specialty: 70111301 – Theory and Methodology of Education and Upbringing (Technological Education)

Abstract

This study theoretically and practically examines the issue of developing students' technological thinking based on art design in the context of digital education. The main purpose of the research is to identify the pedagogical potential of art design and to scientifically substantiate its use as a means of forming students' technological and creative competencies in a digital learning environment [1], [2].

The article reveals the essence of the concept of technological thinking and highlights its role in the process of training modern specialists. The research is based on constructivist and competency-based approaches and employs pedagogical observation, questionnaires, diagnostic tests, and experimental methods.

During the experimental process, digital projects based on art design, visual modeling tasks, and interactive learning modules were actively used. The results demonstrate a significant improvement in students' problem-solving thinking, visual analysis skills, conscious use of technological tools, and the level of creative approach.

The conclusions of the study confirm that the art design approach is an effective pedagogical tool that activates the educational process in digital learning environments, promotes students' formation as active subjects of learning, and enhances their innovative potential. The proposed methodology is recommended for implementation in higher education institutions in accordance with modern educational requirements [3].

Keywords:

digital education, art design, technological thinking, design thinking, creative competence, visual modeling, digital pedagogy, innovative education.

Annotatsiya

Raqamli ta’lim sharoitida art dizayn asosida talabalarning texnologik tafakkurini rivojlantirish masalasi nazariy va amaliy jihatdan tadqiq etiladi. Tadqiqotning asosiy maqsadi art dizaynning pedagogik imkoniyatlarini aniqlash hamda uni raqamli o‘quv muhitida talabalarning texnologik va kreativ kompetensiyalarini shakllantirish vositasi sifatida ilmiy asoslashdan iborat.[1],[2]. Maqolada texnologik tafakkur tushunchasining mohiyati ochib berilib, uning zamonaviy mutaxassis tayyorlash jarayonidagi o‘rni yoritilgan. Tadqiqot konstruktivistik va kompetensiyaviy yondashuvlar asosida olib borilgan bo‘lib, pedagogik kuzatuv, so‘rovnoma, diagnostik testlar va tajriba-sinov metodlari qo‘llanilgan. Tajriba jarayonida art dizayn asosidagi raqamli loyihalar, vizual modellashtirish topshiriqlari va interaktiv o‘quv modullaridan foydalanilgan. Natijalar talabalarning muammoli fikrlashi, vizual tahlil ko‘nikmalari, texnologik vositalardan ongli foydalanish qobiliyati va kreativ yondashuv darajasi oshganini ko‘rsatdi. Tadqiqot xulosalari art dizayn yondashuvi raqamli ta’lim sharoitida ta’lim jarayonini faollashtiruvchi, talabalarni faol subyekt sifatida shakllantiruvchi hamda ularning innovatsion salohiyatini rivojlantiruvchi samarali pedagogik vosita ekanligini tasdiqlaydi. Mazkur metodika oliy ta’lim muassasalarida zamonaviy ta’lim talablariga mos ravishda qo‘llash uchun tavsiya etiladi.[3].

Kalit so‘zlar: raqamli ta’lim, art dizayn, texnologik tafakkur, dizayn-tafakkur, kreativ kompetensiya, vizual modellashtirish, raqamli pedagogika, innovatsion ta’lim.

Kirish

So‘nggi yillarda global miqyosda kechayotgan raqamlashtirish jarayonlari ta’lim tizimiga ham chuqur ta’sir ko‘rsatmoqda. Axborot-kommunikatsiya texnologiyalarining jadal rivoji, sun’iy intellekt, raqamli dizayn va vizual kommunikatsiya vositalarining keng joriy etilishi ta’limning mazmuni, shakli va metodlariga nisbatan yangi talablarni shakllantirmoqda. [1]. Zamonaviy jamiyat sharoitida mutaxassis nafaqat o‘z sohasining bilimiga ega bo‘lishi, balki texnologik muhitda erkin faoliyat yurita olishi, muammolarni texnologik tafakkur asosida tahlil qilishi va innovatsion yechimlar ishlab chiqishi lozim.[2]. Shu bois, ta’lim jarayonida talabalarning texnologik tafakkurini rivojlantirish dolzarb pedagogik muammolardan biriga aylandi. Texnologik tafakkur shaxsning texnologik jarayonlarni tushunish, modellashtirish, optimallashtirish va ularni ijodiy tarzda qo‘llay olish qobiliyatini ifodalaydi. Bu tafakkur turi mantiqiy, tizimli va kreativ fikrlash elementlarini o‘zida mujassamlashtiradi hamda zamonaviy mutaxassisning asosiy kompetensiyalaridan biri hisoblanadi.[3]. Ko‘plab oliy ta’lim muassasalarida ta’lim hali ham asosan nazariy bilimlarni uzatishga yo‘naltirilgan bo‘lib, talabalarning texnologik tafakkuri va kreativ kompetensiyalarini rivojlantirishga yetarli darajada xizmat qilmayapti. Ayniqsa, texnologiya va san’at uyg‘unligini talab etuvchi faoliyat turlari ta’lim jarayonida kam qo‘llanilmoqda. Natijada talabalar real texnologik muammolarni hal etishda qiyinchiliklarga duch kelmoqda, ularning innovatsion faolligi past bo‘lib qolmoqda.[2],[3].

Art dizayn ta’limiy resurs sifatida alohida ahamiyat kasb etadi. Art dizayn bu san’at, texnologiya va muhandislik tafakkurining integratsiyasiga asoslangan faoliyat turi bo‘lib, u vizual fikrlash, modellashtirish, loyihalash va kreativ muammo yechish jarayonlarini birlashtiradi. Raqamli muhitda art dizayn grafik dasturlar, animatsiya, 3D modellashtirish, interaktiv interfeyslar va vizual kontent yaratish orqali amalga oshiriladi. Bu esa talabalarning nafaqat estetik didini, balki texnologik tafakkurini ham rivojlantirishga xizmat qiladi. [1],[4]. Raqamli ta’lim sharoitida art dizayn asosida tashkil etilgan o‘quv faoliyati talabalarning bilimni passiv qabul qilishdan faol yaratishga o‘tishini ta’minlaydi. Talabalar raqamli loyihalar ustida ishlash jarayonida muammolarni tahlil qiladi, ma’lumotlarni qayta ishlaydi, modellar yaratadi va o‘z yechimlarini vizual shaklda ifodalaydi.[2].Bu jarayon ularning tizimli fikrlashi, refleksiyasi va innovatsion salohiyatini rivojlantiradi.[3]

Mazkur tadqiqot talabalarning texnologik tafakkurini raqamli ta’lim muhitida art dizayn asosida rivojlantirish jarayonini o‘rganishga qaratilgan bo‘lib, u integrativ, tizimli va faoliyatga yo‘naltirilgan pedagogik yondashuvlarga asoslanadi. Tadqiqot metodologiyasi zamonaviy pedagogika, ta’lim texnologiyalari va dizayn-tafakkur nazariyalarining uyg‘unligiga tayangan holda ishlab chiqildi. Ushbu yondashuvlar talabaning bilimni tayyor holatda emas, balki mustaqil faoliyat jarayonida yaratishini, muammolarni tahlil qilish va innovatsion yechim ishlab chiqish jarayonida texnologik tafakkur shakllanishini ta’minlaydi.

Tadqiqotning nazariy asosi sifatida konstruktivistik ta’lim modeli, kompetensiyaviy yondashuv va dizayn-tafakkur konsepsiyasi qabul qilindi. Mazkur nazariy yo‘nalishlar bilimning faol konstruktsiyasi, o‘quv jarayonining muammoli va loyihaviy xarakterga ega bo‘lishi hamda ta’lim jarayonining reflektiv komponenti bilan boyitilishini taqozo etadi. Shu bois art dizayn asosidagi faoliyat talabalarni vizual modellashtirish, texnologik jarayonlarni tushunish va ularni kreativ tarzda qo‘llashga yo‘naltiradi. Empirik ma’lumotlar pedagogik kuzatuv, so‘rovnoma, suhbat va diagnostik testlar orqali to‘plandi. Ushbu metodlar yordamida talabalarning texnologik tafakkuri darajasi, ularning raqamli vositalardan foydalanish malakasi va muammoli vaziyatlarga munosabati aniqlashtirildi. Olingan ma'lumotlar sifat va miqdor jihatdan tahlil qilinib, umumlashtirildi. [1],[2].Tajriba-sinov ishlari jarayonida art dizayn asosidagi raqamli topshiriqlar ishlab chiqilib, ta'lim jarayoniga joriy etildi. Talabalar vizual loyiha yaratish, infografika ishlab chiqish, 3D obyektlarni modellashtirish va interfeys dizayni kabi faoliyat turlarida ishtirok etdilar. Bu jarayon ularning muammoli fikrlashi, tizimli tahlil ko'nikmalari va texnologik vositalarni maqsadga muvofiq tanlash qobiliyatini rivojlantirishga xizmat qildi. Tadqiqot uch bosqichda tashkil etilib, dastlabki bosqichda texnologik tafakkurning boshlang'ich holati aniqlangan, keyingi bosqichda shakllantiruvchi ta'sir amalga oshirilgan va yakuniy bosqichda natijalar qayta baholangan. Natijalar ishonchliligini ta'minlash maqsadida turli metodlar orqali olingan ma'lumotlar o'zaro solishtirildi va tasdiqlandi. Baholash jarayonida talabalarning muammoni tahlil qilish darajasi, texnologik vositalarni tanlash va qo'llash qobiliyati, kreativ yondashuv va refleksiya ko'nikmalari asosiy mezon sifatida qabul qilindi. Natijalar pedagogik diagnostika asosida tahlil qilinib, metodikaning samaradorligi ilmiy asosda xulosalandi.

Raqamli ta'lim muhitida art dizayn asosida tashkil etilgan o'quv faoliyati talabalarning texnologik tafakkurini sezilarli darajada rivojlantirishga xizmat qiladi. Talabalarning muammoli fikrlash, vizual modellashtirish va texnologik vositalardan foydalanish kompetensiyalari ortishi pedagogik metodikaning samaradorligini tasdiqlaydi. Bu esa o'z navbatida, o'quv jarayonining faollashuvi va innovatsion xarakterga ega bo'lishiga olib keladi. Art dizayn yondashuvi o'quv jarayonida talabalarni mustaqil fikrlashga va ijodiy yechimlar izlashga undaydi, bu esa ularning o'z-o'zini boshqarish va refleksiya ko'nikmalarini mustahkamlaydi. Raqamli vositalar orqali amaliyotga yo'naltirilgan topshiriqlar esa o'quvchilarni texnologik muammolarni hal qilishda ko'proq ishtirok etishga rag'batlantiradi.

Xulosa

Raqamli ta'lim muhitida art dizayn asosida tashkil etilgan o'quv faoliyati talabalarning texnologik tafakkurini rivojlantirishda yuqori samaradorlikka ega. [1],[4].Ushbu metodika talabalarni muammoli vaziyatlarni tahlil qilishga, texnologik jarayonlarni modellashtirishga va innovatsion yechimlar ishlab chiqishga yo'naltiradi. Natijada ularning vizual-analitik fikrlashi, kreativ yondashuvi va raqamli kompetensiyalari sezilarli darajada oshadi. Art dizayn asosidagi yondashuv ta'lim jarayonini faollashtiradi, talabalarning mustaqil fikrlashi va refleksiyasini kuchaytiradi hamda nazariy bilimlarni amaliy faoliyat bilan integratsiyalash imkonini beradi. Shu bois mazkur metodika zamonaviy raqamli ta'lim talablariga mos bo'lib, oliy ta'lim muassasalarida texnologik tafakkurni rivojlantirishga qaratilgan samarali pedagogik yechim sifatida tavsiya etiladi.[2].

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ASSESSING THE SOCIO-ECONOMIC EFFICIENCY OF LOCAL INVESTMENT PROJECTS

Ibragimov Akbar Allayarovich
Master's Student Department of Economics Faculty of Social Sciences and Technology. Asia International University
ibragimovakbar8173@gmail.com

Abstract: This article analyzes methodologies for assessing socio-economic efficiency of local investment projects in Uzbekistan based on empirical analysis of 147 regional projects implemented during 2020-2024 with total investment of 48.7 trillion UZS.

Keywords: investment efficiency, project appraisal, cost-benefit analysis, social return on investment, regional development, local investment, economic impact assessment, project evaluation, infrastructure investment, development finance

Local investment projects constitute critical mechanism through which regional and municipal governments address infrastructure deficits, stimulate economic development, create employment, and improve public services. Following administrative decentralization reforms in Uzbekistan initiated through Presidential Decrees PQ-4365 (June 2019) and PF-6224 (April 2021), local investment activity intensified substantially with regional investment reaching 187.4 trillion UZS in 2024, representing 26.8% of total fixed capital formation, and local government and enterprise projects accounting for 48.7 trillion UZS distributed across infrastructure (42.3%), industrial facilities (28.4%), social services (18.7%), and agricultural development (10.6%). However, ensuring efficient resource allocation amid fiscal constraints, competing priorities, and capacity limitations requires robust project appraisal and evaluation systems enabling evidence-based decision-making, accountability to stakeholders, and continuous improvement through learning. Assessing socio-economic efficiency presents methodological challenges given multiple, sometimes conflicting objectives (economic growth, employment, equity, environmental sustainability), diverse stakeholder perspectives (beneficiaries, implementing agencies, financing institutions, taxpayers), externalities and indirect effects difficult to quantify, long time horizons with uncertain future conditions, and distributional impacts requiring value judgments about equity weights. Current evaluation practices face significant weaknesses: only 34% of projects undergo rigorous cost-benefit analysis before approval, 68% lack baseline measurements enabling impact attribution, technical capacity for economic analysis remains insufficient particularly regarding shadow pricing and externality valuation, short-term orientation emphasizes visible outputs over sustainable outcomes, and limited stakeholder engagement constrains project relevance and ownership. Understanding methodologies for comprehensive efficiency assessment, determinants of project performance, international best practices, and institutional mechanisms for strengthening evaluation systems proves essential for improving local investment effectiveness and maximizing development impacts.

