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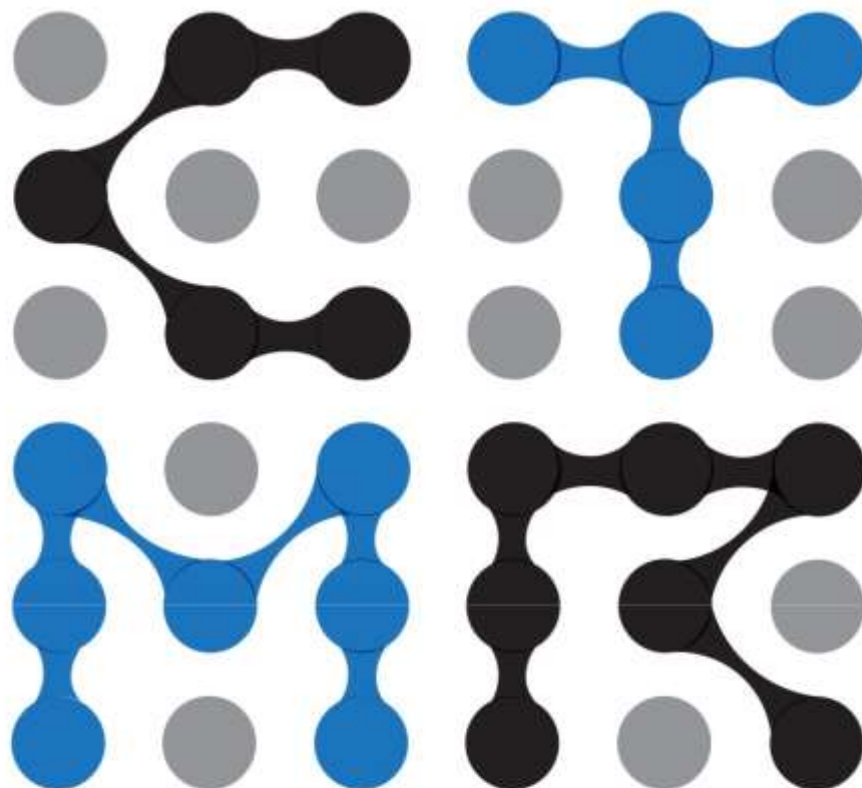
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**CENTER FOR TECH
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SEMANTIC ANALYSIS OF ADJECTIVES IN UZBEK AND COMPUTATIONAL
THESAURUS APPROACH

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Abstract: This thesis examines the semantic analysis of adjectives in the Uzbek language and their representation in a computational thesaurus. Adjectives, essential for expressing qualities and states, are analyzed through tools like word embeddings and corpus-based methods. The study highlights the semantic clustering of synonyms and the disambiguation of polysemous adjectives, ensuring their accurate organization in a thesaurus. Challenges such as contextual ambiguity and incomplete resources are addressed using computational techniques complemented by expert linguistic input. The research underscores the value of visualization and computational tools in creating intuitive and effective linguistic resources. This approach enhances applications in natural language processing, education, and linguistic research while preserving the richness of the Uzbek lexicon.

Keywords: Uzbek adjectives, semantic analysis, computational thesaurus, word embeddings, polysemy, synonyms, NLP, lexical relationships, linguistic research..

Adjectives in the Uzbek language are integral to expressing qualities, states, and conditions, forming an essential component of its grammar and lexicon. These descriptive words serve as critical tools for communication, providing nuanced meanings and enriching the language. However, the analysis and organization of adjectives, especially in a computational thesaurus, present challenges due to their semantic complexity. This **thesis** delves into the semantic analysis of Uzbek adjectives and examines a computational approach to constructing an effective thesaurus, leveraging modern linguistic technologies. Adjectives, as a part of speech, can be categorized based on their semantic and grammatical features. They often exhibit relationships such as synonymy, antonymy, and polysemy. For example, the adjective *ingichka* (thin) can refer to physical thinness, sharpness of sound, or a figurative subtlety, depending on its context. Such semantic variations complicate the task of categorizing adjectives, requiring precise analysis to define their contextual meanings.

Semantic analysis provides insights into how adjectives function within the Uzbek language. By mapping their meanings and relationships, we can identify patterns that are critical for tasks such as machine translation, information retrieval, and language teaching. The analysis also facilitates the development of linguistic resources like thesauruses, which are essential for preserving and enhancing the understanding of the Uzbek language. Modern computational linguistics offers tools and techniques to analyze adjectives and structure them into a thesaurus. The use of large-scale text corpora, such as the Uzbek Language Educational Corpus and ARANEUM UZBEKIUM, combined with advanced algorithms like word embeddings, enables the automatic extraction of semantic relationships. Word embeddings are vector representations of words that capture semantic similarities based on their co-occurrence in large text datasets. For instance, the adjective *mazali* (tasty) shows a high degree of semantic similarity with words like *shirin* (sweet) and *qaymoqli* (creamy). By applying clustering techniques, these relationships can be visualized, providing a clear representation of their semantic fields.

For example, a cluster for *mazali* might include related adjectives such as:

- *Shirin* (sweet)

- *Qaymoqli* (creamy)
- *Ta'mli* (flavorful)

These clusters serve as the foundation for thesaurus entries, grouping semantically related words under a single heading.

Synonymy and polysemy are central to the semantic analysis of adjectives. Synonyms like *ingichka* (thin) and *yupqa* (slender) can be grouped together in a thesaurus, while polysemous words are divided into separate entries based on their distinct meanings. For example:

- *Inchigka* (thin) as a physical quality: Synonyms include *ensiz* (narrow) and *yupqa* (slender).
- *Inchigka* (sharp) as a sound quality: Related to *chiyildoq* (piercing).
- *Inchigka* (subtle) as a figurative expression: Synonyms include *nozik* (delicate) and *latif* (graceful).

This method ensures that polysemous words are comprehensively represented without ambiguity, making the thesaurus more effective.

Challenges in Computational Thesaurus Construction

Developing a computational thesaurus involves several challenges, particularly in a language like Uzbek, where resources and computational tools are still evolving.

1. **Ambiguity in Context:** Polysemous adjectives require precise disambiguation to ensure correct semantic clustering.
2. **Incomplete Lexical Resources:** Existing dictionaries and corpora may lack exhaustive lists of synonyms and antonyms.
3. **Cultural and Contextual Nuances:** Adjectives often carry cultural connotations that need to be preserved in their representation.

To overcome these challenges, computational methods must be supplemented with expert linguistic analysis. For instance, combining automated word embeddings with manual verification can improve accuracy.

The Role of Visualization in Semantic Analysis

Visualization techniques play a crucial role in representing the semantic relationships of adjectives. Graph-based models can depict synonyms, antonyms, and other relationships, making it easier to understand complex networks of meaning. Tools like t-SNE and PCA can project high-dimensional word embeddings into two or three dimensions, creating intuitive visualizations for linguists and developers.

For example, a graph for *nozik* (delicate) might show:

- Connections to synonyms (*latif*, *nazokatli*).
- Contextual associations with words like *ipakdek* (like silk) or *sezgir* (sensitive).

These visualizations enhance the usability of the thesaurus, particularly in educational and computational applications.

Applications of a Computational Thesaurus

A well-constructed computational thesaurus has wide-ranging applications:

1. **Natural Language Processing (NLP):** Enhances tasks like sentiment analysis, machine translation, and speech recognition by providing nuanced lexical data.
2. **Language Education:** Supports the teaching of Uzbek by offering detailed explanations of adjectives and their usage.
3. **Linguistic Research:** Facilitates studies in semantics, syntax, and lexical relationships within Uzbek and comparative linguistics.

For instance, an NLP application could use thesaurus data to identify sentiment-laden adjectives like *mazali* (tasty) or *achchiq* (bitter), improving the accuracy of sentiment classification.

Conclusion

The semantic analysis of adjectives in Uzbek and their organization in a computational thesaurus represent significant advancements in linguistic research and resource development. By leveraging tools like word embeddings, corpus analysis, and visualization techniques, it is possible to systematically map the semantic fields of adjectives and create a user-friendly thesaurus.

Despite the challenges, the integration of computational methods with expert linguistic input ensures the creation of a reliable and versatile resource. This approach not only preserves the richness of the Uzbek language but also opens new avenues for research, education, and technology-driven applications. As computational linguistics continues to evolve, so too will the opportunities for further enriching and expanding the Uzbek lexicon.

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THE STATE OF CARBOHYDRATE AND LIPID METABOLISM IN OBESE PATIENTS AFTER BILIOPANCREATIC BYPASS SURGERY**Khamdamov I.B.**

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Summary. The paper presents material on the problem of surgical treatment of patients with severe forms of obesity. Based on factual material, an assessment is given of the methods of combined bariatric operations used by the authors.

Key words: obesity, obesity treatment, bariatric surgery, laparoscopic longitudinal resection of the stomach, bariatric surgery, sleeve gastrectomy, gastric bypass, longitudinal resection of the stomach in combination with small intestinal bypass.

Relevance. The prevalence of obesity has now reached epidemic proportions. According to data published in 2009 by the World Health Organization (WHO, International Obesity Task Force), about 2.1 billion people worldwide were overweight or obese. In Russia (WHO, 2010), 51.7% of women and 46.5% of men were overweight or obese, including morbid obesity [163]. According to analysts' forecasts, by 2025 the number of obese people in the world will almost double; 40% of men and 50% of women will suffer from this disease. [1,2]. Lifestyle changes in combination with drug therapy are the basis for the treatment of obesity and type 2 diabetes. However, according to the US National Institutes of Health, up to 60% of obese patients cannot maintain their body weight (BW) reduced by diet and exercise for a year, and after 5 years, the reduced BW returns to its original level in almost all of them. In morbid obesity (MO), the effectiveness of conservative therapy does not exceed 5-10% [1,2,6,8,10].

In recent decades, surgical methods for treating severe forms of obesity have become widely used throughout the world, and there is an obvious trend both towards an increase in the number of operations performed and towards an expansion of the number of countries where bariatric surgery is becoming increasingly widespread. The main goal of surgical treatment of obesity is to influence the course of associated diseases by significantly reducing BW, since only achieving optimal glycemic control and target parameters of lipid metabolism can prevent the development and progression of complications of T2DM, including CVD. The experience of using bariatric surgeries in patients with obesity combined with metabolic disorders and diseases has shown the significant potential of surgery in achieving compensation for type 2 diabetes mellitus that developed against the background of obesity. In 1978, Buchwald H. and Varco R. formulated the concept of "metabolic" surgery [1,4]. Some of the first works in this area were the publications of Pories W. et al. [1,23,24,25,26,27,28], which discussed the possibility of persistent compensation for type 2 diabetes mellitus in obese patients after gastric bypass surgery (GBS). Later, other authors, including Russian ones, also demonstrated an improvement in the course of type 2 diabetes mellitus after bariatric surgeries, the original purpose of which was to reduce BW [3,4,20,21,22].

Russian experience of using bariatric surgeries in patients with obesity and associated T2DM, as well as numerous publications [11,13,15] on the positive impact of bariatric surgeries on the

course of T2DM, determine the need for a thorough study of the mechanisms underlying the improvement of metabolic control in obese patients with various carbohydrate metabolism disorders, primarily with T2DM, after bariatric treatment.