The primary objective is developing comprehensive framework for assessing socio-economic efficiency of local investment projects, applying this framework to evaluate completed projects in Uzbekistan, identifying performance determinants, and formulating evidence-based recommendations for strengthening evaluation systems and improving project selection and design. Specific tasks include: reviewing theoretical frameworks from welfare economics emphasizing social surplus maximization, development economics highlighting market failures and distributional concerns, and project appraisal theory specifying discount rates, shadow prices, and evaluation methodologies; developing integrated evaluation framework incorporating financial analysis (net present value, internal rate of return, payback period), economic analysis using shadow pricing and externality valuation, social impact assessment measuring employment, poverty reduction, and inclusion outcomes, and multi-criteria decision analysis balancing multiple objectives; collecting comprehensive dataset of 147 local investment projects completed during 2020-2024 across 12 regions with total investment 48.7 trillion UZS, documenting project characteristics (size, sector, location), financial and economic flows, implementation processes, and outcomes; conducting ex-post evaluation applying developed framework calculating financial internal rate of return (FIRR), economic internal rate of return (EIRR), and social return on investment (SROI) for all 147 projects; implementing regression analysis examining efficiency determinants including project size, sector, regional development level, and stakeholder participation intensity; conducting comparative case study analysis of high-performing versus low-performing projects identifying success factors and implementation challenges; reviewing international best practices in project appraisal systems from United Kingdom, Asian Development Bank, World Bank, and successful developing countries; and formulating policy recommendations addressing mandatory appraisal requirements, standardized methodologies, independent review mechanisms, capacity building programs, data system improvements, participatory approaches, and institutional learning systems.

First, mandate comprehensive appraisal requiring cost-benefit analysis for all projects exceeding 500 million UZS investment, integrating financial analysis for fiscal sustainability, economic analysis incorporating externalities and shadow pricing, environmental impact assessment, social impact assessment measuring distributional effects, and risk analysis through sensitivity testing. Second, develop standardized methodologies establishing approved shadow prices updated annually (shadow wage rate, exchange rate, discount rate currently recommended 10% real), externality valuation approaches for common project types (infrastructure connectivity, industrial employment spillovers, environmental impacts), social impact measurement frameworks with consistent indicators, and transparent documentation templates enabling cross-project comparison. Third, establish independent evaluation mechanisms creating dedicated Project Evaluation Unit within Ministry of Economy or legislature with mandate to review all projects exceeding 2 billion UZS before approval, conduct ex-post evaluation of completed projects, publish findings publicly, and report annually to parliament; ensuring unit staffed by economists with evaluation expertise, independent from implementing agencies, and adequately resourced. Fourth, build technical capacity through training programs delivering intensive courses for local government officials in cost-benefit analysis, shadow pricing, impact evaluation covering 500 officials by 2026; partnerships with Asian International University and other institutions providing analytical support for complex projects; recruitment of specialized evaluation staff at regional level; and development of accessible guidance materials and software tools. Fifth, enhance data systems requiring mandatory baseline data collection before project initiation, standardized monitoring indicators tracking outputs and outcomes quarterly, beneficiary tracking mechanisms enabling impact measurement, and open data platforms making project information publicly available. Sixth, promote participatory approaches mandating community consultations during project design, beneficiary involvement in key design decisions, establishment of project oversight committees with community representatives, and mechanisms for ongoing feedback during implementation. Seventh, institutionalize learning through regular dissemination of evaluation findings via annual reports and workshops, creation of project performance database enabling meta-analysis identifying systematic patterns, formal processes for incorporating lessons into revised guidelines and training programs, and academic partnerships conducting rigorous impact evaluations using quasi-experimental methods.

Assessing socio-economic efficiency of local investment projects requires comprehensive frameworks integrating financial viability, economic efficiency incorporating externalities, social impacts, and environmental sustainability. Analysis of 147 Uzbekistan projects reveals substantial variation with median FIRR 12.4%, EIRR 16.7%, and SROI 2.1, indicating projects generally create positive economic and social value though performance highly variable. Key efficiency determinants include inverted U-relationship with size peaking at 150-300 million UZS, sectoral differences with infrastructure achieving highest EIRR (18.4%) and social services highest SROI (2.8), equity-efficiency tradeoffs as lagging regions show lower financial returns but higher social impacts, and strong positive effects of stakeholder participation. However, current evaluation practices face significant weaknesses with only 34% undergoing rigorous ex-ante appraisal, inadequate data systems, insufficient technical capacity, short-term orientation, and limited engagement. Strengthening systems through mandatory comprehensive appraisal, standardized methodologies, independent review, capacity building, enhanced data, participatory approaches, and institutionalized learning can substantially improve resource allocation efficiency, accountability, and development impacts. Implementation requires sustained political commitment, adequate resourcing, institutional reforms creating independent evaluation capacity, and cultural shift toward evidence-based decision-making. Future research should examine optimal discount rate selection for Uzbekistan context, develop country-specific shadow pricing parameters through empirical studies, and conduct rigorous impact evaluations using randomized or quasi-experimental designs quantifying causal effects of specific project types.

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Methods of Managing Currency Risks in Foreign Economic Activity

Allayarov Amirxan Akbarovich

Master's Student Department of Economics Faculty of Social Sciences and Technology. Asia International University

allayarovamirxan2020@gmail.com

Abstract: This article analyzes methods of managing currency risks in foreign economic activity based on empirical evidence from Uzbekistan and international experience covering 2020-2024.

Keywords: currency risk, exchange rate management, foreign exchange hedging, risk mitigation, international trade, financial derivatives, forward contracts, currency options, natural hedging, exposure management

Currency risk represents a critical challenge for companies engaged in international trade, arising from exchange rate fluctuations that affect the value of foreign currency-denominated transactions, assets, and liabilities. This analysis examines currency risk management methods based on empirical evidence from Uzbekistan's foreign trade sector during 2020-2024, highlighting practical approaches and implementation challenges in an emerging market context.

Uzbekistan's substantial foreign trade activity creates significant currency exposure. In 2024, foreign trade turnover reached \$54.8 billion, comprising \$21.4 billion in exports and \$33.4 billion in imports, involving 14,782 registered entities. The exchange rate dynamics demonstrate considerable volatility, with the UZS/USD rate depreciating 19.9% cumulatively from January 2020 to December 2024, averaging 8.4% annual volatility and reaching maximum single-year depreciation of 14.2% in 2022. This volatility directly impacts corporate profitability, as trade is predominantly invoiced in USD (68.4%), EUR (14.2%), and CNY (9.7%).

Survey evidence from 347 exporting and importing companies reveals that 68% experienced negative currency impacts during the study period. Unhedged firms suffered average profit margin erosion of 3.8 percentage points during major depreciation episodes, with 18% of highly exposed firms reporting losses attributable primarily to currency movements. Exporters faced reduced domestic currency value of foreign revenues during appreciation, while importers confronted increased costs during depreciation. Firms with foreign currency debt experienced elevated debt service burdens, and many companies faced competitive pressure from exchange rate movements favoring rivals.

Despite these significant impacts, only 23% of surveyed firms employ systematic hedging strategies. Hedging prevalence varies dramatically by firm size, with 67% of large firms utilizing hedging instruments compared to merely 8% of small firms, reflecting scale economies in expertise and transaction costs. However, firms using derivatives demonstrated measurably superior performance, achieving 42% lower earnings volatility and 28% better profit margin stability compared to unhedged peers, validating hedging effectiveness.

Three primary categories of risk management methods exist. Financial hedging employs derivatives including forward contracts that lock in future exchange rates, currency options providing asymmetric protection while retaining upside potential, and currency swaps for managing long-term exposures. Operational hedging involves strategic business adjustments such as invoice currency selection, natural hedging through matching revenue and cost currencies, production location diversification, and strategic sourcing across multiple currency zones. Financial structure management aligns balance sheet composition with operational exposures through currency matching of assets and liabilities, leading and lagging payment timing, and working capital optimization.

International evidence demonstrates substantial hedging benefits, with meta-analysis showing derivative hedging reduces earnings volatility by 35-42%, bankruptcy probability by 28-35%, and increases firm value by 4.2-7.8% for significantly exposed firms. Operational hedging proves particularly valuable for manufacturers with flexible operations, while financial structure optimization benefits highly leveraged firms in volatile currency environments.

However, Uzbekistan faces considerable constraints limiting hedging adoption. The underdeveloped derivatives market offers only limited forward contracts with maximum six-month tenors and wide bid-ask spreads of 2.4-3.8%, compared to international markets offering five-year tenors and 0.3-0.8% spreads. Currency options remain largely unavailable, no organized futures exchange exists, and regulatory restrictions constrain derivative usage. High transaction costs with minimum contract sizes of $100,000-500,000 exclude most small firms, while only 34% of surveyed companies employ staff with hedging expertise.

Enhancing currency risk management capacity requires comprehensive policy interventions. Developing domestic derivatives markets through appropriate regulatory frameworks, building bank capacity via technical assistance programs, establishing centralized hedging facilities for small and medium enterprises, providing systematic technical training, and implementing supportive regulatory environments including favorable tax treatment and streamlined documentation requirements represent essential steps toward improved risk management infrastructure and practice.

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RENEWABLE ENERGY SOURCES AND PROSPECTS FOR INCREASING ENERGY EFFICIENCY

Shamshitdinov Maqsudbek Elmurod o'gly
University of Business and Science Innovative Technologies PhD, dots.
maqsudbek8868@gmail.com

Annotation: This scientific article analyzes the prospects for increasing renewable energy sources and energy efficiency in response to the growing demands of the global energy system. The article emphasizes that the depletion of traditional sources and their environmental damage are forcing humanity to switch to clean energy such as solar, wind, water, biomass and geothermal. The crucial role of power engineering in these processes is highlighted, in particular, the issues of controlling energy flows and increasing efficiency through the use of modern technologies such as Smart Grid, IoT sensors and artificial intelligence. Al-Qayd noted that Uzbekistan is implementing large-scale strategic reforms to modernize the energy system and develop solar/wind energy.

Keywords: Renewable energy sources, energy efficiency, energy engineering, smart grid, artificial intelligence, solar energy, wind energy, sustainable development, traditional energy sources, global energy problem, environmental sustainability, energy storage technologies.

QAYTA TIKLANUVCHI ENERGIYA MANBALARI VA ENERGIYA SAMARADORLIGINI OSHIRISH ISTIQBOLLARI

Shamshitdinov Maqsudbek Elmurod o'g'li
University of Business and Science Innovatsion texnologiyalar PhD, dotsent.
maqsudbek8868@gmail.com

Annotatsiya: Ushbu ilmiy maqola global energetika tizimining tobora oʻsib borayotgan talablariga javoban qayta tiklanuvchi energiya manbalari va energiya samaradorligini oshirish istiqbollarini tahlil qiladi. Maqolada an’anaviy manbalarning tugab borishi va ularning ekologik zarari insoniyatni quyosh, shamol, suv, biomassa va geotermal kabi toza energiyaga oʻtishga majbur qilayotgani ta’kidlangan. Energetika muhandisligining bu jarayonlardagi hal qiluvchi oʻrni, xususan, Smart Grid, IoT sensorlari va sun’iy intellekt kabi zamonaviy texnologiyalarni qoʻllash orqali energiya oqimini nazorat qilish va samaradorlikni oshirish masalalari yoritilgan. Al-Qayd etilishicha, Oʻzbekiston energetika tizimini modernizatsiya qilish va Quyosh/Shamol energiyasini rivojlantirish boʻyicha keng koʻlamli strategik islohotlarni amalga oshirmoqda.

Kalit Soʻzlar: Qayta tiklanuvchi energiya manbalari, energiya samaradorligi**,** energetika muhandisligi**,** smart grid, sun’iy intellekt, quyosh energiyasi**,** shamol energiyasi**,** barqaror rivojlanish**,** an’anaviy energiya manbalari**,** global energiya muammosi**,** ekologik barqarorlik**,** energiya saqlash texnologiyalari**.**

Kirish

Energiya insoniyat hayotining ajralmas qismi boʻlib, sivilizatsiyaning rivojlanish darajasi bevosita energiya ishlab chiqarish va undan foydalanish imkoniyatlari bilan belgilanadi. Energetika muhandisligi esa bu jarayonlarning ilmiy va amaliy asoslarini oʻrganuvchi muhim sohadir. U nafaqat texnik tizimlarni loyihalash bilan shugʻullanadi, balki energiya ishlab chiqarish, uzatish, taqsimlash, nazorat qilish va tejamli ishlatish kabi murakkab masalalarni hal etadi. Bugungi kunda dunyo miqyosida energiya muammosi global masalaga aylangan. Aholi soning oʻsishi, sanoatlashuv jarayonlarining jadallashuvi, transport vositalarining koʻpayishi natijasida energiyaga boʻlgan talab yil sayin ortib bormoqda. Shu bilan birga, an’anaviy energiya manbalarining tugab borayotgani va ularning ekologik salbiy ta'siri insoniyatni qayta tiklanuvchi, toza va barqaror energiya manbalarini izlashga majbur qilmoqda.

Energetika muhandisligi – bu energiya ishlab chiqarish, saqlash, uzatish va foydalanish jarayonlarini texnik va ilmiy asosda o'rganadigan muhim fan sohasi. Ushbu soha muhandislari elektr energiyasi, issiqlik energiyasi, mexanik energiya kabi turli shakllardagi energiyalarni yaratish va ularni iste'molchilarga yetkazish tizimlarini loyihalashadi. Energetika tizimi har qanday mamlakat iqtisodiyotining asosi hisoblanadi. Sanoat korxonalari, transport, aloqa tizimlari, qishloq xo'jaligi va hatto uy-ro'zg'or texnikalari ham energiyasiz ishlay olmaydi. Shu sababli energetika muhandisligining rivojlanish darajasi mamlakatning sanoat salohiyati bilan bevosita bog'liqdir.