It turned out that in most patients with obesity and T2DM or another carbohydrate metabolism disorder, normalization of glycemia occurs relatively quickly after bariatric surgery - long before clinically significant loss of BW. After bypass operations (BS, biliopancreatic diversion (BP)), normoglycemia, according to the literature, was restored in 84% - 98% of patients, and after restrictive ones - in 48% - 72% of patients [30 - 33]. A possible explanation for this is the phenomenon of the "incretin effect" identified in the 60s of the last century [1,2,6,8,10], a more pronounced stimulation of insulin secretion after oral administration of glucose compared to its intravenous infusion, leading to an identical increase in glycemia [1,4,29]. However, the mechanisms of the positive effect of bariatric operations on the parameters of metabolic control in patients with obesity and type 2 diabetes have not yet been fully studied, and the potential of their incretin-directed action has not been revealed.

However, despite good results in terms of weight loss, bariatric surgeries are associated with disruption of the physiologically balanced and holistic digestion process, and therefore are not without the development of a number of long-term metabolic complications.

Purpose of the study. To evaluate the effectiveness of BPSH in achieving long-term compensation of carbohydrate and lipid metabolism in patients with obesity and type 2 diabetes.

Materials and methods. This work is based on an analysis of the results of examination and treatment of 49 patients with various types of external hernias of the anterior abdominal wall, who were examined and inpatiently treated in the 1st surgical department of the Bukhara Regional Multidisciplinary Medical Center and the Department of Thoracoabdominal Surgery of the Multidisciplinary Clinic of the Tashkent Medical Academy for the period from 2011 to 2023. The analyzed material included women of reproductive age who planned to have children in the future. The control group consisted of all women with hernias of the anterior abdominal wall who underwent traditional hernial orifice repair without the use of allomaterial. The main group is all women with hernias of the anterior abdominal wall who underwent alloplasty according to our recommendations.

Research results and discussion. To study the state of carbohydrate and lipid metabolism before and after BPS in patients with obesity and type 2 diabetes mellitus, a retrospective analysis of case histories of patients operated on for obesity and concomitant diseases was performed in accordance with the objectives. Of the 70 patients included in the retrospective observation, there were 45 women (64%) and 25 men (36%) aged 28 to 60 years (median 46 [38.0; 51.0] years) with severe obesity (BMI from 35.0 to 68.0 kg/m², median 47.9 [43.9; 53.2] kg/m²) and type 2 diabetes mellitus, 43 people (61.4%) had arterial hypertension. Of the entire examined group, 22 patients (31%) were under 40 years of age before the operation, 48 patients (69%) were aged 40 to 60 years. Before surgery, 58 patients (83%) had MO: 33 patients (47%) had a BMI of 40.0-49.9 kg/m², 21 (30%) had a BMI of 50.0-59.9 kg/m², and 4 (6%) had more than 60 kg/m²; the rest (12 people, i.e. 17%) had stage II obesity. The duration of T2DM before surgery ranged from newly diagnosed to 15 years; the median for the group as a whole was 2.0 [0; 6.0] years. There were 30 patients (42.8%) with a disease duration of up to 1 year from diagnosis verification, 27 (38.6%) from 1 year to 10 years, and 13 patients (18.6%) with a disease duration of more than 10 years. Before the operation, only diet therapy for diabetes mellitus was administered to 28 patients (40%), in combination with OADs - 31 (44.3%), insulin therapy - 11 (15.7%). Of the group of

patients receiving OADs, 9 people took a drug from the biguanide group (metformin), 8 from the sulfonylurea group, 4 from the DPP-4 inhibitor group, 1 from the glinide group, 4 - a combination drug (biguanide + sulfonylurea), 5 - a combination drug (biguanide + DPP-4 inhibitor). Considering that the median age in the group as a whole was 46 [38.0; 51.0] years and the patients did not have severe complications of diabetes mellitus and/or risk of severe hypoglycemia, the following target levels were adopted [1]: HbA1c level < 7%, fasting glycemia < 7 mmol/l, TC < 4.5 mmol/l, LDL-C < 2.6 mmol/l, TG < 1.7 mmol/l, HDL-C > 1.0 mmol/l (in men) and > 1.2 mmol/l (in women). Before the operation, against the background of the conducted hypoglycemic therapy, 27 patients (39%) had target HbA1c values, fasting glycemia - only 17 (24%). That is, the vast majority of patients were in a state of chronic decompensation of carbohydrate metabolism: in 43 patients (61%) the HbA1c level was more than 7%, and in 8 (11%) – more than 10%.

Initially, 16 of 59 patients (27%) who did not receive insulin therapy were found to have fasting hyperinsulinemia and all (n = 59) had a high HOMA-IR insulin resistance index. Before the operation, there were no patients with a C-peptide level below the norm, the minimum recorded value was 1.3 ng/ml.

Before the operation, only 17 patients (24%) had the target values for this category of patients [1] for TC, 22 (31%) for LDL-C, 23 (32%) for TG, 10 (40%) for HDL-C among men and 10 (22%) among women. Thus, the vast majority of patients with obesity and type 2 diabetes before bariatric surgery, despite conservative therapy, did not achieve target indicators of carbohydrate (more than 60% of patients) and lipid metabolism (about 70% of patients).

Our results of long-term observation of patients with obesity combined with type 2 diabetes after BPS (a retrospective 5-year study) demonstrate the high efficiency of the operation in terms of reducing BW (by 42% from the initial value), continuing for 2 years after the operation, as well as the stability of the reduced BW during the subsequent observation period.

Conclusions:

1. Already 3 months after BPSH, patients with obesity and type 2 diabetes achieve satisfactory glycemic control and significant improvement in lipid metabolism parameters.
2. The vast majority of patients with obesity and type 2 diabetes experience partial and complete remission of type 2 diabetes after BPSH.

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Annotatsiya: Ushbu maqolada ko'k'yo'tal kasalligining tarqalishini oldini olish chora-tadbirlari o'rganiladi. Tadqiqotda kasallikning epidemiologik xususiyatlari, tarqalish omillari va diagnostika usullari tahlil qilingan. Kasallikka qarshi samarali profilaktika choralari amalga oshirish, jumladan emlash dasturlari, sanitariya-gigiyena qoidalariga rioya qilish va aholining xabardorligini oshirish kabi yo'nalishlarga e'tibor qaratilgan. Maqolada ko'k'yo'tal kasalligining oldini olish strategiyalari yoritiladi.

Kalit so'zlar: Ko'k'yo'tal, epidemiologiya, profilaktika, vaksinalar, immunizatsiya, diagnostika, sanitar-gigiyena, kasallik tarqalishi, emlash dasturi.

Kirish qismi. Ko'k'yo'tal yuqori nafas yo'llarining yuqumli kasalligi bo'lib, spazmatik yo'tal xurujlari bilan ta'riflanadi. Ko'k'yo'tal maktabgacha tarbiya yoshidagi bolalarda hammadan ko'ra ko'proq uchraydi. Ayniqsa 2 yoshdagi bolalarda og'ir kechadi. Qo'zg'atuvchisi – Bordetella pertussis aerob, kapsulali, grammanfiy tayoqcha bakteriyadir. Bakteriyalar ko'p miqdorda toksinlar ajratib chiqaradi va nafas yo'llarining shilliq qavatini zararlaydi.

Asosiy qism. Kasallik nafas yo'llarining shilliq qavatida ko'payadi 40 % hollarda kasallik o'tkir bronhit tarzida kechishi mumkin. Ko'k'yo'tal yuqori nafas yo'llariga yallig'lanishga sabab bo'luvchi Bordetella pertussis bakteriyasining tushishi natijasida yuzaga keladi. Kasallik havotomchi yo'li bilan yuqadi, zararlantirish ehtimoli 90% ni tashkil qiladi. Inkubatsion davri 7-14 kun, bemor 5 kunlik antibiotik terapiyadan so'ng izolyatsiya qilinishi kerak. Kasallik asosan 3 stadiyada kechadi: kataral, konvulsiya, desrement stadiyasi. Inkubatsion davrdan keyin grippsimon belgilar paydo bo'ladi, yengil tana haroratining ko'tarilishi kuzatiladi. Aksirish, quruq yo'tal boshlanadi, bu davr 2 hafta davom etadi, o'ta yuqish darajasi yuqori bo'ladi. Birinchi 1-2 hafta ichida engil sovuq, yo'tal, burun burunlari, zaiflik va kamdan-kam hollarda isitma belgilari paydo bo'ladi. Paroksizmal, spazmodik yo'tal titroqlari odatda chuqur shovqinli nafas bilan tugaydi. Ko'p yo'tal xurujlari juda og'riqli bo'lishi mumkin va ko'plab bemorlar uchun ular kechasi tez-tez uchraydi. Ikkinchi stadiyada yo'tal hurujlari boshlanadi, harakterli ko'rinishi til tashqariga chiqishi kuzatiladi. yo'tal natijasida tiniq shilliq ajrab chiqadi va qayt qilishi mumkin. Konvulsiya davri 2 haftadan 6 haftagacha davom etadi. Oxirgi davrda (stadium decrementi) yo'tal hurujlari asta sekin kamaya boradi, 3 haftadan 6 haftagacha davom etadi. Antibiotiklar berilmasa 10 oygacha davom etishi mumkin, shu sababli 100 kun yo'tal deb nomlangan. 6 oydan kichik ko'krak yoshidagi bolalarda yo'tal hurujlari apnoe bilan kuzatiladi, katta yoshdagi odamlarda faqat quruq yo'tal kuzatiladi – bu kasallikning atipik kechishidir. Ko'k'yo'tal o'pka shamollashiga, o'rta quloq yallig'lanishiga va ikkilamchi infeksiyalarga sabab bo'ladi. Kuchli yo'tal chov hamda kindik churrallarini keltirib chiqaradi.

Ko'k'yo'tal uchun xarakterli alomatlar:

- 1.Ko'krak qafasida og'riq
- 2.Uzoq davom etadigan yo'tal
- 3.Balg'am
- 4.Tumov

5.Isitma

6.Yuzning ko'karishi

7.Qusish

8.Xirildoq ovoz

Diagnostika

1.O'pka rentgeni

2.Pulmonologiya

3.Balg'amdan bakterriologik bakposev

4.Umumiy qon tekshiruvi

Kasallikning kechki bosqichida pulmonolog maslahati ham tavsiya etiladi.

Ko'kyo'talni davolash quyidagilarni o'z ichiga oladi:

1.antibiotiklar;

2.yo'talga qarshi gamma-globulin;

3.antigistamin preparatlar;

4.sedativ preparatlar;

5.spazmolitiklar;

6.neyroleptiklar;

7.yo'talga qarshi va balg'am ko'chiruvchi preparatlar;

8.ingalyatsiyalar;

9.fizioterapevtik muolajalar;

10.o'pkani sun'iy ventilyatsiya qilish (asoratli kechganda).

Gorchichnik va bankalardan foydalanish tavsiya etilmaydi, chunki ular yo'talni kuchaytirishi mumkin.

Bolalarda ko'kyo'talni davolash kattalardagiga o'xshaydi. To'shak rejimiga rioya qilish va bolaga stress ta'sirini minimallashtirish tavsiya etiladi.

Ko'kyo'talni o'z vaqtida davolamaslik jiddiy oqibatlariga olib kelishi mumkin, masalan:

1.pnevmoniya;

2.bronxit;

3.plevrit;

4.o'pka emfizemasi;

5.pnevmotoraks;

6.yiringli otit;

7.qorin devori mushaklarining yirtilishi;

8.insult;

9.to'g'ri ichakning tushib qolishi;

10.gemorroy.