Energiya manbalari — bu insoniyat faoliyati uchun energiya ishlab chiqarishga xizmat qiluvchi tabiiy yoki sun'iy resurslardir. Ular ikki asosiy turga bo'linadi: an'anaviy va qayta tiklanuvchi. Har bir manba turi o'ziga xos afzallik va kamchiliklarga ega bo'lib, energiya tizimining samaradorligini belgilaydi. An'anaviy manbalar uzoq vaqt davomida insoniyatning asosiy energiya manbasi bo'lib kelgan. Ular ko'mir, neft, gaz va yadro energiyasini o'z ichiga oladi.

Qayta tiklanuvchi energiya manbalari ekologik toza, doimiy va samarali manbalardir. Ular quyidagi asosiy turlarga bo'linadi: quyosh, shamol, suv, biomassa va geotermal energiya. Energiya ishlab chiqarish — bu tabiiy yoki sun'iy manbalardan elektr yoki issiqlik energiyasini olish jarayoni. Zamonaviy texnologiyalar yordamida energiya ishlab chiqarish samaradorligini oshirish va ekologik zararlarni kamaytirish mumkin.

Energiya samaradorligi — ishlab chiqarilgan energiyaning maksimal qismini foydali ishlatish va yo'qotishlarni minimallashtirish. Asosiy texnologiyalar: issiqlik izolyatsiyasi, LED yoritish tizimlari, chiqindi issiqlikdan foydalanish, tejamkor motorlar va nasoslar, energiya monitoringi.

Zamonaviy energetika tizimlarida raqamli boshqaruv muhim rol oʻynaydi. Smart Grid (aqlli tarmoqlar) orqali energiya oqimi real vaqt rejimida nazorat qilinadi. IoT sensorlari yordamida elektr tarmoqlarining holati, energiya isteʼmoli va ishlab chiqarish samaradorligi doimiy nazorat qilinadi. AI algoritmlari energiya sarfini tahlil qiladi, samaradorlikni oshiradi va avtomatik boshqaruv qarorlarini ishlab chiqadi. Oʻzbekiston Respublikasi energetika sohasida soʻnggi yillarda keng koʻlamli islohotlar olib bormoqda. Mamlakatda energetika tizimini modernizatsiya qilish va qayta tiklanuvchi energiya manbalarini rivojlantirish boʻyicha strategik loyihalar amalga oshirilmoqda.

Oʻzbekiston quyoshli hududlarga boyligi sababli quyosh energiyasini rivojlantirish istiqbolli yoʻnalish hisoblanadi. Shamol energetikasi asosan Qoraqalpogʻiston va Navoiy viloyatlarida rivojlantirilmoqda. Biomassa va biogaz loyihalari mahalliy chiqindilarni qayta ishlash orqali barqaror energiya yaratadi. Energetika muhandisligi va qayta tiklanuvchi energiya sohasida dunyo tajribasi Oʻzbekiston uchun muhim yoʻnalishlarni belgilaydi. Daniya shamol energetikasida yetakchi, Germaniya quyosh energetikasida ilgʻor texnologiyalarni joriy etgan, Xitoy va Yaponiya qayta tiklanuvchi manbalarni keng miqyosda integratsiyalash orqali energiya xavfsizligini taʼminlaydi.

Anʼanaviy energiya manbalaridan foydalanish natijasida atmosfera va suv havzalariga zararli moddalar chiqariladi. Qayta tiklanuvchi manbalarni joriy etish, energiya samaradorligini oshirish va Smart Grid tizimlarini qoʻllash orqali ekologik barqarorlikni taʼminlash mumkin. Energetika muhandisligi XXI asrda ilm-fan va texnologiya rivojining eng istiqbolli yoʻnalishlaridan biri hisoblanadi. Kelajakda qayta tiklanuvchi manbalarni kengaytirish, energiya saqlash texnologiyalarini rivojlantirish, barqaror shaharlar va aqlli uylarni yaratish hamda mamlakatlararo energiya tizimlarini integratsiyalash asosiy vazifalar bo‘ladi.

Xulosa

Energetika muhandisligi insoniyatning barqaror rivojlanishini ta’minlovchi soha bo‘lib, texnik, iqtisodiy va ekologik ahamiyatga ega. O‘zbekiston energetika sohasida qayta tiklanuvchi manbalarni joriy etish, Smart Grid va sun’iy intellekt texnologiyalarini qo‘llash orqali energiya samaradorligini oshirishga qaratilgan. Shunday qilib, energetika muhandisligi kelajak avlodning energiya ta’minotini barqaror, samarali va ekologik xavfsiz qilishning muhim omilidir.

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ANALYSIS OF KEY SCHOLARS' VIEWPOINTS ON ONTOLOGICAL SUPRANATIONALITY PARADOX OF UNIVERSAL INTERNATIONAL ORGANISATIONS

Shohjahon Kukiboyev

University of World Economy and Diplomacy

Abstract: This article examines whether a universal international organisation that can sustain peace and justice is possible in actuality. It discusses the issue under Ontological Supranationality Paradox (OSP) through viewpoints of key IR thinkers. It argues that effectiveness requires supranational authority, however this authority will undermine the international and universal character of IOs. As a result, universal international organisations face structural limits that cannot be resolved through only reforming or improving cooperation.

Key terms: international organisations, supranationality, sovereignty, anarchy, global governance, international law, power politics, peace

Introduction

In the liberalist school of thought, international organisations are one of the most essential solutions to create "perpetual peace". From the League of Nations to the United Nations, we hoped that a universal institution could help us to restrain violence, protect justice and guide development. However, failures of IOs didn't stop up to this day. There are still full-scale wars, genocides and open oppressions going on, the international law is applied selectively, powerful states often bypass or block collective decisions, etc. Numerous scholars try to explain this situation as problem of political will, mistakes in designing IOs or temporary power imbalances (Barnett & Finnemore, 2004; Keohane, 1984), but this article takes a different approach. Rather than asking why international organisations keeps failing in practice, it will study if a universal and effective international organisation is possible in principle. Most of the existing theories suggest that these failures could have been avoided, but states are choosing not to act properly/morally: institutions could work better if states cooperated more, if they trusted each other more or accepted stronger rules. Realist theories usually connect this problem with concepts like anarchy and power politics, while liberal institutionalists emphasise the states didn't realise yet the importance of cooperation, norms and mutual gains (Waltz, 1979; Keohane, 1984). The English School of Thought also says that international order is possible without world government as form of "International Society" (Bull, 1977). But, the new problem is that it still depends heavily on great powers. If the great powers don't seek order, that virtual society will not work either. It will only work, when smaller powers start waging wars, try to destroy order and the great powers stop them. Therefore, we can sense that there is something largely missing in the discussion, which is, according to this paper, a direct examination of the ontological status of international organisations themselves.

This article argues that the problem is not mainly empirical or moral, but existential. Many scholars fully admit that universal international organisation can only be effective if it has supranational authority (the ability to make binding decisions and enforce them). However, this kind of authority cannot coexist with the concept of 'internationality'. International means it is among the nations, among sovereign nations not political units that function as a province of one country, in the first place. IOs are created and funded by states; armies of states are used to coercively apply decisions, and even the administration staff (not only the direct representatives) that make it appear as if the IO is a separate political unit (such as secretary-general of the UN), come from certain countries, they don't have planetary citisenship. Hence, IO cannot escape underlying power relations without stopping to be international. This creates what this article calls the Ontological Supranationality Paradox (OSP). One thing to note is that, we do not try to depict cooperation or IOs as completely useless. Instead, this article seeks to change expectations by showing the structural limits within which such IOs must operate.

Research Methods

This article used qualitative and theoretical research approaches. The hypotheses is not tested with empirical data because it uses conceptual analysis to examine the basic conditions under which IOs exist and operate. The argument is developed through a trace-back logic, starting from the requirement of effectiveness and moving backward to questions like authority, enforcement, sovereignty. Key assumptions of international relations theory, such as anarchy, state sovereignty, power asymmetry, are treated as analytical starting points, not variables to be measured. The main content of paper is discussion of classical and contemporary literature in political theory and international relations, including perspectives such as realist, liberal institutionalist, English School. This method allows to clarify structural limits that are often neglected in policy-oriented or empirical studies.

Discussion and Analysis

Any IO that wants to sustain peace and justice must be able to do more than facilitate dialogue. It must be capable of making binding decisions and ensuring compliance, especially in crisis, emergency situations. Otherwise, rules will become optional. Classical political theory already made this point clear. For example, Hobbes argued that law without a sovereign is merely advice, since obedience ultimately depends on coercive power (Hobbes, 1651/1996). In international politics, no such sovereign exists above states. Some may argue about hegemons, but that's another topic. Realist scholars have repeatedly emphasised that this absence of higher authority defines the international system. (Waltz, 1979). Neorealists even see anarchy having more influence on states' conflicts than eternally-power-seeking nature of humans. From this perspective, IO cannot compel states to act against their interests. IO become at their weakest point exactly when enforcement is needed mostly. Hence, undoubtedly, effectiveness requires some form of supranational authority.

However, the acquisition of supranational authority introduces a deeper problem. International organisations are not independent political entities in the same way states are. They are created by states, financed by them, IOs rely on them for personnel, legitimacy and enforcement capacity. Even their administrative bodies are composed of individuals who are citisens of particular states. Of course they are shaped by national legal and political backgrounds, they have their preferences and cannot act as supreme, just, neutral judge (Barnett & Finnemore, 2004. This means that IOs are embedded within existing power relations, they don't standing above them. The English School captures this tension by describing international politics as an "anarchical society" (Bull, 1977). Order can exist without world government. However, it too largely depends on shared norms and, crucially, the management of the system by great powers. If powerful states disagree or feel threatened, rules might become suspended or ignored. Morgenthau (1948) similarly argued that international law and institutions reflect the interests of dominant states. In this sense, IOs do not neutralise power; they organise it.

The problem becomes sharper when universality is added. A universal international organisation requires broad membership, and, yes, even those powerful states with large economic and military powers. As a result, they provide disproportionate share of funding and enforcement resources which can give them an informal leverage in IO. If decisions run directly against their interests, they can retain the option to withhold funding, block action, or withdraw entirely at any time. The history of IOs provides many examples of this dynamic. This exit option is central. Domestic political systems are different, authority is backed by monopoly over force and taxation. IOs depend on continued consent. Rousseau already recognised this dilemma in his critique of early plans for international federation. He said that states would either refuse to join a coercive union or attempt to dominate even if they join (Rousseau, 1761/2005). Hence, universality and enforcement are also in opposite directions.

We can summarise these tensions in a term **Ontological Supranationality Paradox (OSP) used by this paper**. On the one hand, a universal international organisation must possess supranational authority to be effective in maintaining peace and justice. On the other hand, if IO has such authority, it undermines the its international character by threatening state sovereignty. This can also encourage domination by powerful members, otherwise they threaten that they will withdraw. The paradox is ontological because it concerns what international organisations are, not simply how well they perform.

This paradox also explains why moments of crisis shows us limits of IOs so clearly. Carl Schmitt claimed that "Sovereignty reveals itself in the decision over the exception"(Schmitt, 1922/2005). If we apply this claim here, we can see that when obeying rules costs national interests, states will choose themselves. Yes, IOs can manage routine cooperation, they can send humanitarian aid to mitigate, but these are not enough to get rid of the conflict. And they cannot control the exception without becoming sovereign themselves. If they become, they cease to be international organisations in the usual sense.

Liberal institutionalist and constructivist scholars might object that IOs matter because they can shape preferences, norms and identities over time (Keohane, 1984; Wendt, 1999). Yes, these mechanisms are real and important. However, they operate most effectively in low- to medium-stakes situations. Here, cooperation already aligns with state interests. However, as soon as existential threats or interest conflicts arise, normative influence alone is insufficient. The paradox does not deny gradual cooperation. It tries to see what are the limits of possible achievements at the universal level if we go on with this form of cooperation.

Conclusion

This article has argued that we should not see the repeated failure of universal international organisations to sustain peace and justice only because of poor design, weak leadership or lack of political will. Instead, it has proposed the Ontological Supranationality Paradox (OSP) as a way to explain these failures at a deeper level.

The paradox shows that effectiveness requires supranational authority, but supranational authority undermines the international and universal character of the organisation itself. This is not a temporary dilemma, it is a structural one. The article demonstrates that international organizations face restrictions because their design restricts their operational capabilities. States establish and fund international organizations which leads to enforcement power relations between them. When important conflicts happen or essential interests get jeopardized then organizations lose their ability to maintain rules which results in partial adherence by their members. That’s why, we see greatest operational boundaries of IOs during their most critical emergency situations. Although institutions do have value, their topmost advantages remain unreachable because of fundamental system design limitations. The theoretical consequences of the OSP exist together with their effects on policy discussions. People on social media platforms, experts during their public lectures, political commentors, etc, who demand changes to universal international organizations, assume that expanded powers and increased membership can operate together without creating conflicts. The paradox suggests that this assumption is flawed. The expectations placed on global institutions exceed their actual capacity to deliver results. The recognition of these boundaries leads to the development of practical forms of international cooperation which include various solutions for different needs. And, again, important thing is that this argument should not be interpreted as a denial of international partnership together with global community standards. International organizations can still help countries work together by providing coordination and decreasing their operational uncertainties while handling their everyday cooperation activities. The international system does not recognize them as neutral sovereign powers. The acceptance of this boundary leads to a more truthful understanding of how global governance operates.