Keksa odamlar va yangi tug'ilgan chaqaloqlarda o'limga olib kelishi mumkin.

Ko'kyo'tal bo'yicha xavf guruhiga quyidagilar kiradi:

1.chaqaloqlar va 1 yoshgacha bo'lgan bolalar;

2.keksalar;

3.davolash-profilaktika muassasalari xodimlari;

4.bolalar maktabgacha tarbiya muassasalari va maktablari xodimlari.

Ko'kyo'talning oldini olish uchun quyidagilar tavsiya etiladi:

1.emlash o'tkazishi;

2.muntazam ravishda nafas mashqlarini bajarish;

3.o'ta sovqotishdan saqlanish;

4.chekishdan voz kechmoq

Xulosa. Ko'kyo'tal kasalligining tarqalishini oldini olishda vaktsinatsiya, sanitariya-gigiyena qoidalariga rioya qilish va tibbiy xodimlarning malakasini oshirish kabi kompleks yondashuvlar muhim rol o'ynaydi. Bu yo'nalishda amalga oshirilgan profilaktik tadbirlar samarali bo'lib, kasallikning tarqalishini sezilarli darajada kamaytirishga imkon yaratmoqda. Biroq, ushbu choralar yanada takomillashtirilishi va kengaytirilishi zarur. Ko'kyo'tal kasalligining tarqalishini oldini olish uchun samarali profilaktika choralarini amalga oshirish juda muhimdir. Ayniqsa bolalar va homilador ayollarni vaksinalashning doimiy monitoringi, sanitariya-gigiyena qoidalariga rioya qilish va kasallik haqida aholining xabardorligini oshirish kasallikning tarqalishini kamaytirishdagi asosiy vositalardir. Emlash dasturlari va tibbiy xizmatlarning sifatini yaxshilash orqali ko'kyo'talning oldini olish va kasallikning tarqalishini to'xtatish mumkin. Ushbu tadqiqot natijalari ko'kyo'tal kasalligining profilaktikasi va davolashda amalga oshirilgan davlat dasturlari samarali ekanligini ko'rsatdi, lekin bu boradagi ishlarni yanada kengaytirish va innovatsion texnologiyalarni joriy etish zarurati mavjud.

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Annotatsiya: Ushbu maqola antitranspiratlar va ularning o'simliklarda suvni yo'qotishni kamaytirishdagi roli haqida batafsil ma'lumot beradi. Antitranspiratlar bu o'simlik barglariga qo'llaniladigan moddalardir, ular transpiratsiya jarayonini tartibga solish orqali o'simliklarning suv muvozanatini saqlashga yordam beradi. Maqolada antitranspiratlarning asosiy turlari – fiziologik, kimyoviy va mexanik antitranspiratlar – ko'rib chiqilgan. Shuningdek, ularning o'simlik metabolizmi va hujayra darajasidagi suv oqimini cheklash mexanizmlari, stomatalarning ochilish va yopilishiga ta'siri tahlil qilingan. Ushbu vositalarning samaradorligi, ekologik va iqtisodiy jihatlari ham muhokama qilingan.

Kalit so'zlar: Antitranspiratlar, transpiratsiya, stomatal faoliyat, suv muvozanati, fiziologik jarayonlar, kimyoviy moddalarning ta'siri, o'simlik fiziologiyasi.

KIRISH

O'simliklar hayoti uchun suv muhim omil hisoblanadi. Suv nafaqat fotosintez, oziqa moddalari transporti va metabolik jarayonlarda, balki o'simliklarning termoregulyatsiyasini saqlashda ham muhim rol o'ynaydi. Transpiratsiya — bu o'simliklar barglaridagi stomata orqali suv bug'lanishini ifodalovchi jarayon bo'lib, suvning tuproqdan o'simlik orqali atmosferaga o'tishini ta'minlaydi. Ammo quruq yoki issiq iqlim sharoitlarida, tuproq namligi yetarli bo'lmaganda transpiratsiya jarayoni o'simliklarning suv tanqisligiga olib kelishi mumkin.

Ushbu muammolarni hal etish uchun antitranspiratlar qo'llaniladi. Antitranspiratlar o'simliklar barglari yuzasida himoya qatlam hosil qilish yoki stomatalarning faoliyatini boshqarish orqali transpiratsiya jarayonini cheklaydi. Ushbu vositalar o'simliklarning suv yo'qotishini kamaytirish, ularning qurg'oqchilik sharoitlariga chidamliligini oshirish va hosildorlikni saqlab qolishda samarali yechim hisoblanadi.

Ushbu maqolada antitranspiratlarning turlari, ularning ta'sir etish mexanizmlari va o'simlik fiziologiyasidagi ahamiyati keng muhokama qilinadi. Shu bilan birga, antitranspiratlarning afzalliklari va cheklovlari, ularning ekologik va iqtisodiy jihatlari ham ko'rib chiqiladi.

Antitranspiratlar o'simliklarning suv yo'qotishini kamaytirish uchun ishlatiladigan moddalardir. Ular o'simlik barglariga qo'llanilib, transpiratsiya jarayonini cheklash orqali suv muvozanatini saqlashga yordam beradi. Antitranspiratlar uch asosiy turga bo'linadi:

1. **Fiziologik antitranspiratlar** — o'simliklarning stomatalari orqali suv yo'qotilishini kamaytirish uchun o'simlik metabolizmini o'zgartiradi. Ushbu antitranspiratlar stomatalarning ochilib-yopilish jarayoniga ta'sir qilib, suv bug'lanishini pasaytiradi. Masalan, abskiz kislotasi (ABA) stomatalarning yopilishiga yordam beruvchi tabiiy gormon hisoblanadi.
2. **Kimyoviy antitranspiratlar** — bu moddalar stomatalarning faoliyatiga to'g'ridan-to'g'ri ta'sir qiluvchi kimyoviy vositalardir. Masalan, silikon, parafin emulsiyalari yoki plastmassaga asoslangan qoplamalar stomatalarning ochilishini cheklab, suv bug'lanishini kamaytiradi. Ular ko'pincha intensiv qurg'oqchilik sharoitlarida qo'llaniladi.
3. **Mexanik antitranspiratlar** — o'simlik barglarini himoya qilish uchun mexanik to'siq hosil qiladi. Bu moddalar barg yuzasida yupqa plyonka hosil qilib, transpiratsiya jarayonini fizik

jihatdan cheklaydi. Ularning samaradorligi barglarning mexanik shikastlanishini ham kamaytirish xususiyatiga ega.

Antitranspiratlar suv yo'qotilishini turli xil mexanizmlar orqali cheklaydi. Ularning asosiy ta'sir mexanizmlari quyidagilardan iborat:

1. **Stomatal faoliyatni boshqarish** — stomatalarning ochilish va yopilish jarayonlariga ta'sir ko'rsatish orqali transpiratsiya jarayoni cheklanadi. Bu mexanizm fiziologik va kimyoviy antitranspiratlarga xosdir. Masalan, abskiz kislotasi stomatalarning yopilishiga olib keladi va suv yo'qotilishini pasaytiradi.
2. **Himoya qatlam hosil qilish** — kimyoviy va mexanik antitranspiratlar barg yuzasida suvning bug'lanishini oldini oluvchi himoya qatlami hosil qiladi. Bu qatlam nafaqat transpiratsiyani cheklaydi, balki tashqi muhitning salbiy ta'siridan ham himoya qiladi.
3. **Metabolik o'zgarishlarni rag'batlantirish** — fiziologik antitranspiratlar o'simliklarning suvni tejashga qaratilgan metabolik jarayonlarini faollashtiradi. Bu o'simlikning umumiy chidamliligini oshiradi va qurg'oqchilik sharoitlarida omon qolishiga yordam beradi.

Antitranspiratlarning qo'llanilishi ko'plab afzalliklarga ega, ammo ularning ekologik va iqtisodiy jihatlari ham hisobga olinishi kerak:

- **Ekologik foydalari:** Antitranspiratlar suv resurslarini tejash imkonini beradi, ayniqsa suv tanqisligi bo'lgan hududlarda. Ular o'simliklarning qurg'oqchilikka chidamliligini oshiradi va qishloq xo'jaligida suvdan samarali foydalanishni ta'minlaydi.
- **Ekologik cheklovlari:** Ba'zi kimyoviy antitranspiratlar tuproq va suv havzalariga salbiy ta'sir ko'rsatishi mumkin. Shu sababli, ularni qo'llashda ekologik xavfsizlik choralari ko'rilishi zarur.
- **Iqtisodiy jihatlari:** Antitranspiratlarning narxi va ularni qo'llash texnologiyalari hosildorlikni oshirish uchun amalga oshiriladigan xarajatlarga bog'liq. Ularning qo'llanilishi qishloq xo'jaligi mahsulotlarining sifatini oshirishi mumkin, bu esa iqtisodiy foyda keltiradi.

Antitranspiratlar qishloq xo'jaligida suv tanqisligi muammolarini hal qilishda muhim ahamiyatga ega. Ular hosildorlikni saqlab qolish va suv resurslarini tejashda samarali vosita hisoblanadi. Ayniqsa, donli ekinlar, meva-sabzavotlar va boshqa qurg'oqchilikka sezgir o'simliklar uchun antitranspiratlar amaliy ahamiyatga ega.

Shuningdek, antitranspiratlarning tuproq namligini saqlashdagi roli ham katta. Ular suv bug'lanishini cheklab, o'simliklarning qurg'oqchil iqlim sharoitlarida moslashuvchanligini oshiradi. Kelajakda, ekologik xavfsiz va samarali antitranspiratlar ishlab chiqish suv resurslarini tejash va qishloq xo'jaligi mahsulotlarining barqarorligini ta'minlashda muhim rol o'ynashi kutilmoqda.

Xulosa

Antitranspiratlar o'simliklar fiziologiyasida muhim rol o'ynaydi. Ular suv yo'qotilishini kamaytirish, qurg'oqchilik sharoitlarida o'simliklarning chidamliligini oshirish va qishloq xo'jaligi hosildorligini saqlashda samarali vosita hisoblanadi. Ushbu vositalarning turli turlari va

ta'sir mexanizmlari mavjud bo'lib, ular stomatalarning boshqarilishi, himoya qatlam hosil qilinishi va metabolik jarayonlarning rag'batlantirilishi orqali o'z samarasini ko'rsatadi.

Biroq, antitranspiratlardan foydalanishda ekologik xavfsizlik va iqtisodiy samaradorlikka e'tibor qaratish lozim. Kelajakda yanada samarali va ekologik xavfsiz antitranspiratlar ishlab chiqilishi qishloq xo'jaligidagi suv tanqisligi muammolarini hal qilishda muhim ahamiyat kasb etadi. Shu sababli, antitranspiratlar bilan bog'liq ilmiy tadqiqotlar va innovatsiyalarni davom ettirish dolzarb vazifa hisoblanadi.

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THE STUDY OF IDIOMATIC EXPRESSIONS DESCRIBING HUMAN CHARACTER AND APPEARANCE IN ENGLISH AND UZBEK LANGUAGES

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Annotation This article examines idiomatic expressions in English and Uzbek languages that describe human character and appearance. The research focuses on identifying the semantic, cultural, and linguistic characteristics of idioms, comparing their usage in both languages, and analyzing their implications in communication and cross-cultural understanding. By providing examples from both languages, the study reveals the cultural similarities and differences in the perception of human traits and physical attributes. The findings emphasize the role of idioms as linguistic tools that reflect a nation's worldview and identity.

Keywords: idiomatic expressions, human character, appearance, English language, Uzbek language, cultural semantics, linguistic comparison, metaphorical meaning.

Introduction. Idiomatic expressions, as unique linguistic units, play a vital role in communication and are deeply rooted in the cultural and social fabric of any language. They often reflect the worldview, beliefs, and values of a nation, providing insight into how people perceive human character and appearance. In English and Uzbek languages, idiomatic expressions describing personality traits and physical attributes are commonly used to convey complex ideas in a concise and figurative manner.

Understanding the similarities and differences between English and Uzbek idioms offers valuable insights into cultural and linguistic diversity. For instance, while English idioms often reference animals and urban life (e.g., "busy as a bee"), Uzbek idioms frequently draw on nature and traditional life (e.g., "tog'dek sabr" – patience like a mountain). These differences highlight the unique ways in which societies construct meaning and express universal concepts.

This study aims to:

1. Analyze idiomatic expressions related to character and appearance in English and Uzbek languages.
2. Identify similarities and differences in their semantic and cultural usage.
3. Explore their role in cross-cultural communication and language learning.

Materials and Methods

Materials

1. Dictionaries and Lexicographic Sources:

"Cambridge Idioms Dictionary" (English idioms).

"O'zbek tilining izohli frazeologik lug'ati" (Uzbek idioms).

2. Literary and Spoken Language Samples:

Works by English and Uzbek authors, including Shakespeare and Alisher Navoi.

Analysis of contemporary Uzbek and English media.

Research articles on idiomatic semantics and cross-cultural linguistics.

Methods

Comparing English and Uzbek idiomatic expressions based on their meaning and usage. Identifying the underlying metaphors and cultural associations in idioms. Analyzing the cultural context and symbolic values of idioms in both languages. Examining the usage of idioms in real-life contexts, such as literature, films, and everyday speech. Collecting and categorizing idioms by theme (e.g., kindness, bravery, beauty) and frequency of use.

Results

Similar Idiomatic Expressions in English and Uzbek

"As brave as a lion" (English) – "Arslonday jasur" (Uzbek).

"As busy as a bee" (English) – "Asaldan shirin" (Uzbek).

These idioms show a shared cultural admiration for strength, diligence, and sweetness.

Unique Expressions Reflecting Cultural Differences

English: "To wear your heart on your sleeve" – Openly displaying emotions.

Uzbek: "Ko'ngli ochiq" – Literally "open-hearted," referring to kindness and generosity. While both describe emotional openness, the metaphors reflect distinct cultural nuances.

Semantic Differences in Metaphorical Usage English idioms often use animals as metaphors (e.g., "as sly as a fox"), emphasizing individual traits.

Uzbek idioms frequently reference natural phenomena (e.g., "tog'dek bardosh" – patience like a mountain), reflecting collective values and resilience.

Common Themes in Idioms

Both languages use idioms to describe:

Kindness: English: "A heart of gold."

Uzbek: "Ko'ngli nurli" (A radiant heart).

Strength: English: "As strong as an ox."

Uzbek: "Polatday qattiq" (As strong as steel).

Beauty: English: "As pretty as a picture."

Uzbek: "Oyday go'zal" (As beautiful as the moon).

Discussion.

The findings indicate that idiomatic expressions in English and Uzbek share universal themes, such as bravery, kindness, and beauty, while exhibiting significant cultural differences. For instance:

1. English Idioms:

Tend to use urban life and animals as metaphors, reflecting an individualistic worldview. E.g., "Busy as a bee," "Sly as a fox."

2. Uzbek Idioms:

Often rooted in nature and traditional life, highlighting collective resilience and harmony. E.g., "Tog'dek bardosh," "Quyoshday iliq" (Warm as the sun).

3. Cultural Reflections:

English idioms emphasize personal traits and achievements.

Uzbek idioms often prioritize communal values and moral virtues.

These differences underscore the importance of understanding idiomatic expressions in cross-cultural communication. They serve as a bridge to better grasp the cultural and social context of the target language, facilitating language learning and cultural exchange.

Conclusion

The study demonstrates that idiomatic expressions are not only linguistic tools but also cultural artifacts that embody the worldview of a nation. English and Uzbek idioms describing human

character and appearance provide unique insights into how societies perceive universal concepts like kindness, bravery, and beauty.

While the two languages share some similarities, such as metaphorical references to strength and resilience, their differences highlight the cultural diversity that shapes language. This research emphasizes the need for further studies on idiomatic expressions to promote cross-cultural understanding and enhance language proficiency.

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A COMPARATIVE ANALYSIS OF MEDICINAL PLANT NAMES IN ENGLISH AND UZBEK LANGUAGES**Kholikova Nodira Alisher qizi**1st course Master's student of the Termez State Pedagogical Institute**Abstract**

This article explores the comparative linguistic characteristics of medicinal plant names in English and Uzbek languages. It focuses on their lexical-semantic features, etymological origins, and translation strategies. The research highlights the cultural and linguistic factors influencing the naming of medicinal plants and the challenges faced in translating these terms across the two languages.

Keywords: medicinal plants, lexical semantics, comparative linguistics, translation, English, Uzbek

Introduction

Medicinal plants play a vital role in human life, both in terms of healthcare and cultural heritage. Their names carry linguistic, cultural, and historical significance. In the field of comparative linguistics, analyzing plant names helps uncover the cultural perceptions and semantic structures of different languages. This study examines the linguistic characteristics of medicinal plant names in English and Uzbek, highlighting similarities, differences, and translation issues.

Methodology

The study adopts a descriptive and comparative approach. A corpus of 50 commonly used medicinal plant names was collected from English and Uzbek herbal medicine literature, dictionaries, and online resources. The analysis focused on:

1. Lexical-semantic structures.
2. Etymological origins.
3. Translation techniques.

Findings and Discussion

1. Lexical-Semantic Features in both languages; medicinal plant names often reflect specific features in English but in Uzbek they do not:

Physical attributes: e.g., dandelion (from “dent-de-lion,” meaning lion’s tooth in French vs. Literal meaning in Uzbek arslon tishi) - Qoqi o’t or momaqaymoq

Usage or medicinal properties: e.g., feverfew (used to reduce fever vs. literal meaning In Uzbek isitma tushiruvchi) - a type of moychechak

Mythological or cultural associations: e.g., St. John’s Wort (named after the holy person, associated with spirituality) vs. In Uzbek it is called Dalachoy

The Uzbek language often employs descriptive compounds, while English tends to use historical or borrowed terms.

2. Etymological Analysis:

English medicinal plant names are derived from Latin, Greek, and Old English roots due to historical influences of classical medicine. For example, valerian originates from Latin valere (to be strong). Uzbek plant names often stem from Turkic or Persian origins, reflecting the region's traditional medicine. For instance, rayhon (basil) comes from Persian.

3. Translation Challenges:

Translation of plant names between English and Uzbek poses difficulties due to:

Non-equivalence: Certain plants exist in one region but not the other, leading to a lack of direct counterparts.

Cultural connotations: Names may carry symbolic meanings that are not transferable, e.g., mistletoe in English symbolizes Christmas but has no equivalent in Uzbek culture.

Phonetic adaptation: Some names are phonetically borrowed, e.g., lavender in Uzbek remains lavanda.

Translation Strategies:

Descriptive translation: Using functional descriptions, e.g., English foxglove as Uzbek tulkizabon.

Borrowing: Retaining the original term, e.g., aloe vera in both languages.

Adaptation: Modifying terms to fit cultural contexts, e.g., holly as doim yashil o'simlik in Uzbek.

Conclusion

The analysis demonstrates that while English and Uzbek medicinal plant names share some universal semantic patterns, they differ significantly in their etymology and cultural connotations. These differences reflect the unique historical and cultural contexts of the two languages. Translating plant names requires a nuanced approach that balances linguistic accuracy with cultural sensitivity.

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THE ROLE OF SONG AND RHYME IN TEACHING ENGLISH PHONETICS AT THE INITIAL STAGE.

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Annotatsiya: Ushbu maqolada ingliz tilini o'rgatishda qo'shiq va qofiyalarning fonetik ko'nikmalarni shakllantirishdagi o'rni tahlil qilinadi. Boshlang'ich bosqichda qo'shiq va qofiyalardan foydalanish talaffuz, ohang va tovushlarni to'g'ri talaffuz qilishga yordam beradi. Tadqiqot natijalari shuni ko'rsatadiki, musiqiy yondashuv bolalarning eslab qolish qobiliyatini oshiradi va o'rganish jarayonini yanada qiziqarli va samarali qiladi. Ushbu usul fonetik ko'nikmalarni mustahkamlash va nutq rivojlanishini rag'batlantirishda muhim vosita sifatida ko'rib chiqiladi.

Kalit so'zlar: qo'shiq, qofiya, fonetika, boshlang'ich bosqich, talaffuz, ohang, musiqiy yondashuv.

Annotation: This article analyzes the role of songs and rhymes in developing phonetic skills in teaching English. Using songs and rhymes at the initial stage helps improve pronunciation, intonation, and articulation. The study reveals that musical approaches enhance memory retention and make the learning process more engaging and effective. This method is considered a key tool in reinforcing phonetic skills and promoting speech development.

Keywords: songs, rhymes, phonetics, initial stage, pronunciation, intonation, musical approach.

Аннотация: В данной статье рассматривается роль песен и рифм в формировании фонетических навыков при обучении английскому языку. Использование песен и рифм на начальном этапе способствует улучшению произношения, интонации и артикуляции. Результаты исследования показывают, что музыкальные подходы улучшают запоминание и делают процесс обучения более увлекательным и эффективным. Этот метод рассматривается как важный инструмент для закрепления фонетических навыков и развития речи.

Ключевые слова: песни, рифмы, фонетика, начальный этап, произношение, интонация, музыкальный подход.

INTRODUCTION

Teaching English phonetics at the initial stage is crucial for building a strong foundation in language learning. Accurate pronunciation, intonation, and rhythm are essential components of effective communication. However, mastering these aspects can be challenging for beginners, especially young learners. Songs and rhymes are widely recognized as effective tools in language teaching due to their repetitive and rhythmic nature. They help learners develop phonological awareness, improve memory retention, and enhance listening skills. Music and rhymes create a fun and engaging learning environment, which motivates students to participate actively. Studies have shown that incorporating musical elements reduces anxiety and increases confidence in language use. Songs and rhymes provide natural exposure to the sounds and patterns of English, making it easier for learners to mimic native-like pronunciation. They also offer context for

learning new vocabulary and sentence structures in an enjoyable manner. This paper explores the benefits of using songs and rhymes in teaching phonetics, focusing on their effectiveness at the initial stage of language acquisition.

Methods

This study utilized qualitative and quantitative research methods to investigate the role of songs and rhymes in teaching English phonetics. A group of 30 primary school students aged 6 to 8 participated in the study. The participants were divided into two groups: an experimental group that learned phonetics through songs and rhymes and a control group that followed traditional teaching methods. Data collection included pre-tests and post-tests to evaluate improvements in pronunciation, intonation, and word stress. Observations and interviews with teachers provided insights into classroom dynamics and learner engagement. The study also incorporated audio recordings to analyze changes in learners' speech patterns over time. Statistical tools were used to measure the effectiveness of the intervention and determine whether the results were significant. Lesson plans for the experimental group included interactive activities such as singing, clapping, and role-playing to reinforce learning. The control group, in contrast, used textbooks and drills to practice phonetics. The research design ensured that all participants received equal instruction time, allowing for fair comparisons between the two groups. These methods aimed to provide a comprehensive understanding of how musical techniques impact phonetic learning.