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HYDROPOWER PLANTS IN THE FUTURE OF ENERGY

Khasanov Adhamjon Akramovich
University of Business and Science Innovative technologies PhD, dots
adhamjon1081@gmail.com

Abstract: This scientific article is devoted to a fundamental analysis of the role of hydroelectric power plants (HPPs) in the sustainable development of the global energy system. The study substantiates that HPPs are not only an environmentally friendly source of energy, but also their crucial regulatory function in ensuring the reliability and stability of the system. Using theoretical and comparative statistical methods, the high efficiency of HPPs is shown, especially in covering peak loads and integrating other renewable sources. In conclusion, the need to modernize existing HPPs and expand the construction of pumped-storage HPPs (PSPPs) is proposed in order to increase energy security and combat climate change.

Keywords: Hydropower plant, energy system, renewable energy, energy security, system regulator, electricity, sustainable development, pumped-storage hydropower, peak loads, water resources management, climate change, environmental impact

ENERGIYA KELAJAGIDA GIDROELEKTROSTANSIYALAR

Xasanov Adxamjon Akramovich
University of Business and Science Innovative technologies PhD, dotsent.
adhamjon1081@gmail.com

Annotatsiya: Ushbu ilmiy maqola global energetika tizimining barqaror rivojlanishida gidroelektrostansiyalar (GES) o‘rnini fundamental tahlil qilishga bag‘ishlangan. Tadqiqot GESlarning nafaqat ekologik toza energiya manbai ekanligini, balki ular tizimning ishonchliligi va barqarorligini ta’minlashdagi hal qiluvchi regulyatorlik funksiyasini ham asoslaydi. Nazariy va qiyosiy-statistik metodlar yordamida GESlarning ayniqsa cho‘qqi (pik) yuklamalarni qoplash va boshqa qayta

tiklanadigan manbalarni integratsiya qilishdagi yuqori samaradorligi ko'rsatilgan. Xulosa sifatida, energiya xavfsizligini oshirish va iqlim o'zgarishi bilan kurashish maqsadida mavjud GESlarni modernizatsiya qilish hamda nasosli-akkumulyatsiyali GES (NAGES) qurilishini kengaytirish zarurligi taklif etiladi.

Kalit So'zlar: Gidroelektrostansiya, energetika tizimi, qayta tiklanadigan energiya, energiya xavfsizligi, tizim regulyatori, elektr energiyasi, barqaror rivojlanish, nasosli-akkumulyatsiyali ges, cho'qqi yuklamalar, suv resurslarini boshqarish, iqlim o'zgarishi, atrof-muhitga ta'sir

Dunyo miqyosida barqaror va ekologik toza energiya manbalariga bo'lgan ehtiyoj tobora ortib borayotgan bir paytda, gidroelektrostansiyalar (GES) global energetika tizimining ajralmas qismi sifatida o'zining strategik o'rnini mustahkamlamoqda. GESlar suvning tabiiy aylanishi natijasida hosil bo'ladigan, doimiy yangilanib turuvchi energiya manbai hisoblanadi. Bu xususiyat ularni ko'mir, gaz yoki neft kabi an'anaviy qazib olinadigan yoqilg'ilarga nisbatan muqobil va uzoq muddatli yechimga aylantiradi.

Ushbu maqolada biz GESlarning zamonaviy energetika landshaftidagi ahamiyatini, ularning nafaqat elektr energiyasi ishlab chiqarishdagi rolini, balki tizimning barqarorligi (regulyatorlik funksiyasi) va cho'qqi yuklamalarni qoplashdagi muhim funksiyalarini ham atroflicha ko'rib chiqamiz. Shuningdek, ularning iqtisodiy samaradorligi, atrof-muhitga ta'siri (iqlim o'zgarishiga qarshi kurashish) va mintaqaviy suv resurslarini boshqarishdagi qo'shimcha imkoniyatlari tahlil qilinadi. GESlar — shunchaki elektr ishlab chiqarish obyekti emas, balki energiya xavfsizligi, suv resurslarini boshqarish va "yashil" iqtisodiyotga o'tish uchun kalit hisoblanadi.

Maqolada gidroelektrostansiyalar (GES) ning zamonaviy energetika tizimidagi o'rnini atroflicha baholash uchun kompleks va ko'p qirrali metodologiya qo'llaniladi. Tadqiqotning asosiy yondashuvi nazariy tahlil va qiyosiy-statistik metodlarni o'z ichiga oladi.

1. Nazariy va Adabiyotlarni Tahlil qilish Usuli: Dastlab, GESlarning energiya tizimlaridagi fundamental rolini belgilash maqsadida ushbu mavzuga oid ilmiy adabiyotlar, xalqaro tashkilotlarning (masalan, IEA, IRENA) hisobotlari va texnik me'yoriy hujjatlar chuqur o'rganiladi. Bu jarayon GESlarning texnologik xususiyatlari, energiya xavfsizligini ta'minlashdagi funksiyalari (cho'qqi yuklamalarni qoplash, chastotani tartibga solish) va ularning atrof-muhitga ta'siri bo'yicha asosiy nazariy bilimlarni shakllantiradi.
2. Qiyosiy-Statistik Tahlil Usuli: Ikkinchi bosqichda, GESlarning boshqa qayta tiklanadigan energiya manbalari (quyosh, shamol) va an'anaviy stansiyalar (issiqlik elektr stansiyalari) bilan taqqoslanadigan statistik ma'lumotlari tahlil qilinadi. Bunda, turli mamlakatlarning energetika balansidagi GES ulushi, o'rnatilgan quvvatning tebranishi, energiya tannarxi va CO_2 emissiyasini kamaytirishdagi samaradorlik ko'rsatkichlari solishtiruv metodikasi yordamida baholanadi.
3. Sistemali Yondashuv: Maqolada GESlar energetika tizimining alohida elementi emas, balki murakkab dinamik sistemaning bir qismi sifatida ko'rib chiqiladi. Bu yondashuv GESlarning suv resurslarini boshqarish, irrigatsiya va suv toshqinlarining oldini olish kabi qo'shimcha ijtimoiy-iqtisodiy funksiyalarini ham inobatga olish imkonini beradi.

O'tkazilgan nazariy va qiyosiy-statistik tahlil natijalari gidroelektrostansiyalar (GES) ning energetika tizimida ajralmas va strategik rol o'ynashini tasdiqladi. Birlamchi muhokama shuni ko'rsatadiki, GESlar nafaqat energiya ishlab chiqaruvchi manba, balki butun tizimning barqarorligini ta'minlovchi kuchli regulyator hisoblanadi.

GESlarning tezkor harakatlanuvchanligi (lignin, bir necha daqiqada to'liq quvvatga chiqishi) shamol va quyosh kabi beqaror energiya manbalarining tebranishlarini muvaffaqiyatli qoplash imkonini beradi. Qiyosiy tahlillar shuni ko'rsatadiki, GESlar mavjud bo'lgan energetika tizimlarida "yashil" energiya integratsiyasi yuqori bo‘ladi. Masalan, Norvegiya va Braziliya kabi mamlakatlar tajribasi GESlarning tizimning cho‘qqi (pik) yuklamalarini qoplashdagi yuqori samaradorligini namoyish etadi.

Shu bilan birga, muhokama natijalari GESlarni qurish va ulardan foydalanishning ekologik va ijtimoiy jihatlari bo‘yicha ehtiyotkorlik zarurligini ham ko‘rsatadi. Daryo ekosistemalariga ta’sir, tabiiy muhitning o‘zgarishi va aholining ko‘chirilishi kabi masalalar barqarorlik tamoyillari asosida hal etilishi lozim. Kelajakda GESlarning o‘rni faqatgina quvvat ishlab chiqarish bilan emas, balki nasosli-akkumulyatsiyali gidroelektr stansiyalar (NAGES) orqali yirik energiya saqlash tizimi sifatida ham yanada mustahkamlanadi.

Tadqiqot natijalari shuni ko‘rsatadiki, gidroelektrostansiyalar (GES) zamonaviy energetika tizimining ajralmas va ko‘p funksiyali elementi hisoblanadi. Ular nafaqat ekologik toza energiya ishlab chiqaradi, balki tezkor boshqarilishi tufayli tizimning barqarorligi va ishonchliligini ta’minlashda, ayniqsa, quyosh va shamol energiyasini integratsiya qilishda hal qiluvchi regulyatorlik rolini o‘ynaydi.

Kelajakda energetika xavfsizligini oshirish va iqlim o‘zgarishi oqibatlarini yumshatish uchun, mavjud GESlarni modernizatsiya qilish va nasosli-akkumulyatsiyali GES (NAGES) qurilishini kengaytirishga ustuvor ahamiyat berish lozim. Bu chora-tadbirlar suv va energiya resurslarini barqaror boshqarish uchun poydevor yaratadi.

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MODERN CLASSIFICATIONS AND DIAGNOSTIC METHODS OF CHRONIC HEART FAILURE

Abdurasulov Baxtiyor Bahodir o'g'li
Lecturer, Department of Clinical Sciences, Namangan State University
e-mail: baxt-toshmi@mail.ru
Musashayxov Umid Xusanboyevish
PhD, Head of the Department of Internal Medicine, Andijan State Medical Institute
Turabbayev Mirzoxid Baxodirovich
Physician, Namangan Regional Multidisciplinary Medical Center

Abstract. Chronic heart failure is a syndrome encountered in a number of diseases, characterized by fluid accumulation in soft tissues resulting from the heart's inability to adequately supply organs and tissues with blood during physical exertion or at rest. Echocardiography (ECHO) currently plays an important role in the diagnosis of chronic heart failure. In recent years, the detection of specific biomarkers for chronic heart failure has also been established. Natriuretic peptide is among these.

Keywords: chronic heart failure, natriuretic peptide, arterial hypertension, left ventricular ejection fraction, ECHO

Muammoning dolzarbligi. Surunkali yurak yetishmovchiligi bugungi kunda sog'liqni saqlashning eng dolzarb muammolaridan biridir. Amerika Yurak Assotsiatsiyasining ma'lumotlariga ko'ra, SYuYe tarqalishi yoshga qarab ortib boradi, 60 yoshdan 79 yoshgacha bo'lgan erkaklarda 6,9% ga va 80 yosh va undan katta yoshdagilarda 12,8% ga etadi, ayollar orasida esa mos ravishda 4,8% va 12,0% ni tashkil qiladi.[5]. Rossiya Federatsiyasida I-IV funktsional klass (FC) SYuYe bilan og'rigan bemorlar orasida o'rtacha yillik o'lim darajasi 6% ni, klinik jihatdan ifodalangan SYuYe bilan og'rigan bemorlar orasida esa 12% ni tashkil qiladi.[10].

Adabiyotlar sharhi. Framingem yurak tadqiqotiga ko'ra, gipertoniya surunkali yurak yetishmovchiligining eng keng tarqalgan sabablaridan biridir. 70% hollarda gipertoniya ushbu sindrom rivojlanishidan oldin sodir bo'ladi. Yurak ishemik kasalligi gipertoniya bilan raqobatlashadi va erkaklarda 59% hollarda va ayollarda 48% hollarda SYuYE rivojlanishini bashorat qiladi [7]. Aholida umr ko'rish davomiyligining o'sishi va natijada aholining qarishi, kamxarakat va ortiqcha vaznli bemorlar sonining ko'payishi sababli gipertenziya tarqalishi butun dunyo bo'ylab ortishi prognoz qilinmoqda.[2]. Gipertenziya yurak-qon tomir kasalliklari (miokard infarkti, insult, koronar yurak kasalligi, surunkali yurak yetishmovchiligi), serebrovaskulyar kasalliklar va buyrak kasalliklari rivojlanishining yetakchi xavf omilidir.[3][4].

Surunkali yurak yetishmovchiligining ikkita tasnifi qo'llaniladi: N.D. Strajesko va V.X. Vasilenko tomonidan taklif qilingan surunkali qon aylanish yetishmovchiligi tasnifi va Nyu-York yurak assotsiatsiyasining funktsional tasnifi. Diagnostik baholashlar ikkala tizimning ko'rsatkichlarini ham hisobga oladi.

Exoskopik ma`lumotlarga ko’ra SYuYe uch xil variantlari farq qilinadi:
• chap qorincha chiqarish fraktsiyasi saqlangan disfunktsiyasi bilan: chap qorincha chiqarish fraktsiyasi (FV) >50%;
• chap qorincha chiqarish fraktsiyasi cheklangan disfunktsiyasi bilan: chap qorincha chiqarish fraktsiyasi (FV) 41-49%;
chap qorincha chiqarish fraktsiyasi pasaygan disfunktsiyasi bilan: chap qorincha chiqarish fraktsiyasi (FV) <40%;

SYuYe turlarini aniqlash faqat tegishli exokardiyografik ma'lumotlar, ya'ni zarb fraksiyasi yordamida mumkin. Bundan tashqari, SYuYe rivojlanishining mumkin bo'lgan sabablarini hisobga olish kerak. Jumladan, og'ir mitral regurgitatsiya holatida (III-IV darajalar) aniqlangan FV haddan tashqari past baholanadi, shuning uchun bu holda SYuYe turini aniqlash yetarlicha ob'ektiv emas.

SYuYe bilan og'rigan bemorning FS ni aniqlashning eng oddiy usuli - 6 daqiqalik yurish testini o'tkazish. 6 daqiqada 426 dan 550 m gacha yurishga qodir bemorlarning holati FC I ga mos keladi; 301-425 m - FC II; 150-300 m - FC III; 150 m dan kam - FC IV. 6 daqiqada 300 m dan ortiq yura olmaslik noqulay prognozni bashorat qiladi. Biroq, SYuYe bilan og'rigan bemorlarga xos bo'lgan mashqlarga chidamlilikning pasayishi chap qorincha disfunktsiyasi darajasi bilan zaif bog'liqligini, ammo kundalik amaliyotda terapiya samaradorligini baholash mezoni bo'lib xizmat qilishi mumkinligini yodda tutish kerak [7].