Results

The findings revealed that the experimental group showed significant improvement in phonetic skills compared to the control group. Pre-test results indicated that both groups had similar levels of pronunciation and intonation errors at the start. However, post-test scores demonstrated that the experimental group made fewer errors and exhibited clearer articulation and better intonation patterns. Teachers observed that students in the experimental group were more motivated and engaged during lessons. They participated actively in singing and rhyming activities, which helped them develop confidence in speaking English. Audio recordings showed that students in the experimental group mimicked native-like sounds more accurately than their counterparts. In addition, learners were able to retain new vocabulary and phrases better, as the repetitive nature of songs reinforced memory. Classroom observations indicated that students enjoyed the musical activities and displayed higher levels of enthusiasm. The results highlighted the role of rhythm and melody in making learning phonetics more accessible and enjoyable. Teachers reported that using songs and rhymes reduced stress and improved classroom dynamics. Overall, the data supported the effectiveness of musical approaches in teaching phonetics to beginners.

Discussion

The results of the study align with previous research, emphasizing the importance of music and rhythm in language learning. Songs and rhymes naturally attract young learners and create a supportive learning environment that reduces anxiety. The repetition in songs aids in reinforcing phonetic patterns, making it easier for students to internalize pronunciation rules. Rhythm and melody also support speech development by improving syllable awareness and stress patterns. Teachers noted that learners with lower confidence levels became more vocal and expressive through musical activities. The study suggests that songs and rhymes cater to different learning styles, accommodating auditory, visual, and kinesthetic learners. The findings highlight that interactive and enjoyable activities can bridge the gap between practice and real-life communication. However, it is important to carefully select songs that match learners' proficiency

levels and cultural backgrounds to maximize their impact. Challenges such as ensuring comprehension of lyrics and managing classroom discipline during singing activities need to be addressed. Future studies could explore the long-term effects of musical techniques on fluency and pronunciation. Incorporating digital tools and multimedia resources could further enhance the learning experience. The findings suggest that integrating songs and rhymes into phonetic instruction can transform traditional teaching methods and create more dynamic classrooms.

Conclusion

This study demonstrated that songs and rhymes play a vital role in teaching English phonetics at the initial stage. They provide a fun and interactive approach to language learning, helping learners develop pronunciation, intonation, and rhythm skills. The experimental group's improved performance highlights the effectiveness of musical techniques in reinforcing phonetic patterns. Teachers observed higher motivation, confidence, and engagement among students who participated in musical activities. The findings suggest that songs and rhymes are not only enjoyable but also practical tools for building a strong foundation in phonetics. Recommendations for future practice include integrating musical activities into daily lessons and using technology to enhance their impact. Further research can examine how musical approaches influence long-term language retention and fluency. Educators are encouraged to adapt songs and rhymes to suit different age groups and cultural contexts for broader applicability. Ultimately, this study reaffirms the potential of music to make phonetic learning more accessible, memorable, and effective for beginners.

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NAY PERINATAL BEPUSHTLIKDA LAPAROSKOPIK OPERATSIYALARNING
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Annotatsiya: Maqolada nay perinatal bepushtlikning diagnostikasi va davolashida laparoskopik jarrohlik usullarining qo'llanilishi, samaradorligi va keng tarqalishi tahlil qilinadi. Ushbu jarrohlik usuli nay patologiyalarini aniqlashda minimal invaziv yondashuvni ta'minlab, reproduktiv funksiyani tiklashda samarali hisoblanadi. Tadqiqot davomida laparoskopiyaning afzalliklari, bemorlarning tiklanish sur'ati va davolanish natijalari o'rganilgan.

Kalit so'zlar: Nay perinatal bepushtlik, laparoskopik jarrohlik, minimal invaziv yondashuv, reproduktiv salomatlik, nay patologiyasi.

Annotation: This article explores the application, efficacy, and prevalence of laparoscopic surgery in diagnosing and treating tubal perinatal infertility. Laparoscopic techniques provide a minimally invasive approach for identifying tubal pathologies and restoring reproductive function. The study investigates the advantages of laparoscopy, recovery rates, and treatment outcomes.

Keywords: Tubal perinatal infertility, laparoscopic surgery, minimally invasive approach, reproductive health, tubal pathology.

Аннотация: В статье рассматривается применение, эффективность и распространенность лапароскопической хирургии при диагностике и лечении трубного перинатального бесплодия. Лапароскопические методы обеспечивают минимально инвазивный подход к выявлению патологий труб и восстановлению репродуктивной функции. Исследование изучает преимущества лапароскопии, скорость восстановления пациентов и результаты лечения.

Ключевые слова: Трубное перинатальное бесплодие, лапароскопическая хирургия, минимально инвазивный подход, репродуктивное здоровье, патология труб.

KIRISH

Nay perinatal bepushtlik reproduktiv salomatlik muammolaridan biri bo'lib, dunyo miqyosida tug'ruq yoshidagi ayollarning bepushtlik holatlarining 25–35 foizini tashkil etadi. Ushbu patologiyada tuxumdonlardan chiqqan tuxum hujayralarining bachadon naylari orqali o'tish qobiliyati buziladi, bu esa urug'lanish jarayonini imkonsiz qiladi. Laparoskopik jarrohlik ushbu muammoni aniqlash va bartaraf etishda zamonaviy diagnostik va davolash usuli sifatida keng qo'llanilmoqda. Ushbu maqola laparoskopik jarrohlikning nay perinatal bepushtlikda qo'llanilish xususiyatlarini, klinik natijalarni va afzalliklarini tahlil qilishga bag'ishlangan.

Metodlar

Ushbu tadqiqot uchun quyidagi usullar qo'llanildi:

1. Statistik ma'lumotlarning tahlili: 2018–2023 yillar oralig'ida klinik ma'lumotlar bazasidan 200 nafar bepushtlik holatlari haqida ma'lumot yig'ildi.

2. Retrospektiv kuzatuv: Nay patologiyalari aniqlangan va laparoskopik operatsiya o'tkazilgan bemorlarning davolanish natijalari o'rganildi.

3. Klinik natijalarni baholash: Bemorlarda tiklanish sur'ati, operatsiya samaradorligi va reproduktiv funksiyani tiklash holatlari tahlil qilindi.

4. Adabiyot tahlili: Jahon sog'liqni saqlash tashkiloti va ilmiy jurnallarning ma'lumotlari asosida laparoskopik yondashuvning xalqaro tajribasi o'rganildi.

Natijalar

Diagnostika samaradorligi: Laparoskopiya orqali nay patologiyalarini aniqlash aniqlik darajasi 95% ni tashkil etdi.

Davolash natijalari: Nay patologiyalarini bartaraf etish orqali reproduktiv funksiyani tiklash bemorlarning 70% dan ortig'ida kuzatildi.

Tiklanish sur'ati: Minimal invaziv yondashuv sababli bemorlarning reabilitatsiya davri an'anaviy jarrohlikka nisbatan 40–50% ga qisqardi.

Komplikatsiyalar: Laparoskopik jarrohlikda asoratlar darajasi 5% dan past bo'lib, bu an'anaviy jarrohlikdan sezilarli darajada pastdir.

Munozara

Laparoskopik jarrohlik nay perinatal bepushtlikni davolashda afzal usul bo'lib, diagnostika aniqligi va davolash samaradorligi bilan ajralib turadi. Ushbu usulning minimal invazivligi sababli bemorlarning tiklanish muddati qisqaradi va ularning reproduktiv funksiyasi tezroq tiklanadi. Shunga qaramay, laparoskopiya maxsus jihozlar va malakali mutaxassislariga bo'lgan ehtiyojni oshiradi, bu esa uning keng tarqalishini cheklashi mumkin.

Xulosa

Nay perinatal bepushtlikni davolashda laparoskopik jarrohlik yuqori samaradorlikka ega bo'lib, diagnostika va davolash jarayonlarini bir vaqtda amalga oshirish imkonini beradi. Ushbu usulning keng qo'llanilishi reproduktiv salomatlik sohasida bemorlarga yangi imkoniyatlar yaratadi. Kelgusida laparoskopik texnologiyalarni yanada rivojlantirish va qo'llash sohasini kengaytirish muhimdir.

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1 ЁШГАЧА БЎЛГАН БОЛАЛАРНИНГ ТУРЛИ ХИЛ ПАТОЛОГИК СИНИШЛАРИДА СУЯК ТЎҚИМАСИНИНГ МОРФОЛОГИЯСИ.

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Мавзунинг долзарблиги: бугунги кунда бир ёшгача бўлган болаларда учрадийган касалликлардан бири бу- суякнинг патологик синишидир.

Умуман олганда, жароҳат олганларнинг 76% катталар, 17% болалар (0.1-14 ёш), 7% ўсмирлар (15-17 ёшлилар)дир. Инсоннинг умумий касаллинишидаги травматизмнинг салмоғи 6-ўринни эгаллаши билан белгиланади. Вақтинча иш қобилятини йўқотиши бўйича 2-ўринни, қон айланиш касалликларидан кейин 1-ўрин, ногиронлик бирламчи чиқиши бўйича 2-ўринни, ўлим сабаби бўйича 3-ўринни эгаллайди, яъни онкологик касалликлар ва юрак қон-томир касалликлари.

Ишнинг мақсади: ишнинг мақсади сифатида Республика шошилинч тез-тиббий илмий-амалий маркази кўп тармоқли тиббиёт маркази Хоразм филиалининг тарвмпостида 1 ёшгача бўлган болаларда турли хил патологик синишлар билан мурожаат қилган беморларнинг анаменситк ва суяк кўмигининг морфологик ўзгаришларини ўрганилди.

Олинган натижалар: олиб борилган текширув натижалари шуни курсатдики, турли хил патологик суяк синишлари бўлган беморларнинг ёши асосан 9 ойликдан 1 ёшгача бўлган даврдаги болаларда турли хил сабабларга кўра масалан, боланинг қаровсиз қолиши оқибатида келиб чиқишига сабаб бўлган.

Шунингдек, суяк кўмиги морфологик ўрганилганда суяк тўқимасида калций Д3 никомедининг етишмовчилиги аниқланди.

Хулосалар: хулосада ўрнида шуни айтиш мумкинки, 1 ёшгача бўлган болаларда турли хил патологик суяк синишининг натижасида болаларнинг эрта ногирон бўлиши, меҳнатга лаёқатсиз бўлиши, жароҳатларнинг асорат сифатида битиши, организмда моддалар алмашинувининг бузилиши натижасида калций Д3 никомедининг етишмовчилиги сабаб бўлган.

Шу сабабли, 1 ёшгача бўлган болаларнинг тарбиясига, уларнинг етук инсон бўлиб етишига ҳамма маъсул ҳисобланади.

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TA'LIM TIZIMINING YANADA RIVOJLANISHI UCHUN BUGUNGI KUNDAGI PSIXOLOG KADRLAR TAYYORLASHNING PEDAGOGIK IMKONIYATLARI VA DOLZARB MUOMMOLARI.