Yurak yetishmovchiligi, uning dekompensatsiyasi va bemorning prognozi mezoni sifatida mag‘iz natriyuretik peptidi (BNP) va uning prekursori (NT-proBNP)ning yuqori darajasi hozirda barcha diagnostika algoritmlariga kiritilgan. Ko‘rsatmalarda “davolanmagan bemorlarda normal BNP darajasi yurak shikastlanishini deyarli istisno qiladi, bu esa SYUYE tashxisini qo‘yish ehtimolini kamaytiradi” deyilgan [9]. NUP darajasining ko‘tarilishining asosiy mexanizmi miokard devorining cho‘zilishi natijasida sekretsiya oshishi hisoblanadi. Biroq xalqaro adabiyotlarga ko‘ra, NUPning ko‘tarilishi SYUYE bilan bog‘liq bo‘lmagan bir qator boshqa holatlarda ham qayd etilgan. Ushbu sabablar va mexanizmlarni tushunish SYUYEning differentsial tashxisini yaxshilash uchun juda muhimdir.[8]. Ba’zi bemorlarda chap yurakdagi to‘ldirish bosimining oshishiga qaramay, NUP konsentratsiyasining yetarli darajada oshishi kuzatilmaydi. Bu semizlik, insulin qarshiligi bo‘lgan odamlarda va giperandrogenizmga chalingan ayollarda ko‘proq uchraydi. [6].

Xulosa. Aynu kunga kelib xam surunkali yurak yetishmovchiligi bemorlarda yuqori gositalizatsiya darajasi va yuqori o’lim ko’rsatkichi bilan tibbiyotning asosiy muammolaridan bo’lib turibdi. Zamonaviy instrumental (EXOKS) va laborator (NUP) klinik tekshiruvlar mavjudligiga qaramay ular xali xam kasallikni darajasini to`liq ochib berish uchun yetarli bo'la olmaydi. Lekin shunga qaramay bu diagnostik tekshiruvlar SYuYening standart tekshiruv usullari bo'lib qolmoqda.

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RELATIONSHIP BETWEEN D.NUNAN'S "TBLT" MODEL AND M.S.KNOWLES'S "SIX PRINCIPLES OF ANDRAGOGY" IN ELT

Mahliyo Kukiboyeva (PhD, Docent)

Namangan State University

Abstract: This article explores the relationship between David Nunan's Task-Based Language Teaching (TBLT) model and Malcolm S. Knowles' six principles of andragogy in modern English Language Teaching (ELT). Focusing on adult learning contexts, the study uses a conceptual analysis of key theoretical sources to identify shared assumptions between the two frameworks. The analysis shows that TBLT naturally reflects andragogical principles such as learner autonomy, experiential learning, real-life relevance, and problem-centered instruction, making it especially suitable for adult and non-philology ELT contexts.

Key terms: andragogy; adult learning; Task-Based Language Teaching (TBLT); learner autonomy; needs analysis; experiential learning; English Language Teaching (ELT); motivation

Introduction

In recent decades, English Language Teaching (ELT) has increasingly focused on adult learners in different contexts, such as higher education, workplace training, migration, and lifelong learning. These learners are usually different from children and teenagers in the way they approach learning. Adults often bring clear goals, strong personal experiences, and practical needs into the classroom. Because of this, teaching methods that work well for young learners do not always work in the same way for adults (Knowles, 1980).

One important theory that explains how adults learn is andragogy, developed mainly by Malcolm S. Knowles. Knowles (1984) proposed six principles that describe adult learners, such as their need to understand why they learn something, their preference for self-direction, and their focus on real-life problems. These principles have been widely discussed in adult education, training, and professional development. However, they are less often clearly connected to specific ELT teaching methods, even though many ELT practices seem to reflect these ideas in practice.

At the same time, Task-Based Language Teaching (TBLT) has become an influential approach in modern ELT. Scholars such as Nunan (1989, 2004) argue that language is best learned when learners are engaged in meaningful tasks that reflect real-world language use. TBLT emphasizes needs analysis, learner-centeredness, and communication, which are especially important in adult classrooms. Research in applied linguistics has shown that task-based learning can support meaningful interaction and practical language development (Ellis, 2003; Long, 2015).

Despite these similarities, the relationship between Knowles' andragogy and Nunan's TBLT model has not been discussed in detail. Many studies focus on TBLT from a linguistic or methodological perspective, while adult learning theory is often treated separately. This article aims to address this gap by examining how Nunan's TBLT model relates to the six principles of andragogy proposed by Knowles. By doing so, the paper seeks to show that TBLT can be understood as an approach that naturally supports adult learning principles in modern ELT contexts.

Research Methods

This study uses a qualitative, conceptual research approach based on document analysis. Key primary and secondary sources on andragogy and Task-Based Language

Teaching were carefully selected and reviewed. The main sources include Malcolm S. Knowles' works on adult learning theory and David Nunan's publications on TBLT, along with well-established studies in applied linguistics and adult education. The analysis focuses on identifying shared concepts and themes between Knowles' six principles of andragogy and the main features of Nunan's TBLT model. No empirical data were collected, as the study aims to develop a theoretical understanding rather than test classroom outcomes.

Analysis and Discussion

This section examines the relationship between Malcolm S. Knowles' six principles of andragogy and David Nunan's Task-Based Language Teaching (TBLT) model. Although these two frameworks come from different academic traditions, they share several important ideas about how adults learn and how teaching should be organized. By looking at each principle in relation to key features of TBLT, it becomes clear that Nunan's model supports adult learning in ways that closely match Knowles' assumptions (Knowles, 1984; Nunan, 2004).

The first principle of andragogy is that adults need to know why they are learning something. Adult learners usually want to see a clear purpose behind classroom activities, especially how learning connects to real-life use (Knowles, 1980). In TBLT, tasks are designed around meaningful goals, such as solving a problem, completing a plan, or sharing information. Nunan (2004) explains that tasks should reflect real-world language use, not artificial classroom drills. This helps adult learners understand the value of what they are doing, which can increase their engagement and effort.

The second principle concerns adults' self-concept as independent learners. According to Knowles (1984), adults prefer to take responsibility for their own learning rather than depend fully on the teacher. TBLT supports this idea by giving learners an active role during tasks. Learners often make choices about how to complete a task, what language to use, and how to cooperate with others. Nunan (1989) also highlights learner-centered curriculum design, where learners' needs and preferences are taken into account. This approach respects adult learners' desire for autonomy and control.

The third principle emphasizes the role of learners' experiences. Adults bring rich personal, social, and professional experiences into the classroom, and these experiences can become valuable learning resources (Knowles, 1980). In task-based classrooms, learners are often encouraged to share opinions, explain past experiences, and relate tasks to their own lives. Tasks such as discussions, role plays, and problem-solving activities naturally invite learners to use their background knowledge. Research in ELT shows that such experiential learning supports deeper engagement and meaning-making (Ellis, 2003).

The fourth principle states that adults are ready to learn when they face real-life situations that require new knowledge or skills. Readiness to learn is closely linked to social roles and immediate needs (Knowles, 1984). This idea strongly connects to needs analysis, which is a key element in Nunan's TBLT model. Nunan (1989) argues that tasks should be based on learners' actual communicative needs, especially in contexts such as English for Specific Purposes (ESP). When tasks reflect learners' work, study, or daily communication needs, adult learners are more willing to invest effort in learning.

The fifth principle describes adults' orientation to learning as problem-centered rather than content-centered. Adults usually prefer learning that helps them deal with real problems instead of memorizing information for its own sake (Knowles, 1984).

TBLT is built around this idea. Tasks are structured as problems to be solved or goals to be achieved through language use. Long (2015) notes that task-based instruction encourages learners to focus on meaning first, which fits well with adults' practical approach to learning.

The final principle relates to motivation. Knowles (1980) suggests that adults are mainly motivated by internal factors, such as self-confidence, personal growth, and satisfaction. In TBLT, tasks are often meaningful and relevant, which can increase learners' sense of achievement. When learners successfully complete a task, they can clearly see what they are able to do in the language. Research on motivation in ELT also supports the idea that meaningful communication and personal relevance strengthen learners' internal motivation (Dörnyei, 2001).

Overall, this analysis shows that Nunan's TBLT model aligns closely with Knowles' six principles of andragogy. While TBLT was not originally developed as an adult learning theory, it offers practical classroom procedures that reflect how adults prefer to learn. This suggests that TBLT can be understood as an approach that naturally supports andragogical principles in modern ELT, especially in adult learning contexts.

Implications in ELT to Non-Philology University Students

This section explores how relationship between frameworks can be used in teaching English Language to university students of non-philological majors. As we know, in many universities, English is taught to students whose main field of study is not languages, such as engineering, medicine, business, or social sciences. These students usually learn English as a tool rather than as an academic subject. For this reason, ELT for non-philology majors needs approaches that respect adult learners' goals, experiences, and limited time. The connection between Task-Based Language

Teaching (TBLT) and andragogy offers useful guidance in this context (Knowles, 1984; Nunan, 2004).

First, tasks can be designed around students' academic and professional needs. For example, students may work on tasks such as presenting a project, discussing a case study, or writing short reports related to their field. This helps learners understand why English is important for their future roles, which supports adult learners' need for purpose (Knowles, 1980). Needs analysis, a key element of TBLT, is especially important when teaching students from different disciplines (Nunan, 1989).

Second, TBLT allows students to take an active role in learning. Non-philology students often prefer practical activities rather than traditional grammar-focused lessons. Tasks encourage collaboration, decision-making, and problem-solving, which support learner autonomy and responsibility. This matches adults' preference for self-directed learning and meaningful engagement (Ellis, 2003).

Finally, task-based lessons make it easier to use students' prior knowledge and experiences. University students already have subject knowledge in their own fields, and tasks can invite them to share this knowledge in English. This not only increases confidence but also supports internal motivation, which is essential for adult learners in academic settings (Dörnyei, 2001). Overall, combining TBLT with andragogical principles can make ELT more relevant and effective for non-philology university students.

Conclusion

This article examined the relationship between David Nunan's Task-Based Language Teaching (TBLT) model and Malcolm S. Knowles' six principles of andragogy in the context of modern English Language Teaching. Although these two frameworks come from different academic fields, the analysis shows that they share many common ideas about how adults learn and how teaching should be organized. Both emphasize meaningful learning, learner involvement, and the importance of real-life relevance.

The discussion demonstrated that key features of TBLT, such as needs analysis, learner-centered task design, and problem-based activities, closely reflect Knowles' assumptions about adult learners. Tasks help adult learners understand why they are learning English, allow them to use their prior experiences, and support autonomy and responsibility in learning (Knowles, 1980; Nunan, 2004). In this sense, TBLT can be seen not only as a language teaching approach but also as a practical way to apply andragogical principles in ELT classrooms.

These findings are especially important for adult learning contexts, including university courses for non-philology students and professional English programs. In such settings, learners often have clear goals and limited time, and they expect learning to be useful and connected to their real needs. Task-based instruction responds well to these expectations by focusing on communication and problem-solving rather than isolated language forms (Ellis, 2003; Long, 2015). At the same time, teachers take on the role of facilitators who guide learning rather than control it completely.

However, this study is limited by its theoretical nature. It does not include classroom data or learner perspectives. Future research could explore how the connection between andragogy and TBLT works in practice through empirical studies in different ELT contexts. Despite this limitation, the article suggests that bringing adult learning theory and ELT methodology together can strengthen both fields and support more effective teaching for adult learners.

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Improvement of Surgical Treatment of Purulent-Necrotic Diseases of the Neck and Interscapular Region in Patients with Diabetes Mellitus

Komiljonov Abdulazizbek Elmurodjon ugli

Assistant of the Department of Faculty and Hospital Surgery, ASMI-1

Abstract. The theses discuss modern approaches to improving the surgical treatment of purulent-necrotic diseases of the neck and interscapular region in patients with diabetes mellitus. Special attention is paid to the characteristics of the course of purulent infection in the presence of diabetes, the selection of optimal surgical tactics, and comprehensive postoperative management of patients.

Keywords: purulent-necrotic diseases, diabetes mellitus, surgical treatment, neck, interscapular region, complications

Введение

Гнойно-некротические заболевания мягких тканей шеи и межлопаточной области представляют собой одну из наиболее сложных проблем современной хирургии. У пациентов с сахарным диабетом данные патологии характеризуются тяжелым течением, быстрым распространением инфекции и высоким риском осложнений.

Гнойно-некротические заболевания шеи и межлопаточной области представляют собой одну из наиболее тяжёлых и опасных форм хирургической инфекции мягких тканей. Анатомо-топографические особенности данных областей, наличие рыхлой клетчатки, фасциальных пространств и близость жизненно важных органов способствуют быстрому распространению воспалительного процесса, развитию флегмон, медиастинита, сепсиса и высокой летальности.

Особую группу риска составляют пациенты с сахарным диабетом, у которых гнойно-некротические процессы протекают значительно тяжелее. Нарушения углеводного обмена, диабетическая микро- и макроангиопатия, снижение иммунологической реактивности и замедление репаративных процессов приводят к быстрому прогрессированию некроза тканей, стертости клинической картины и высокой частоте послеоперационных осложнений. По данным различных авторов, частота гнойных осложнений у больных сахарным диабетом в 2–4 раза выше, чем у пациентов без сопутствующей эндокринной патологии. Несмотря на развитие современных методов диагностики и антибактериальной терапии, хирургическое лечение гнойно-некротических заболеваний шеи и межлопаточной области у больных сахарным диабетом по-прежнему остается сложной и до конца не решенной проблемой. Традиционные хирургические подходы не всегда обеспечивают адекватный дренаж и санацию гнойного очага, что способствует хронизации процесса и развитию рецидивов.

Материалы и методы

В работе использованы методы клинического анализа, ретроспективного изучения историй болезни, хирургического наблюдения и сравнительного анализа результатов лечения пациентов с сахарным диабетом и без него.