Osiyo xalqaro universiteti "Pedagogika va psixologiya" yo'nalishi magistranti:

Xusainova Zarina Komiljonovna

Annotatsiya: Bugungi kunda o'qituvchilar va ta'lim muassasalarining boshqa xodimlari bilan birgalikda psixologlar o'quvchilarning rivojlanishida, ularning psixologik salomatligini ta'minlashda va pedagogik jarayonlarni samarali tashkil etishda muhim ahamiyat kasb etadi. Shuning uchun ta'lim tizimi uchun psixolog kadrlarini tayyorlashning pedagogik imkoniyatlarini o'rganish, ta'lim muassasalarida psixologiyani o'qitishning roli oshirishga yordam beradi.

Kalit so'zlar: Pedagogik psixologiya, Ta'limda psixologik yondashuvlar, Psixologik kadrlar tayyorlash, Psixologik yordam, Maslahat.

Asosiy qism: Pedagogik psixologiya o'quvchilarning kognitiv va emosional rivojlanishiga, shuningdek, o'zaro munosabatlar, motivatsiya va o'qish jarayonidagi qiyinchiliklarga e'tibor qaratadi. Psixologik kadrlar tayyorlashda ushbu sohalarida chuqur bilim va amaliy ko'nikmalarni rivojlantirish talab etiladi.

Ta'limda Psixologik Yondashuvlar: Ta'lim tizimida psixologik kadrlarni tayyorlashda turli pedagogik yondashuvlar va metodlar mavjud. Psixologik yondashuvlar orqali o'quvchilarning o'ziga xos xususiyatlari va ehtiyojlariga mos ravishda ta'lim jarayonini tashkil qilish mumkin. Bunda psixologlar o'qituvchilar bilan hamkorlikda, o'quvchilarning motivatsiyasi, o'z-o'zini anglash darajasi, va boshqa psixologik faktorlarni hisobga olgan holda, o'qish jarayonining samaradorligini oshirishga qaratilgan metodlarni ishlab chiqadilar.

Differensial yondashuv va individual yondashuv psixologik kadrlar tayyorlashning muhim qismidir. Har bir o'quvchining psixologik xususiyatlari turlicha bo'lgani uchun, psixologlar o'quvchilarning ehtiyojlarini aniqlash va unga mos ravishda pedagogik jarayonni tashkil qilishlari kerak. Bunday yondashuvlar, o'quvchilarning yuqori natijalarga erishishlariga yordam beradi va ta'lim tizimining barcha qatlamlarida psixologik yordam ko'rsatish imkonini yaratadi.

Psixologik kadrlar tayyorlash: Zamonaviy ta'limda psixologik kadrlar tayyorlashda innovatsion texnologiyalarni qo'llash imkoniyatlari juda kengaygan. Raqamli texnologiyalar, onlayn kurslar, virtual simulyatsiyalar va o'quvchilarning psixologik holatini baholash uchun mo'ljallangan dasturlar yordamida psixologik kadrlar tayyorlash samarali amalga oshirilmoqda. Shuningdek, psixologik tadqiqotlar, testlar va baholash metodlari yordamida o'quvchilarning rivojlanishini kuzatish va tahlil qilish, ta'lim jarayonini yaxshilashda muhim rol o'ynaydi.

O'qituvchilar va psixologlar uchun tashkil etiladigan onlayn treninglar va seminarlar, yangi psixologik yondashuvlar va metodlarni o'rganish imkonini beradi. Bunday resurslar, kadrlarni tayyorlashda innovatsion yondashuvlarni qo'llash imkoniyatini kengaytiradi va psixologik kadrlarning malakasini oshirishga yordam beradi.

Psixologik yordam va maslahat: Ta'lim tizimida psixologik yordam ko'rsatish va maslahat xizmatlarini tashkil etish ham psixologik kadrlar tayyorlashning muhim qismi hisoblanadi. O'qituvchilar va o'quvchilar uchun psixologik maslahatlar va yordam xizmatlari ta'lim muassasalarida alohida rol o'ynaydi. Psixologlar o'quvchilarning ruhiy holatini yaxshilashda, stressni boshqarishda va o'zaro munosabatlarni yaxshilashda yordam beradi.

O'qituvchilarga psixologik maslahatlar berish, pedagogik stressni kamaytirish va samarali ta'lim jarayonini tashkil etishda yordam beradi.

Xulosa: Ta'lim tizimi uchun psixologik kadrlarni tayyorlashning pedagogik imkoniyatlari juda katta va ularning ahamiyati tobora ortib bormoqda. Psixologik bilimlar va pedagogik usullarni birlashtirish orqali o'qituvchilar va psixologlar o'quvchilarning rivojlanishiga, ularning psixologik salomatligini ta'minlashga va ta'lim jarayonini samarali tashkil etishga yordam berishi mumkin. Psixologik kadrlarni tayyorlash jarayonida innovatsion texnologiyalar, amaliy mashg'ulotlar va tajriba almashish kabi imkoniyatlardan keng foydalanish, ta'lim tizimining sifatini oshirishga xizmat qiladi.

FOYDALANILGAN ADABIYOTLAR:

1. ПСИХОЛОГИЧЕСКАЯ ПОДГОТОВКА В СИСТЕМЕ ПЕДАГОГИЧЕСКОГО ОБРАЗОВАНИЯ Л. А. Цветкова, Е. Н. Волкова, С. А. Безгодова
2. Психолого-Педагогическая Подготовка учительских кадров для «овой школы» (в рамках стандарта П По направлению «Психолого-Педагогическое образование – 050400») В.В. цо*
3. Ta'lim tizimi uchun psixologik kodlar tayyorlashning pedagogik imkoniyatlari.
4. Xusainova zarina komiljonovna

BO‘LAJAK BOSHLANG‘ICH SINIF O‘QITUVCHILARINI ILMIY TADQIQOT ISHLARIGA YO‘NALTIRISHNING NAZARIY ASOSLARI**Muhammadiyeva Xadicha Karamatovna**

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Annotatsiya: Mazkur tezisda bo‘lajak boshlang‘ich sinif o‘qituvchilarini ilmiy tadqiqot ishlariga yo‘naltirish tushunchasi, ilmiy tadqiqot atamasi, ilmiy tadqiqotni tashkil etish orqali talabalarni mustaqil ishlashga o‘rgatish ijodiy va ijtimoiy faolligini oshirish masalalari yoritilgan.

Kalit so‘zlar: talaba, ilm, ilmiy tadqiqot, kasbiy madaniyat, metodologiya, talaba, pedagogika, oliy ta‘lim.

Bugungi kunda OTM fanlarini o‘qitishda ikki xil, bir qarashda bir-biriga zid bo‘lgan yondashuvni kuzatish mumkin. Bir tomondan – ma‘lum ta‘lim standartlariga erishishga, kompetensiyalarni rivojlantirishga va muvofiq imtihonlarga tayyorlash maqsadiga yo‘naltirilgan qat‘iy yondashuv. Haligacha ta‘lim tizimida ko‘plab yondashuv va usullar talqin va tahlilga, ya‘ni berilgan ma‘lumotni to‘g‘ri tushunib, to‘g‘ri yetkazib bera olishga, nari borsa, berilgan bir necha axborotlarni umumiy lashtirib, xulosa chiqara olishga yo‘naltirilgan. Ikkinchi tomondan – jamiyatda va ayniqsa, mehnat bozorida kreativ fikrlaydigan, innovatsiyalarga tayyor bo‘lgan mutaxassislariga bo‘lgan talabning oshishi ta‘limni tahsil oluvchilarda kreativ fikrlashni rivojlantirishga yo‘naltirmoqda.

Uzoq yillar davomida mutaxassislardan kreativlik va o‘ziga xoslik emas, rejalashtirilgan vazifaning puxta va maksimal darajada aniq bajarilishi talab qilib kelindi. Bugungi kunga kelib, vaziyat o‘zgardi. Endilikda bo‘lajak mutaxassislar zamonaviy bilim, ko‘nikma va malakaga, kompetensiyalarga ega bo‘lishi va olingan fundamental bilimlarni amaliy faoliyatda qo‘llay olishi lozim. Shu bilan ulardan maqsadga intiluvchanlik, jamoada ishlash, axborotni qayta ishlay olish, qaror qabul qilish va g‘oyalar ishlab chiqish talab etilmoqda. Bu esa zamonaviy oliy ta‘lim oldiga nafaqat talabalarga chuqur bilim berish, balki o‘quv jarayonini ularning kreativligini – ijodiy faolligini rivojlantiradigan tarzda tashkil etish va rejalashtirish vazifasini qo‘yadi. Zamonaviy tendentsiyalar bo‘lajak mutaxassislardan nafaqat zarur bilim va malakalariga, balki ularni butun kasbiy faoliyati davrida generatsiya qilish ko‘nikmalariga ega bo‘lishni talab qiladi. Tadqiqotlar tahlilida yana bir jihat ko‘zga tashlandi: ayrim tadqiqotlarda kreativlikka ta‘lim vositasi nuqtai nazaridan qaralsa, ko‘pchilik tadqiqotchilar kreativlikni ta‘lim maqsadi sifatida baholashadi.

Ammo yuqoridagi tadqiqotlar OTM fanlarini o‘qitishda kreativ yondashuvning barcha jihatlarini to‘liq ochib bera olmaydi. OTM fanlarini o‘qitish jarayonida zarur kompetensiyalarni shakllantirish uchun barcha yo‘nalish – shaxs, jarayon, mahsulot uzviylikda dolzarblik kasb etishi talab qilinadi. Ijodkor shaxsning shakllanishini shaxsning o‘zaro mos tarzda bajarilgan ijodiy faoliyat va ijodiy mahsulotlarni yaratish borasidagi rivojlanishi sifatida belgilash mumkin. Ushbu jarayonning sur‘ati va qamrovi biologik va ijtimoiy omillar, shaxsning faolligi va kreativ sifatleri, shuningdek, mavjud shart-sharoit, hayotiy muhim va kasbiy shartlangan hodisalarga bog‘liq. Zamonaviy sharoit pedagogning, shu jumladan bo‘lajak OTM fanlarini o‘qituvchilarining kreativlik sifatlariga ega bo‘lishini taqozo etadi.

Kreativlik pedagogni o'quv-tarbiya jarayonida yangi innovatsion yondashuvlarni izlashga, kasbiy kompetentsiyalarni mustaqil o'zlashtirishga undaydi. A.V. Morozov ta'kidlaganidek, pedagogik kreativlik o'qituvchining shaxslararo idrok etish, shaxslararo muloqot va shaxslararo munosabatlarda yuqori darajadagi malakaga ega bo'lishni talab qiladi". O'qituvchining ijodiy qarorlari intellektual va pedagogik kreativlikning o'zaro bog'liqligiga asoslanadi: kreativlikning yuqori darajasida u "nafaqat turli xil innovatsion ta'lim tizimlariga yetarlicha moslashadi, balki ularni shakllantirish, rivojlantirish va pedagogik amaliyotga tatbiq etishda faol ishtirok etadi".

Kreativ ta'lim jarayoni uning har bir ishtirokchisiga har bir ta'lim darajasida nafaqat o'zining ijodiy salohiyatini rivojlantirish, balki o'z-o'zini anglash, ijodiy o'z-o'zini rivojlantirish va obyektiv qadr-qimmatga bo'lgan ehtiyojni shakllantirishga imkon beradi.