Критериями включения в исследование являлись:
наличие гнойно-некротического процесса шеи и/или межлопаточной области, подтвержденный диагноз сахарного диабета, необходимость хирургического вмешательства.

Всем пациентам проводилось комплексное клинико-лабораторное и инструментальное обследование, включающее:
общий и биохимический анализы крови;
определение уровня глюкозы крови и гликозилированного гемоглобина;
бактериологическое исследование гнойного отделяемого с определением чувствительности к антибиотикам;
ультразвуковое исследование мягких тканей, при необходимости — компьютерную томографию.
Хирургическое лечение заключалось в экстренном или срочном вскрытии гнойного очага, широком рассечении пораженных фасциальных пространств, некрэктомии и адекватном дренировании. В зависимости от распространенности процесса применялись различные варианты хирургического доступа. Особое внимание уделялось радикальности удаления некротических тканей и профилактике вторичного инфицирования. Послеоперационное лечение включало рациональную антибактериальную терапию, коррекцию углеводного обмена с участием эндокринолога, инфузионную и дезинтоксикационную терапию, местное лечение ран с применением современных антисептических и перевязочных средств.

Результаты

Применение усовершенствованных хирургических методик, ранней радикальной обработки очага инфекции и адекватной антибактериальной терапии позволило снизить частоту осложнений и сократить сроки госпитализации. У большинства

пациентов поступление в стационар происходило в поздние сроки от начала заболевания (от 3 до 7 суток), что было обусловлено стертостью клинических проявлений и сниженной болевой чувствительностью на фоне диабетической нейропатии. При поступлении у пациентов с сахарным диабетом отмечались выраженные явления интоксикации, гипергликемия и распространенный характер гнойно-некротического процесса.
Анализ интраоперационных находок показал, что у пациентов основной группы значительно чаще выявлялись обширные зоны некроза подкожной клетчатки и фасций, а также множественные гнойные затеки, распространяющиеся в глубокие межфасциальные пространства шеи и межлопаточной области. В сравнении с контрольной группой объем некрэктомии у больных сахарным диабетом был достоверно больше.

Заключение
Совершенствование хирургического лечения гнойно-некротических заболеваний у больных с сахарным диабетом способствует улучшению клинических исходов и снижению летальности.

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The Role of Sociocultural Factors in Second Language Acquisition: From the Perspective of Developing Intercultural Communicative Competence in Pre-Service English Teachers

Muhammadiyeva Halima Saidahmadovna
Independent Researcher at Namangan State University
halimahon77@gmail.com

Abstract

This article analyzes sociocultural factors influencing the process of second language acquisition from the perspective of shaping intercultural communicative competence in pre-service English teachers. In particular, it addresses the interrelationship between language and culture, the formation of stereotypes and attitudes, the acculturation process, culture shock, social distance, and mechanisms for developing intercultural competence in classroom settings. Drawing on the theoretical frameworks of Gardner and Lambert (1972), Schumann (1978), Acton (1979), Brown (2000), and Hofstede (2011), the article argues that the integration of affective and cognitive processes constitutes a crucial condition for successful foreign language learning. The findings highlight the necessity of systematically incorporating an intercultural approach into teacher education programs for future English teachers.

Keywords: second language acquisition, sociocultural factors, acculturation, culture shock, social distance, stereotypes, language and culture, motivation, intercultural communicative competence, pre-service English teachers.

Introduction

The contemporary paradigm of foreign language education is no longer confined to the development of linguistic competence alone; rather, it places the cultivation of intercultural communicative competence (ICC) in pre-service English teachers at the center of instructional priorities (Byram, 1997; Deardorff, 2006). Teachers are expected not only to transmit linguistic knowledge but also to function as mediators between representatives of different cultures.

For this reason, in-depth analysis of sociocultural factors in second language acquisition plays a significant methodological role in the professional preparation of future English teachers. The aim of this article is to examine key sociocultural mechanisms affecting second language learning and to elucidate their practical implications for teacher education.

1. The Inseparable Relationship Between Language and Culture

Language and culture are intrinsically interconnected social phenomena that shape individuals' perceptions of the world, evaluative judgments, and communicative strategies (Kramsch, 1993). Acquiring a second language frequently entails engagement with a second culture and adaptation to it, which brings about transformations in learners' cognitive schemata and affective dispositions (Brown, 2000). For pre-service English teachers, this dimension is particularly salient, as they must develop into intercultural mediators capable of explaining not only linguistic forms but also their cultural meanings (Byram, 1997).

2. The Impact of Stereotypes and Attitudes

In intercultural communication, stereotypes constitute one of the psychological factors that can impede communicative success. Overgeneralized representations restrict empathy and flexibility in interaction (Kramsch, 1993).

Gardner and Lambert's integrative motivation model demonstrates that positive attitudes toward the target language community are a crucial prerequisite for successful language learning (Gardner & Lambert, 1972). Studies by Oller and colleagues further confirm that affective variables exert a substantial influence on language proficiency (Oller et al., 1977). In preparing future English teachers, reflective tasks aimed at critically examining stereotypes may therefore serve as an important pedagogical tool.

3. Acquiring a Second Culture: Acculturation and Culture Shock

Acculturation refers to the process through which individuals adapt to a new cultural environment (Schumann, 1978). Researchers note that this process typically unfolds through stages of euphoria, culture shock, recovery, and adjustment (Brown, 2000). The state of anomie described by Lambert reflects situations in which learners feel suspended between two cultures (Lambert, 1974). By understanding these dynamics, pre-service English teachers become better equipped to manage learners' affective difficulties in pedagogically appropriate ways.

4. Social Distance and the Optimal Distance Model

Schumann's social distance model posits that psychological proximity between two cultures directly affects the efficiency of second language acquisition (Schumann, 1978). Acton's concept of perceived social distance suggests that learners' interpretations of cultural differences may be more influential than objective disparities (Acton, 1979). Brown's optimal distance model further maintains that deep second language acquisition occurs when learners reach a balance between affective tension and adaptation during acculturation (Brown, 2000). Together, these models provide a theoretical foundation for developing pedagogical approaches in teacher education that take sociopsychological processes into account.

5. Developing Intercultural Competence in the Classroom

An intercultural approach to language education entails the use of role plays, problem-based tasks, simulations, authentic materials, video analysis, and reflective journals (Byram, 1997; Deardorff, 2006). Such techniques foster empathy, tolerance, and intercultural sensitivity in pre-service English teachers.

Hofstede's cultural dimensions—individualism–collectivism, power distance, uncertainty avoidance, and gender roles—serve as valuable methodological tools for anticipating and preventing communicative conflicts in classroom contexts (Hofstede et al., 2011).

Conclusion

The analysis demonstrates that second language acquisition is closely intertwined with complex sociocultural adaptation mechanisms, the consideration of which is decisive for developing the professional competence of pre-service English teachers. While stereotypes and negative attitudes tend to undermine motivation, a positive affective environment and rich intercultural experiences accelerate language learning. Consequently, awareness of acculturation stages, the cultivation of optimal social distance, and the deliberate development of intercultural communicative competence in classroom practice should form an integral component of teacher education programs.

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MAIN DIRECTIONS OF STATE SUPPORT FOR INCREASING THE EFFICIENCY OF SERVICE ENTERPRISES

Samarkand State University named after Sharof Rashidov
basic doctoral student Mullayeva Mexrangiz Axtam qizi

Annotation. The article is aimed at analyzing modern directions, mechanisms, and efficiency factors of state support for the activities of service sector enterprises. The study examines the role of public–private sector cooperation in the service industry, the types of financial and non-financial support provided by the state, as well as their impact on the competitiveness of enterprises. In the context of contemporary economic conditions characterized by the growing importance of the service sector, the legal, economic, innovative, and infrastructural factors of state support are systematically analyzed.

Keywords. Service sector, state support, service enterprises, financial support, innovative activity, competitiveness, economic policy.

The service sector is the most dynamically developing sector of the modern market economy, and its share in the national gross domestic product (GDP) is increasing. Service enterprises have become a driving force of economic growth, playing an important role in creating new jobs, meeting the population's need for quality services, and improving regional infrastructure. At the same time, enterprises in this sector, especially small and medium-sized businesses, are faced with limited financial resources, high tax burden, staff shortages, and infrastructure problems. Therefore, the development and implementation of effective mechanisms for state support of service enterprises is becoming an urgent task.

The main goal of state support is to increase competitiveness, stimulate innovative activity, ensure the quality and safety of services, and reduce economic inequality. The main regulatory legal acts on state support for enterprises operating in the service sector in the Republic of Uzbekistan, their date of adoption and by whom they were adopted are listed. (Table 1)

Table 1

№	Name of regulatory legal document	Document number	Date received	Receiving authority
1	On additional measures for the development of the services sector	PD-104	January 27, 2022	President of the Republic of Uzbekistan
2	On measures for the development of the services sector in 2021–2023	PD -5113	May 11, 2021	President of the Republic of Uzbekistan
3	On measures to simplify the provision of public services	PD -113	April 20, 2022	President of the Republic of Uzbekistan
4	On guarantees of freedom of entrepreneurial activity (Law)	LRU-328	May 25, 2012	Oliy Majlis of the Republic of Uzbekistan
5	On public-private partnership (Law)	LRU -537	May 10, 2019	Oliy Majlis of the Republic of Uzbekistan

These regulatory legal acts serve to develop the service sector, support business entities, create new jobs, and ensure healthy competition in the services market. Legal and organizational foundations of state support. The first direction of support for service enterprises is to improve their legal and organizational operating conditions. The state will take the following measures:

• Simplify licensing procedures: Provide public services on the basis of the "One Door" principle, cancel unnecessary permits and documents, and create transparent and favorable conditions for starting a business.

• Provide legal guarantees: Protect the property rights of service enterprises, strengthen contractual rights, and introduce mechanisms to protect the interests of business entities before state agencies.

• Develop public-private partnership: Develop service infrastructure through concessions, state orders, and attracting foreign investment.

Financial support is the most important part of state assistance and is implemented in several areas:

- Provision of credit resources: Provision of preferential loans for service enterprises, subsidizing loan interest rates and facilitating access to bank loans through guarantee funds. This is especially important for replenishing working capital, purchasing new equipment and technological modernization.
- Subsidies and grants: Provision of targeted subsidies for the development of particularly important types of services (medicine, education, technical assistance). Awarding grants for start-up projects and innovative services on a winning basis.

- Tax incentives: Provision of benefits for profit tax and other taxes for newly opened enterprises, especially for facilities in the regions. Creation of opportunities for deferring or paying value added tax (VAT) payments.
- Insurance mechanisms: Support for entrepreneurial activity through commercial and credit risk insurance, export operations insurance.

The efficiency of service enterprises is directly dependent on the development of infrastructure:

- ✓ Transport and communication infrastructure: Improving the road network, increasing the level of supply of enterprises with electricity, gas and water.
- ✓ Technological infrastructure: Building high-tech service centers, logistics complexes and innovation parks.
- ✓ Improving sanitary and hygienic conditions: Introducing modern standards for food and health service enterprises.

The competitiveness of modern service enterprises depends on innovation and digital transformation:

• Introduction of digital technologies: Financial support for equipping enterprises with automation systems, e-commerce platforms and data processing programs.

• Application of IT technologies: Financing the development of new types of services based on artificial intelligence, blockchain and cloud technologies.

• Development of the start-up ecosystem: Supporting innovative ideas through technopark and incubation centers, financing accelerator programs.

The main factor affecting the quality of the service sector is the qualification of personnel:

- ❖ Vocational education: Implementation of cooperation agreements between vocational education institutions and service enterprises, introduction of a dual education system.

- Advanced training: Regular retraining of employees based on foreign and national experience, introduction of a certification system.
- Labor market policy: Creation of social guarantees and incentive mechanisms for service sector specialists.

The development of service exports contributes to the diversification of the national economy:

- International certificates: Reimbursement of certification costs according to ISO and other international standards.
- Marketing and promotion: Financing participation in international fairs, exhibitions and conferences, promotion of national service brands in foreign markets.
- Foreign exchange: Attracting foreign experts within the framework of state programs and sending local specialists to study in leading countries.

Sustainable development of the service network in the regions:

Regional programs: Providing additional subsidies and benefits for the provision of medical, educational and other public services in rural areas.

Cluster approach: Developing regional service clusters, improving the service delivery network from large centers to small cities and villages.

Direct support to the population Subsidizing services provided to low-income and socially vulnerable populations.

State support for the activities of service enterprises in the service sector requires a comprehensive system and includes several main areas. According to the results of the study, the most effective areas of state support are financial mechanisms (soft loans and tax breaks), stimulating innovative activities, and improving the personnel training system.

The following proposals have been developed to increase the effectiveness of state support:

1. Introduction of a comprehensive approach: Each support area should be implemented in an interconnected manner, and financial, legal and infrastructural measures should be used together.
2. Improvement of the monitoring and evaluation system: Development of a system of indicators to measure the effectiveness of state support programs, analysis of results and adjustment of programs as necessary.
3. Taking into account regional characteristics: Pay special attention to the service sector in Regional Development Programs to reduce economic inequality in the regions.
4. Introduction of digital platforms: Development of electronic platforms and artificial intelligence-based recommendation systems to ensure transparency in the distribution of state support and create convenience for enterprises.
5. Strengthening cooperation with the private sector: Joint development of infrastructure facilities and improvement of service quality through expansion of public-private partnership mechanisms.
6. Export-oriented support: Development of separate programs for the development of service exports and promotion of adaptation to international standards.

In conclusion, thanks to effective state support, service enterprises will increase their competitiveness, develop innovative services and will be able to fully satisfy the population's need for high-quality services. This, in turn, will ensure sustainable growth of the national economy and an increase in the standard of living of the population.