Zamonaviy oliy ta'lim talabalar kreativligini namoyon bo'lishi uchun qulay shart-sharoitlarni yaratishga qaratilgan bo'lib, bu ularning kasbiy kompetensiyalarini rivojlantirish bilan ham bog'liq. Oliy ta'limda bo'lajak mutaxassisning kreativ salohiyatini rivojlantirish uchun sharoit yaratish bo'yicha kelgusidagi ishlar uning malakasini shakllantirish uchun ham, uning muloqot qobiliyatini rivojlantirish uchun ham zarurdir. Shu sababdan OTM talabalarini kreativ yondashuvlar asosida ilmiy tadqiqot ishlariga yo'naltirishning ilmiy-pedagogik asoslarini yaratish juda muhim.

Shundan kelib chiqib, ta'lim jarayonida o'qituvchi OTM fanlarini dan kreativ mashg'ulot o'tishi uchun faoliyatga yo'naltirilgan, yechimini topish uchun fanga oid kompetensiyalar, shaxsiy tashabbus, fantaziya, faollik, o'ziga xoslik talab qilinadigan vazifalar qo'yishi zarur.

Ta'limda kreativ yondashuvni innovatsion yondashuvdan ayri holda tasavvur qilib bo'lmaydi. Ma'lumki, innovatsiyalar - bu nazariy asoslangan, maksadga yo'naltirilgan hamda amaliy-mo'ljallangan yangilik sanaladi. Har kaday innovatsiya, kiritilgan yangilik ta'lim oluvchilardan yuqori darjadagi emotsionallik hamda intellektuallikni talab kiladi. Innovatsion faoliyat g'oyalarni yangiliklarga aylantirib beradi, shuningdek, ushbu jarayonni boshqarish tizimini shakllantiradi. Ya'ni, innovatsion faoliyat ta'lim tizimida ijobiy o'zgarishlarga yo'naltirilgan hamda pedagogni ijodkor shaxs sifatida rivojlantirishni, uni reproduktiv faoliyat turidan metodik yechimlarni mutaql izlashga o'tkazishni, pedagogni innovatsion metodikalar muallifiga, ularni ta'lim, rivojlantirish, tarbiyalash vostitasiga aylantiruvchi amaliyotchiga aylantirishni nazarda tutadi.

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**TALABALARDA MUSTAQIL TA'LIM TOPSHIRIQLARIDAN FOYDALANIB
KASBIY MADANIYATNI RIVOJLANTIRISHNING METODOLOGIK ASOSLARI****Abrorxonova Kamolaxon Abrorxon qizi**

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Annotatsiya: Mazkur tezisda OTMLarda talabalarga mustaqil ta'lim topshiriqlarini berish orqali kasbiy madaniyatini oshirish, kasbiy madaniyat tushunchasi, mustaqil ta'limni tashkil etish orqali talabalarni mustaqil ishlashga o'rgatish ijodiy va ijtimoiy faolligini oshirish masalalari yoritilgan.

Kalit so'zlar: mustaqil ta'lim, kasbiy madaniyat, metodologiya, talaba, kredit modul, mustaqil fikrlash, pedagogika, oliy ta'lim.

Bugungi kunda oliy ta'lim tizimi talablarining mustaqil ta'lim faoliyatiga asoslanganligi bilan muhim ahamiyatga ega. Rivojlangan davlatlarda fanlarni o'qitishga doir ilmiy adabiyotlarda mustaqil ta'lim topshiriqlari va mustaqil o'quv topshiriqlarning mazmuniga, samaradorlik darajasiga alohida e'tibor beriladi va ta'lim jarayonida mustaqil ta'lim topshiriqlaridan savol, tezkor savol-javob o'yin texnologiyalari, topshiriq va matn tahlillaridan unumli foydalaniladi. yurtimizda ham bu borada tizimli ishlar amalga oshirilmoqda. Masalan, O'zbekiston Respublikasi oliy ta'lim tizimini 2030-yilgacha rivojlantirish Konsepsiyasida "Mustaqil ta'lim soatlari ulushini oshirish, talabalarda mustaqil ta'lim olish, tanqidiy va ijodiy fikrlash, tizimli tahlil qilish, tadbirkorlik ko'nikmalarini shakllantirish, o'quv jarayonida kompetensiyalarni kuchaytirishga qaratilgan metodika va texnologiyalarni joriy etish, o'quv jarayonini amaliy ko'nikmalarni shakllantirishga yo'naltirish, bu borada o'quv jarayoniga xalqaro ta'lim standartlariga asoslangan ilg'or pedagogik texnologiyalar, o'quv dasturlari va o'quv-uslubiy materiallarni keng joriy etish" masalalarida ta'lim oluvchilarning mustaqil ta'lim olishlari, mustaqil ishlash malakalarini uzluksiz oshirish orqali mutaxassislarning zaruriy kompetensiyalarini, ijodiy yaratuvchanlik, tadqiqotchilik, mantiqiy tafakkurini rivojlantirishga alohida e'tibor qaratilgan.

Mustaqil ta'lim - o'quv materialini mustaqil o'zlashtirish, murakkablik darajasi turlicha bo'lgan topshiriqlar, amaliy vazifalarni auditoriya hamda auditoriyadan tashqarida ijodiy va mustaqil bajarish asosida nazariy bilim, amaliy ko'nikma va malakalarni shakllantirishga qaratilgan tizimli faoliyat hisoblanadi. Mustaqil ta'lim topshiriqlari talabalardan o'z bilimlarini mustaqil ravishda chuqurlashtirishni talab qiladi. Shuningdek, mustaqil ta'lim topshiriqlari talabalarining kasbiy madaniyatini rivojlantirishda ham muhim o'rin tutadi. Chunki bunday topshiriqlar nafaqat nazariy bilimlarni mustahkamlash, balki talabaning o'z kasbiga bo'lgan mas'uliyatini oshirish va kasbiy ko'nikmalarini shakllantirish uchun asos yaratadi. Kasbiy madaniyatni rivojlantirishda mustaqil ta'lim topshiriqlari talabalarni o'z kasbiga nisbatan hurmat va mas'uliyat bilan yondashishga o'rgatadi, kasbiy faoliyatda axloqiy me'yorlar va etika qoidalariga rioya qilish ko'nikmasini rivojlantiradi va talabalarni o'z kasbi bo'yicha zamonaviy texnologiyalar va innovatsiyalar bilan tanishtirish orqali professional madaniyatni oshiradi. Mustaqil ta'lim topshiriqlari talabalarining nazariy bilimlarini amaliy ko'nikmalarga aylantirishga, kasbiy etika va madaniyatni shakllantirishga, shuningdek, o'z-o'zini

rivojlantirishga ko'maklashadi. Bu jarayon orqali talabalar nafaqat o'z kasbiy sohasida muvaffaqiyatli mutaxassis bo'lib yetishadilar, balki jamiyat oldida mas'uliyatli, yuqori madaniyatli va malakali shaxs sifatida shakllanadilar.

Kasbiy madaniyatni rivojlantirish – pedagogik faoliyat rivojining muhim tavsifini o'zida ifoda etib, ta'lim jarayonida pedagogik yondashuv, strategik maqsad va vazifalarni to'g'ri belgilash, qarorlar qabul qilish, ta'lim jarayonini loyihalashtirish, innovatsion pedagogik faoliyatni tashkil etish, ta'limni boshqarish hamda boshqaruv usullari, metodlari va tamoyillaridan samarali foydalanish orqali shaxs faolligini oshirish, o'z – o'zini namoyon etish imkoniyatini kengaytirish, jamiyat talablariga muvofiq faol harakatlanish va samarali muloqot ko'nikmalarini o'zlashtirish, egallagan bilim, ko'nikma va malakalarini amaliyotga tadbiq eta olish qobiliyati sanaladi. Kasbiy madaniyatni rivojlantirish jarayoni insondagi motivlar bilan bevosita bog'liq bo'lib, uning mohiyati - inson xulq-atvorining ichki barqarorligi, harakatga undovchi tushuncha sifatida ta'riflanadi. Motivatsiya esa “xulq-atvorni psixologik va fiziologik boshqarishning dinamik jarayoni” bo'lib, unga tashabbus, yo'nalganlik, tashkilotchilik, qo'llab-quvvatlashkabilarni kiritish mumkin. Bu kabi kabi sifatlarni shakllantirishda talabalarga taqdim etiladigan mustaqil ta'lim topshiriqlari muhim manba bo'lib xizmat qiladi.

Mustaqil ta'lim topshiriqlari talabalarning kasbiy madaniyatini rivojlantirishda muhim rol o'ynaydi. Ushbu topshiriqlar talabalarni mas'uliyatli, o'z-o'zini rivojlantirishga intiluvchi va kasbiy faoliyatda yuqori natijalarga erishuvchi mutaxassis sifatida shakllantiradi. Talabalar mustaqil ishlash jarayonida o'z vaqtini samarali boshqarish, ijodiy va tanqidiy fikrlash, amaliy topshiriqlarni bajarish orqali kasbiy ko'nikmalarni mustahkamlash imkoniyatiga ega bo'ladilar. Shuningdek, mustaqil ta'lim jarayoni orqali talabalar kasbiy etika va madaniyatni, jamoada ishlash qobiliyatini, zamonaviy texnologiyalardan foydalanish ko'nikmalarini rivojlantiradilar. Bu esa ularning kelgusidagi kasbiy faoliyatida muvaffaqiyatli bo'lishiga zamin yaratadi.

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TOMATO PEST TUTA ABSOLUTA IN TERMEZ DISTRICT OF SURKHANDARYA REGION. POPULATION-GENETIC MONITORING AND ECONOMIC SIGNIFICANCE**Karim Eshnazarov**

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Annotation. Tomatoes are the most consumed type of vegetables. A number of insects cause serious damage to tomatoes. Among them, the tomato moth is considered a serious pest of leaves and fruits. This article describes the effectiveness of drugs used against tomato moth.

Key words. Tomato, drug, clean product, bioecological control, control, tomato moth, crop, leaf, fruit, damage.

INTRODUCTION. Tomato (Latin: *Solanum lycopersicum*) is an annual, perennial herbaceous plant in tropical climates. It is widely cultivated as a vegetable crop. Although the scientific terminology uses the name tomato, in Uzbekistan both the plant and the fruit are called tomatoes or "pamildori" (among the people). In January-September 2022, Uzbekistan exported about 60 thousand tons of tomatoes worth \$ 45.1 million to 11 foreign countries. The volume of tomato exports decreased by 13 thousand tons compared to the same period in 2021. The countries to which Uzbekistan exported the most tomatoes in the first 9 months of 2022 were: Russia - 29.3 thousand tons; Kazakhstan - 23.8 thousand tons; Kyrgyzstan - 6.3 thousand tons; Tajikistan - 513 tons; Mongolia – 7.7 tons; UAE – 2.5 tons. The regions that exported the most tomatoes abroad in September were: Fergana region – 17 thousand tons; Khorezm region – 12 thousand tons; Bukhara region – 6.7 thousand tons. It is clear that protecting tomatoes from harmful organisms is one of the urgent issues. Tomato moth (*Tuta absoluta*) belongs to the order of Lepidoptera, the family of Gelechiidae. According to available data, in Uzbekistan in 2015 (current) the tomato moth was widely distributed in Bukhara, Navoi and Tashkent regions, and to a lesser extent in the Fergana Valley (prof. Sh.T. Khodjaev, B.Sc. F. Shamsitdinov). It is very likely that the moth has spread to other regions. In some places, farmers have sprayed tomato crops with this pest up to 20 times. The most unfortunate thing is that the harvest from the sprayed crops is immediately sold in the markets without maintaining the expiration date, which is not controlled by SES employees, as a result, there is a high probability that many people who eat such tomatoes are poisoned. Leaves heavily damaged by the moth die completely. The moth can reduce the yield of infected tomato plants by 80-100% and completely destroy the crop. From the day the damage begins, the moth can completely destroy a field of 1 ha in 2 weeks. The larva (worm) is whitish-yellow when it first emerges, 0.5 mm long, with a black head (diagnostic sign), then it grows and becomes light brown or yellowish-green in its 2nd-4th year; it lives 4-15 (on average 8) days, and at this time the 4th year is over. The mature larva is 8-9 mm long, it spins a silken cocoon, falls to the soil and pupates. The pupation takes place in the soil or among plant debris, sometimes on damaged and twisted leaves, in a silky cocoon for 10 days. It can also pupate in the pores of the leaves. The pupa is light brown in color, about 6 mm long. Imago: females live 10-15 days, males 6-7 days. Length 5-7 mm, wingspan 8-10 mm, brown or silvery in color, with characteristic black spots on the front wings, and filamentous (rosary-like) whiskers. The presence of filamentous

(rosary-like) whiskers, silvery-gray scales on the front wings, and characteristic black spots on the front wings are among the most important identification features of the pest. These include the symptoms of the moth larvae during their 1st to 4th instar stage. *Tuta absoluta* is a global invasive pest that mainly damages tomato crops, and its rapid population growth and resistance to pesticides are making it difficult to control. This article presents the results of observations conducted in a closed field in the city of Termez during August, September, and October, and their population genetic and economic significance. Although this observation was carried out without laboratory conditions, practical conclusions were drawn regarding the population dynamics, activation period, and pesticide resistance of the pest.