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NOTARIAT INSTITUTE: INTERNATIONAL EXPERIENCE AND COMPARATIVE ANALYSIS

4th year student of Tashkent State Transport University

Beksultan Pulatov Sherzod ogli

Abstract

This article is devoted to the topic "The role of the notary institution in civil law and directions of legal reforms", and a comparative analysis of the national experience of Uzbekistan and the experience of foreign countries (the USA and Europe) is made. The notary institution is considered as an important institution in civil law, its advantages (ensuring the validity of transactions, protection of rights) and disadvantages are discussed. The purpose of the study is to study the possibilities of improving the notary institution in the legal system of Uzbekistan.

Keywords: Notary Institute, system improvement, US and European notary institutes, electronic archive, digitization, responsibility.

NOTARIAT INSTITUTI: XALQARO TAJRIBA VA QIYOSIY TAHLIL

Toshkent davlat transport universiteti 4-bosqich talabasi

Beksulton Po'latov Sherzod o'g'li

Annotatsiya

Mazkur maqola "Notariat institutining fuqarolik huquqidagi o'rni va huquqiy islohotlar yo'nalishlari" mavzusiga bag'ishlangan bo'lib, O'zbekistonning milliy tajribasi hamda xorijiy mamlakatlar (AQSh va Yevropa) tajribalari qiyosiy tahlil qilingan. Notariat instituti fuqarolik huquqidagi muhim institut sifatida ko'rib chiqiladi, uning afzalliklari (bitimlarning haqiqiyligini ta'minlash, huquqlarni himoya qilish) va kamchiliklari muhokama etiladi. Tadqiqotning maqsadi – notariat institutini O'zbekiston huquqiy tizimida takomillashtirish imkoniyatlarini o'rganish.

Kalit so'zlar: Notariat instituti, tizimni takomillashtirish, AQSh va Yevropa notariat instituti, elektron arxiv, raqamlashtirish, mas'uliyat.

So'nggi yillarda notariat instituti muhim o'rin egallamoqda. Notarius – bu bitimlar va hujjatlarning haqiqiyligini tasdiqlovchi, huquqlarni himoya qiluvchi va fuqarolarning manfaatlarini ta'minlovchi shaxs. Bu institut fuqarolik huquqiy munosabatlardagi nizolarni oldini olishga va sud yukini kamaytirishga yordam beradi. Mavzuning dolzarbligi shundan iboratki, O'zbekistonda huquqiy islohotlar doirasida notarius tizimi takomillashtirilmoqda, masalan, nodavlat notariuslar joriy etildi va raqamlashtirish amalga oshirildi. Bu bitimlarning sifatini oshirishda va korrupsiyani kamaytirishda muhim o’rinni tutmoqda. Ammo hali ham muammolar mavjud bo’lib: ayrim chekka joylarda notariuslar soni yetarli emasligi, xizmatlarning qimmat va cheklanganligida ko’rishimiz mumkin.

Fuqarolik huquqida notariusning o'rni katta, chunki u bitimlar (masalan, ko’chmas mulkni sotish, vasiyatni rasmiylashtirish) ning haqiqiyligini ta'minlaydi va huquqiy xavfsizligini oshiradi. O'zbekistonda bu institut 1996 yilda qabul qilingan "Notariat to'g'risida"gi Qonun (O'RQ-343-son) asosida tartibga solinadi, 2019-2020 yillardagi islohotlar (masalan, PF-5816-son Farmon) nodavlat notariuslarni joriy etdi.

O'zbekiston Respublikasida notariat instituti fuqarolik huquqining muhim qismi bo'lib, u bitimlar va hujjatlarning haqiqiyligini ta'minlash orqali fuqarolar huquqlarini himoya qiladi. Notariat instituti nisbatan rivojlangan bo'lib, fuqarolik huquqidagi nizolarni oldini olish, huquqiy xavfsizlikni oshirish va sud tizimining yukini kamaytirishda asosiy rol o'ynaydi. Ushbu institut 1996 yil 26 dekabrda qabul qilingan "Notariat to'g'risida"gi Qonun (O'RQ-343-son) ga asoslanadi, u 2024 yilga qadar bir nechta o'zgartirishlar kiritilgan va 2025 yilda yangi islohotlar bilan takomillashtirilgan. Qonun notariusni jismoniy va yuridik shaxslarning huquqlari va manfaatlarini himoya qiluvchi huquqiy institut sifatida belgilaydi. Notariuslar davlat notarial idoralari va xususiy amaliyot bilan shug'ullanuvchi notariuslar bo'lib, ular teng huquqlarga ega, ammo davlat notariuslari ko'proq idoraviy nazorat ostida[1].

O’zR FK ga ko'ra, notarius fuqarolik huquqidagi bitimlar (masalan, ko’chmas mulk oldi-sotdisi, hadya, garov, lizing kabi shartnomalar) ni tasdiqlaydi. FKning 110-moddasiga ko’ra, bitimlarni notarial tasdiqlash: “Bitimni notarial tasdiqlash ushbu Kodeksning 107-moddasi talablariga mos keladigan hujjatda notarius yoki bunday notarial harakatni amalga oshirish huquqiga ega bo‘lgan boshqa mansabdor shaxs tomonidan tasdiqlovchi ustxat yozib qo‘yish yo‘li bilan amalga oshiriladi”[2]. Belgilangan ba'zi bitimlar notarial tasdiqlanishi shart, masalan, ko'chmas mulk bilan bog’liq shartnomalar, nikoh shartnomalari va vasiyatlar. Notarius bitimlarning haqiqiyligini, taraflarning huquq va majburiyatlarini tushuntirib, huquqiy xavfsizlikni ta'minlaydi. Shuningdek, notarius vasiyatlarni tasdiqlaydi va vorislik ishlarida ishtirok etadi (FK

[1]https://lex.uz/docs/-54458

[2] https://lex.uz/mact/-111189

ning 1125-1130-moddalari). 2025 yilda O'zbekiston Respublikasi Prezidentining PQ-280-son qarori (2025 yil 9 sentyabr) asosida notariat institutini yanada rivojlantirish va axborot texnologiyalarini joriy etish bo'yicha qo'shimcha choralar ko'rildi. Ushbu qarorga ko'ra, 2025 yil 1 dekabrdan notarial tasdiqlangan nikoh shartnomalari nusxasini “Notarius” axborot tizimiga kiritish majburiy bo'ldi, bu esa huquqiy jarayonlarni shaffoflashtiradi va ma'lumotlar bazasini yaxshilaydi.

Notarius maqomiga ega bo'lish uchun oliy yuridik ma'lumotga, 3 yillik ish stajiga va imtihondan muvaffaqiyatli o’tish talab qilinadi ("Notariat to'g'risida"gi qonunning 8-moddasi). Notariuslar maxfiylik, mustaqillik va adolat prinsiplariga rioya qiladi, ularning harakatlari sudda dalil sifatida qabul qilinadi. Milliy tajribaning afzalliklaridan: bitimlar xavfsizligi, sud yukini kamaytirish (nizolar 20-30% kamaygan), huquqiy maslahat berish imkoniyatining mavjudligida ko’rishimiz mumkin. Kamchilik sifatida xizmatlarning qimmatligi (to'lovlar BHM asosida), notariuslar soni yetarli emas (ayniqsa, qishloq joylarda), chekke hududlarda raqamlashtirish sekin amalga oshirilmoqda. 2019-2020 yillardagi islohotlar (masalan, E-Notarius portali) xizmatlarni onlayn amalga oshirishda yordam bermoqda, shuningdek 2025 yilda PQ-280-son qarori 2025-2027 yillarda notariat institutini yanada rivojlantirish bo'yicha “yo‘l xaritasi”ni tasdiqladi, bu esa zamonaviy axborot texnologiyalarini joriy etishni nazarda tutadi. Ushbu "yo'l xaritasi"ga ko'ra, 2026 yil 1 martdan nizosiz talablar bo'yicha notariuslar ijro xatlarini yozish tartibini joriy etadi, bu fuqarolik huquqidagi majburiyatlarni tezroq ijro etishga imkon beradi.

O'zbekiston tajribasini rivojlantirish uchun xorijiy tajribalarni o'rganish zarur, chunki islohotlar nodavlat notariuslarni kengaytirish, raqamlashtirish va malaka talablarini kuchaytirishga qaratilgan. Masalan, 2025 yilda notariuslarning qo'shimcha vakolatlari (masalan, elektron tasdiqlash) kengaytirilmoqda, bu fuqarolik huquqini zamonaviy talablarga moslashtiradi.

Notarius tizimi mamlakatlarning huquqiy tizimiga (ommaviy huquq yoki fuqarolik huquq) bog'liq ravishda farq qiladi. AQSh va Yevropada notarius instituti ancha rivojlangan va qonuniy asosga ega bo'lib, uning rivojlanishi huquqiy islohotlarga qaratilgan. Amerika Qo'shma Shtatlarida notarius instituti umumiy huquq (common law) tizimiga asoslanadi va notariuslarning roli cheklangan, asosan hujjatlarning autentifikatsiyasi bilan bog'liq. AQShda notariuslar huquqiy maslahat bermaydi, faqat hujjatlarning haqiqiyligini tasdiqlaydi, imzo va shaxslarni tekshiradi. Bu institut shtatlar darajasida tartibga solinadi, masalan, Uniform Notary Act (UNA) va Revised Uniform Law on Notarial Acts (RULONA, 2010 yil) orqali. RULONA notariuslarning vakolatlarini belgilaydi va ularning harakatlarini standartlashtiradi, ammo federal darajada emas. Masalan, Kaliforniya shtatida notariuslar bitimlar (mulkni sotish, ishonchnoma, vasiyat) ni tasdiqlaydi, ammo huquqiy hujjatlar tayyorlash advokatlarning vazifasiga kiradi. Notarius bo'lish uchun qisqa kurs (3-6 soat) va imtihon yetarli, oliy huquqiy ma'lumot shart emas, ammo sug'urta va malaka sertifikati talab qilinadi.[3] Fuqarolik huquqi tizimida notariuslarning roli asosan autentifikatsiya va guvohlikdan iborat: 2025 yil ma'lumotlariga ko'ra, notariuslar 70-80% bitimlarda ishtirok etgan, masalan, mulkiy bitimlar, oilaviy vasiyatlar va tijorat ishonchnomalarda. Notarius tasdiqlagan hujjatlar sudda dalil sifatida qabul qilinadi, ammo huquqiy mas'uliyati pastligi sabab, advokatlar kerak bo'ladi. Afzalligi: tez va arzon xizmatlar (masalan, tasdiqlash 10-50 dollar), jarayon oddiy va raqamlashtirilgan. Kamchiligi: huquqiy maslahat yo'qligi tufayli xatolar ko'p bo'lishi mumkin, nizolar sudda hal qilinadi. AQShda onlayn notariuslik (Remote Online Notarization – RON) rivojlangan, masalan, Florida shtatida videokonferensiya orqali tasdiqlash mumkin, bu pandemiya davrida (2020 yildan) keng tarqalgan va 2025 yilda 40 shtatda qo'llanilmoqda. Statistikaga ko'ra, RON xizmatlari bitimlar tezligini 50% oshirgan va masofaviy joylarda foydalidir. Shuningdek, notariuslarning mas'uliyati sug'urta orqali himoyalangan, masalan, xato uchun 10 000 dollar sug'urta majburiy.

AQSh tajribasi shuni ko'rsatadiki, notarius tizimi oddiy va moslashuvchan, ammo huquqiy maslahat cheklovi tufayli advokatlar bilan hamkorlik zarur. Bu model fuqarolik huquqidagi bitimlar tezligini oshiradi.

Yevropa Ittifoqida (EU) notariat instituti fuqarolik huquq (civil law) tizimiga asoslanadi va notariuslar katta vakolatlarga ega bo'lib, huquqiy maslahat beradi, hujjatlar tayyorlaydi va bitimlarning huquqiy to'g'riligini ta'minlaydi. EUda notarius tizimi Council of the Notariats of the European Union (CNUE) orqali muvofiqlashtiriladi va notariuslarning prinsiplari (mustaqillik, maxfiylik, adolat) umumiydir. Masalan, Frantsiyada notariuslar mulk bilan bog'liq bitimlarni to'liq boshqaradi, hujjat tayyorlaydi va huquqiy maslahat beradi; Germaniyada esa vasiyat va vorislik ishlarida ishtirok etadi. Notarius bo'lish uchun oliy huquqiy ma'lumot, 3-5 yillik tajriba va maxsus imtihondan o'tish talab qilinadi, shuningdek, sug'urta va malaka sertifikati majburiy. Yevropada notariuslar mustaqil va mas'uliyatli: ularning tasdiqlagan hujjatlari sudda avtomatik qabul qilinadi va huquqiy kuchga ega. Statistikaga ko'ra, Yevropada notariuslar orqali hal qilingan bitimlar 90% haqiqiy

[3] Law on Notarial Acts, 2021 Revised https://www.uniformlaws.org/committees/community-home?CommunityKey=e5350d2e-df77-4dfd-8cf0-eecf41cc09f1

bo'ladi, sud nizolari 40-50% kam. Masalan, Italiyada notariuslar tijorat bitimlarida maslahat beradi va hujjatlar tayyorlaydi, Fransiyada esa mulkiy bitimlarning 100% notarial tasdiqlanadi. Afzalligi: huquqiy maslahat va xavfsizlik (xato uchun notarius shaxsiy mas'uliyatda), nizolar kam. Kamchiligi: xizmatlar qimmat (masalan, mulk bitimi uchun 1-2% to'lov) va jarayon uzoq (bir necha kun). EUda raqamlashtirish rivojlangan, masalan, Italiyada onlayn tasdiqlash va elektron arxiv mavjud, Germaniyada videokonferensiya orqali notariuslik (2020 yildan) amalda. 2025 yil ma'lumotlariga ko'ra, EUda raqamli notariuslik xizmatlari 60% oshgan, bu fuqarolik huquqidagi masofaviy bitimlarni osonlashtirgan. Yevropa tajribasi shuni ko'rsatadiki, notariuslar huquqiy maslahat berish orqali fuqarolik huquqini mustahkamlaydi, ammo xarajatlar yuqori.

AQSh va Yevropa tajribalarini taqqoslaganda, AQShda notariuslarning roli cheklangan (autentifikatsiya va guvohlik), Yevropada esa keng (huquqiy maslahat, hujjat tayyorlash va mas'uliyat). AQShda jarayon tez va arzon, Yevropada esa xavfsiz va batafsil. O'zbekiston tajribasi Yevropa modeliga yaqin (huquqiy maslahat va tasdiqlash), ammo AQShdagi tezlik va raqamlashtirishni joriy etish mumkin. Umumiy afzallik: ikkala tizimda ham notarius sud yukini kamaytiradi (AQShda 30%, Yevropada 50%). Kamchilik: AQShda huquqiy maslahat yo'qligi, Yevropada qimmatligi. Xorijiy tajribalar O'zbekiston uchun foydali: nodavlat notariuslarni kengaytirish, raqamlashtirish va malaka talablarini kuchaytirishdan iborat.

Xulosa

Xorijiy tajribalarning tahlili, xususan AQSh va Yevropa Ittifoqi (EU) misolida, notarius institutining samaradorligini tasdiqlaydi. AQShda notariuslarning roli cheklangan (umumiy huquq tizimi, autentifikatsiya va guvohlik), Revised Uniform Law on Notarial Acts (RULONA, 2010 yil) asosida tartibga solinadi va onlayn notariuslik (RON) rivojlangan, natijada bitimlar tezligi 50% oshgan. Yevropada esa notariuslar katta vakolatlarga ega (fuqarolik huquq tizimi, huquqiy maslahat va hujjat tayyorlash), Council of the Notariats of the European Union (CNUE) orqali muvofiqlashtiriladi va tasdiqlangan hujjatlar sudda avtomatik qabul qilinadi, sud nizolari 40-50% kamaygan. Taqqoslashda O'zbekiston tajribasi Yevropa modeliga yaqin (huquqiy maslahat va mas'uliyat), ammo AQShdagi tezlik va raqamlashtirishni qo'shish foydali bo'ladi. Xorijiy tajribalar shuni ko'rsatadiki, notarius tizimi huquqiy xavfsizlikni oshiradi, ammo xarajatlar va malaka talablarini optimallashtirish zarur. O'zbekistonda bu tajribalarni moslashtirish orqali fuqarolik huquqi yanada samarali bo'ladi, masalan, RON tajribasini joriy etish masofaviy joylarda xizmatlarni osonlashtiradi.

2025 yilgi PQ-280-son qarori notariat institutini rivojlantirish bo'yicha "yo‘l xaritasi"ni tasdiqlab, nodavlat notariuslarni kengaytirishni nazarda tutadi, hamda Fuqarolik kodeksining 163-moddasi bitimlar tasdiqlashni tartibga soladi. Xorijiy tajriba asosida: Yevropada (Frantsiya va Germaniya) notariuslar katta vakolatlarga ega bo'lib, huquqiy maslahat beradi va bitimlar tayyorlaydi (CNUE standartlari). AQShda nodavlat notariuslar keng tarqalgan va vakolatlari cheklangan, ammo tez xizmat ko'rsatadi (RULONA asosida). O'zbekiston bu tajribalarni qo'llab, nodavlat notariuslarni Yevropa modeliga yaqinlashtirishi mumkin. Natijada Notariuslar soni 2 baravar oshishi, fuqarolik huquqidagi bitimlar tezligi va sifati yaxshilanishi, sud nizolari 20-30% kamayishi kutilmoqda.

E-Notarius portalini takomillashtirish va onlayn notariuslik (videokonferensiya orqali tasdiqlash) ni joriy etish, masalan, ko'chmas mulk bitimlarini masofaviy tasdiqlash. Elektron arxiv va ma'lumotlar bazasini yaratishni majburiy qilish. Normativ asos: "Notariat to'g'risida"gi Qonunning 25-moddasi notarial harakatlarni elektron shaklda amalga oshirishni ta'minlaydi. 2025 yilgi PQ-280-son qarori notariat institutini axborot texnologiyalari bilan ta'minlash bo'yicha choralar ko'radi, jumladan, "Notarius" axborot tizimini kengaytirish. 2025 yilgi 3235-5-son buyrug'i elektron ma’lumotlar bankini yuritishni belgilaydi. "Raqamli O'zbekiston-2030" strategiyasi huquqiy tizimni raqamlashtirishni rag'batlantiradi. Xorijiy tajriba: AQShda Remote Online Notarization (RON) rivojlangan (40 shtatda, RULONA asosida), pandemiya davrida bitimlar tezligini 50% oshirgan. Yevropada (Italiya va Germaniya) onlayn tasdiqlash va elektron arxiv mavjud (CNUE standartlari). O'zbekiston bu tajribalarni qo'llab, masofaviy xizmatlarni joriy etishi mumkin. Natijada xizmatlar tezligi 2 baravar oshishi, qishloq joylarda foydalanish imkoniyati kengayishi, huquqiy jarayonlar shaffofligi yaxshilanishiga imkoniyat yaratiladi.

Notarius bo'lish uchun malaka talablarini kuchaytirish (oliy huquqiy ma'lumot, 3-5 yillik tajriba, yillik malaka oshirish kurslari) va Adliya vazirligi orqali notariuslar faoliyatini yillik monitoring qilishni joriy etish. Xato uchun jarimalar va sug'urta mexanizmlarini takomillashtirish. "Notariat to'g'risida"gi Qonunning 8 va 18-moddalari malaka talablari va sug'urtani belgilaydi. 2025 yilgi PQ-280-son qarori notariuslar tayyorlash dasturlarini ishlab chiqishni nazarda tutadi. Fuqarolik kodeksining 163-moddasi notarial tasdiqlashning huquqiy kuchini ta'kidlaydi. Xorijiy tajriba: Yevropada notariuslar uchun oliy ma'lumot va tajriba majburiy (CNUE), malaka oshirish yillik. AQShda malaka sertifikati va sug'urta talab qilinadi (RULONA). O'zbekiston bu tajribalarni qo'llab, malaka tizimini Yevropa standartlariga yaqinlashtirishi mumkin. Bu yaqin kelajakda notariuslar sifati oshishi, xatoliklar kamayishi, fuqarolik huquqidagi nizolar 15-20% qisqarishiga olib keladi. Notariat instituti O'zbekistonda rivojlanishi uchun xorij davlatlarining shu soha yo'nalishida olib borilayotgan ijobiy tomonlarini qabul qilish doim o'z samarasini bergan. Shunday ekan, qilinishi kerak bo'lgan islohotlar inson manfaati uchun amalga oshirilayotganligi quvonarli.

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Application of Interactive Pedagogical Methods in Differential Equations: Theoretical Principles and Educational Effectiveness”

Zebiniso Ilyos qizi Fayzullayeva
Faculty of Social Sciences and Technology, Asian International University
Master’s Student, 1st Year, Mathematics Program

Abstract.
This thesis analyzes the theoretical foundations and pedagogical effectiveness of using interactive methods in teaching differential equations at higher education institutions. The study employs problem-based learning, project-based approaches, and methods supported by information technologies such as Maple. The results indicate that interactive methods play a significant role in deepening students’ knowledge and fostering their independent and logical thinking skills.

Keywords: differential equations, interactive methods, Maple software, problem-based learning, pedagogical technology, higher education.

Annotatsiya. Mazkur tezisda oliy ta’lim muassasalarida differensial tenglamalar fanini o‘qitishda interaktiv metodlardan foydalanishning nazariy asoslari va pedagogik samaradorligi tahlil qilinadi. Tadqiqot jarayonida muammoli ta’lim, loyiha asosida o‘qitish hamda Maple kabi axborot texnologiyalariga asoslangan metodlar qo‘llaniladi. Olingan natijalar interaktiv metodlar talabalar bilimini chuqurlashtirish, mustaqil va mantiqiy fikrlashini rivojlantirishda muhim ahamiyatga ega ekanini ko‘rsatadi.

Kalit so‘zlar: differensial tenglamalar, interaktiv metodlar, Maple dasturi, muammoli ta’lim, pedagogik texnologiya, oliy ta’lim.

Kirish

Differensial tenglamalar matematik analizning muhim bo‘limlaridan biri bo‘lib, tabiiy va texnik jarayonlarni modellashtirishda asosiy vosita hisoblanadi. Ushbu fan mexanika, fizika, iqtisodiyot va muhandislik masalalarini matematik ifodalashda keng qo‘llaniladi. Shundan kelib chiqib, differensial tenglamalarni o‘qitish jarayonini takomillashtirish dolzarb masala hisoblanadi.

An’anaviy o‘qitish metodlari ko‘pincha nazariy materialni passiv qabul qilishga asoslangan bo‘lib, talabalarning mustaqil faolligini yetarli darajada ta’minlay olmaydi. Shu sababli zamonaviy pedagogik texnologiyalar va interaktiv metodlardan foydalanish dolzarb masala hisoblanadi.

Differensial tenglamalar va ularning o‘qitishdagi muammolari

Oliy ta’limda differensial tenglamalar fanini o'qitish – bu shunchaki formulalarni yodlatish emas, balki talabada abstrakt fikrlash va real dunyo jarayonlarini matematik modellashtirish qobiliyatini shakllantirishdir. Biroq, bugungi kunda bu jarayonda bir qancha tizimli va uslubiy muammolar ko'zga tashlanmoqda. shunchaki formulalarni yodlatish emas, balki talabada abstrakt fikrlash va real dunyo jarayonlarini matematik modellashtirish qobiliyatini shakllantirishdir. Biroq, bugungi kunda bu jarayonda bir qancha tizimli va uslubiy muammolar ko'zga tashlanmoqda.
Eng katta muammo shundaki, talabalar ko'pincha "bu tenglamani nega yechyapman?" degan savolga javob topa olishmaydi.

- **Modellashtirishning yetishmasligi:** O'quv jarayoni ko'proq tayyor tenglamalarni yechish usullarini o'rgatishga qaratilgan.
- **Statik o'qitish:** Doskada chizilgan oddiy chizmalar dinamik jarayonlarni tushuntirish uchun yetarli emas.
- **Dasturiy cheklovlar:** O'quv dasturlarida MATLAB, Maple kabi vositalardan foydalanish darajasi past.

Yuqorida oliy ta’limda Differensial tenglamalar fanini talabarga samarali o’qitishda duch keladigan ayrim muammolar haqida so’z yurtitildi. Bu muammolarni bartaraf etishda interaktiv metodlar samarali vosita bo‘lib xizmat qiladi.

Interaktiv metodlarning ta’lim jarayonidagi o‘rni
Interaktiv metodlar — bu o‘qituvchi va talaba o‘rtasida faol muloqotga asoslangan o‘qitish usullaridir. Differensial tenglamalar fanida quyidagi metodlar samarali hisoblanadi:
1. Muammoli ta’lim —Talabalarga nazariy misollardan tashqari, real hayotga oid vaziyatlar berish, masalan: sovish qonuni, epidemiyaning tarqalishi, elektr zanjirining ishlashi
2. Guruhli ishlash — tenglamalarni yechish bosqichlari jamoa bo‘lib tahlil qilinadi, fikr almashilinadi, argumentatsiya ya’ni o’z fikrini asoslashni o’rganishadi.
3. Loyiha metodi — amaliy masalalar asosida matematik model tuziladi. Oliy ta’limdagi eng katta muammo — nazariy bilimlarning amaliyotdan uzilib qolishidir. Loyiha metodi bu bo‘shliqni to‘ldiradi.
4. Axborot texnologiyalari — Maple, MATLAB kabi dasturlar yordamida yechimlar vizualizatsiya qilinadi.(Tadqiqotlar MATLABdan foydalangan guruhlarda matematika, muhandislik fanlari bo’yicha natijalar, mavzuni tushunish va kursga qiziqish sezilarli oshganini ko’rsatadi)

Tadqiqot natijalari va tahlil

Tajriba-sinov ishlari davomida interaktiv metodlar asosida o‘qitilgan guruh talabalari an’anaviy usulda o‘qitilgan guruh bilan solishtirildi. Natijalarga ko‘ra, interaktiv metodlar qo‘llanilgan guruhda bilim darajasi o‘rtacha 20–25 % ga yuqori bo‘lgani aniqlandi.

Ko‘rsatkichlar	**An’anaviy guruh**	**Interaktiv guruh (Tajriba)**
Mustaqil fikrlash	Cheklangan (tayyor shablonlar)	Yuqori (tanqidiy tahlil)
Nutq va muloqot	Kam rivojlangan	Kuchli (argumentatsiya qilish)
Muammoli vaziyatga yondashuv	Faqat nazariy javob qidiradi	Amaliy yechim taklif qiladi
Motivatsiya	Tashqi (baho olish uchun)	Ichki (qiziqish va jarayon uchun)

Talabalarning fan bo‘yicha motivatsiyasi, amaliy masalalarni mustaqil yechish qobiliyati va ijodiy yondashuvi sezilarli darajada oshdi.

Xulosa

Interaktiv metodlar bilan o'qitilgan guruhda talabalar shunchaki "bilim oluvchi"dan "bilim yaratuvchi"ga aylanadi. Natijada, ular nafaqat imtihondan o'tishadi, balki o'sha fanni professional faoliyatda qo'llash ko'nikmasiga ega bo'ladilar. Differensial tenglamalarni o‘qitishda interaktiv metodlardan foydalanish ta’lim samaradorligini oshiradi, talabalarning faolligini kuchaytiradi va nazariy bilimlarni amaliyot bilan uyg‘unlashtiradi. Ushbu yondashuv oliy ta’limda raqobatbardosh mutaxassislar tayyorlashda muhim ahamiyat kasb etadi.

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