Research conducted in greenhouses of Termez district

Research methods. The survey was carried out in a closed field. The field was divided into 2 sections, sections 1 and 2 contain 30 main rows and 6 sub-rows each. An average of 145-150 seedlings are planted in each sub-row. Our observation in the field began in August, when soil preparation and disinfection for the crop were carried out, seedlings and cuttings were planted, and observation work was carried out from that time. Samples were collected and tested using pheromone traps and natural methods. Temperature and humidity levels were measured daily. Samples were taken every 25 meters along the diagonal of the field. The degree of damage to the leaves by pests and the time when the plant was severely damaged were monitored. When making calculations, 10 places of the monitored area are placed in a checkerboard pattern along the crop area and each plant (at least 100) is examined. The number of pests per 1 m² was determined based on the M.S. Gilyarov formula.

Research results.i. Results of observations and population dynamics conducted in Termez district in 2024

The following main conclusions were made during the observation, which lasted from August to October:

1. Increase in activity:

– Although the pest was relatively rare in August, 1-3 butterflies were detected in pheromone traps from August 20 to August 30. In the first 10 days of September, up to 3-7 were detected, in the second 10 days, up to 5-12 insects were detected, and in the third 10 days, up to 7-13 were detected. In September, the population increased sharply. This is due to the seasonal temperature comfort and the optimal microclimate of the indoor environment.

– The pest activity continued in October, with 5-11 moths detected in the first 10 days, 4-8 in the second 10 days, and 3-5 in the last 10 days. This indicates that *Tuta absoluta* can survive indoors even in winter.

2. Monitoring with Pheromone Traps:

– Monitoring was carried out using pheromone traps and it was observed how much the pest accumulates each month. The traps helped to effectively control the pest and determine the period of activity.

3. Climate Adaptability:

– Due to the high level of adaptability of the pest, it was found that it is difficult to control it indoors without pesticides.

Novelty and Importance of Population Genetic Analysis

1. Genetic Adaptation and Tolerance

– *Tuta absoluta* populations have the ability to adapt rapidly to pesticides. Population monitoring can determine when and in what periods this adaptation increases. This helps to develop strategies for the rational use of pesticides and chemical rotation.

2. Regional Diversity and Genetic Potential

– The genetic composition of pests can vary from region to region. Observations conducted in the field, when confirmed by laboratory analyses, allow us to understand the level of genetic adaptation of *Tuta absoluta* in this region.

3. Potential for Genetic Confinement in the Closed Field

– Genetic diversity can be limited due to population isolation in closed conditions. By analyzing the results of these observations, the effects of biological control strategies and pheromone traps are evaluated.

Economic Importance of Monitoring

1. Saving Chemicals

– Controlling populations with high levels of pesticide resistance increases pesticide consumption, which places an additional economic burden on agriculture. Based on the results of monitoring, it is recommended to use pesticides only when necessary, which will help reduce costs.

2. Ensuring Yield

– Significant losses can be observed in tomato crops due to *Tuta absoluta*. Identifying the periods of pest activity and taking prompt measures against it will allow maintaining yield.

3. Sustainable Ecological Control Strategies

– Less use of chemicals and use of biological control methods serve to maintain ecological balance. This increases the ecological purity of agricultural products and ensures their competitiveness in the market.

Innovative News and Future Research

1. Integrated Pest Management (IPM)

– This observation provides a basis for developing an integrated pest control strategy through the use of pheromone traps and rational use of pesticides. This control method is cost-effective and reduces environmental impacts.

2. Baseline Data for Genetic Studies

– The results of this observation serve as a valuable source for future genetic analyses conducted in laboratory conditions. Knowing the dynamics of the pest's activation on a monthly basis allows for the identification and comparison of genetic differences.

Conclusion

The results of the observation of *Tuta absoluta* conducted in a closed field in Termez conditions shed light on the population genetic novelty and economic importance of the pest. Since the pest is resistant to pesticides and has seasonal adaptations, it is important to monitor and control its dynamics. Based on the results of the monitoring, farmers can be given instructions on the effective use of pesticides and the use of pheromone traps. If genetic analyses are carried out in the laboratory in the future, the results of this monitoring will serve as a basis for this scientific research. This will allow the development of more effective and sustainable strategies for combating *Tuta absoluta*.

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EXPLORING THE CONCEPT OF MOTHERLAND: A COMPARATIVE ANALYSIS
OF UZBEK AND ENGLISH PERSPECTIVES**Kholturaeva Maftuna Akbaraliyevna**

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Annotation: This research explores the concept of "Motherland" in Uzbek and English cultures, focusing on its linguistic, cultural, and emotional significance. By comparing expressions, idioms, and cultural values associated with the term, the study identifies similarities and differences in how the idea of the motherland is perceived in both languages. The findings contribute to a deeper understanding of national identity and cultural worldview in a comparative linguistic context.

Keywords: Motherland, cultural values, linguistic worldview, Uzbek culture, English culture, comparative linguistics, national identity.

Annotasiya: Ushbu tadqiqot "Vatan" tushunchasini o'zbek va ingliz madaniyatlarida o'rganadi, uning lingvistik, madaniy va emotsional ahamiyatiga e'tibor qaratadi. Ushbu tushuncha bilan bog'liq iboralar, idiomalar va madaniy qadriyatlarni taqqoslash orqali ikkala tilda "Vatan" haqidagi tasavvurlar o'rtasidagi o'xshashlik va farqlar aniqlanadi. Tadqiqot milliy identitet va madaniy dunyoqarashni qiyosiy lingvistik kontekstda chuqurroq tushunishga hissa qo'shadi.

Kalit so'zlar: Vatan, madaniy qadriyatlar, lingvistik dunyoqarash, o'zbek madaniyati, ingliz madaniyati, qiyosiy lingvistika, milliy identitet.

Аннотация: Данное исследование изучает концепцию "Родины" в узбекской и английской культурах, акцентируя внимание на её лингвистическом, культурном и эмоциональном значении. Сравнивая выражения, идиомы и культурные ценности, связанные с этим понятием, исследование выявляет сходства и различия в восприятии "Родины" в двух языках. Результаты способствуют более глубокому пониманию национальной идентичности и культурного мировоззрения в сравнительно-лингвистическом контексте.

Ключевые слова: Родина, культурные ценности, лингвистическое мировоззрение, узбекская культура, английская культура, сравнительная лингвистика, национальная идентичность.

INTRODUCTION

The concept of "Motherland" holds a deep emotional, cultural, and linguistic significance across different societies. It serves as a foundation for national identity, connecting people to their homeland through shared heritage, language, and traditions. In Uzbek culture, the term "Vatan" often carries a strong spiritual and patriotic connotation, deeply rooted in history and literature. Similarly, the English word "Motherland" symbolizes a nurturing source of identity and belonging, though its usage and context differ. This paper seeks to explore the comparative perceptions of "Motherland" in Uzbek and English cultures. By analyzing language-specific idioms, cultural values, and linguistic expressions, the study aims to highlight both universal and unique aspects of this concept. Key research questions include: How is the notion of "Motherland" linguistically and culturally represented in Uzbek and English? What similarities and differences can be observed in their expressions? How do historical and social factors influence these perceptions? This study contributes to cross-cultural linguistics and provides insights into the cultural worldview embedded in language.

Methods

To achieve the study's objectives, a comparative linguistic and cultural analysis was conducted. Data were gathered from primary and secondary sources, including Uzbek and English literary texts, idiomatic dictionaries, and cultural studies. For Uzbek, the research focused on classical and contemporary works by authors like Alisher Navoi and Abdulla Qodiriy, while for English, texts by authors such as Shakespeare and contemporary writers were analyzed. Additionally, idiomatic expressions containing the concept of "Motherland" were extracted and categorized. The study employed a qualitative method to analyze the semantic, cultural, and emotional nuances of the term in both languages. Comparative linguistics tools were used to identify similarities and differences in usage. Furthermore, a survey was conducted among native speakers of both languages to understand their emotional associations with the term. Data from these surveys were analyzed statistically to support the qualitative findings. This mixed-methods approach ensured a comprehensive understanding of the concept from both linguistic and cultural perspectives.

Results

The findings reveal significant similarities and differences in how the concept of "Motherland" is perceived in Uzbek and English cultures. In Uzbek, "Vatan" is deeply tied to patriotism, sacrifice, and spiritual devotion. Common expressions like "Vatan uchun jon fido" (Sacrifice your life for the motherland) emphasize the strong emotional and moral commitment to one's homeland. In English, "Motherland" often carries a nurturing connotation, symbolizing a source of life and heritage, as seen in phrases like "return to the motherland." However, it lacks the same level of spiritual devotion found in Uzbek. Both cultures associate the concept with identity and belonging, but historical and geopolitical factors influence its representation. For instance, Uzbekistan's history of colonization and independence has imbued "Vatan" with a sense of struggle and resilience. In contrast, English expressions reflect a colonial history, where "Motherland" sometimes extends to the idea of empire. The survey results further confirmed these findings, with 80% of Uzbek respondents linking "Vatan" to sacrifice, compared to only 50% of English speakers associating "Motherland" with strong emotions.

Discussion

The comparative analysis underscores the cultural and historical factors that shape the linguistic representation of "Motherland" in Uzbek and English. The spiritual and patriotic weight of "Vatan" in Uzbek culture reflects a collective historical memory of struggle and resilience. This contrasts with the English perspective, where the concept is more nurturing and less tied to sacrifice. These differences highlight how language reflects a society's unique experiences and worldview. However, some universal aspects of the concept were also evident, such as its connection to identity, heritage, and emotional belonging. The findings suggest that while the concept of "Motherland" is universal, its cultural and linguistic representation is deeply context-dependent. This study contributes to cross-cultural understanding by providing a nuanced view of how a seemingly universal concept varies across cultures. It also highlights the importance of comparative linguistics in uncovering the interplay between language and culture. Future research could explore additional languages to broaden the scope of these findings.

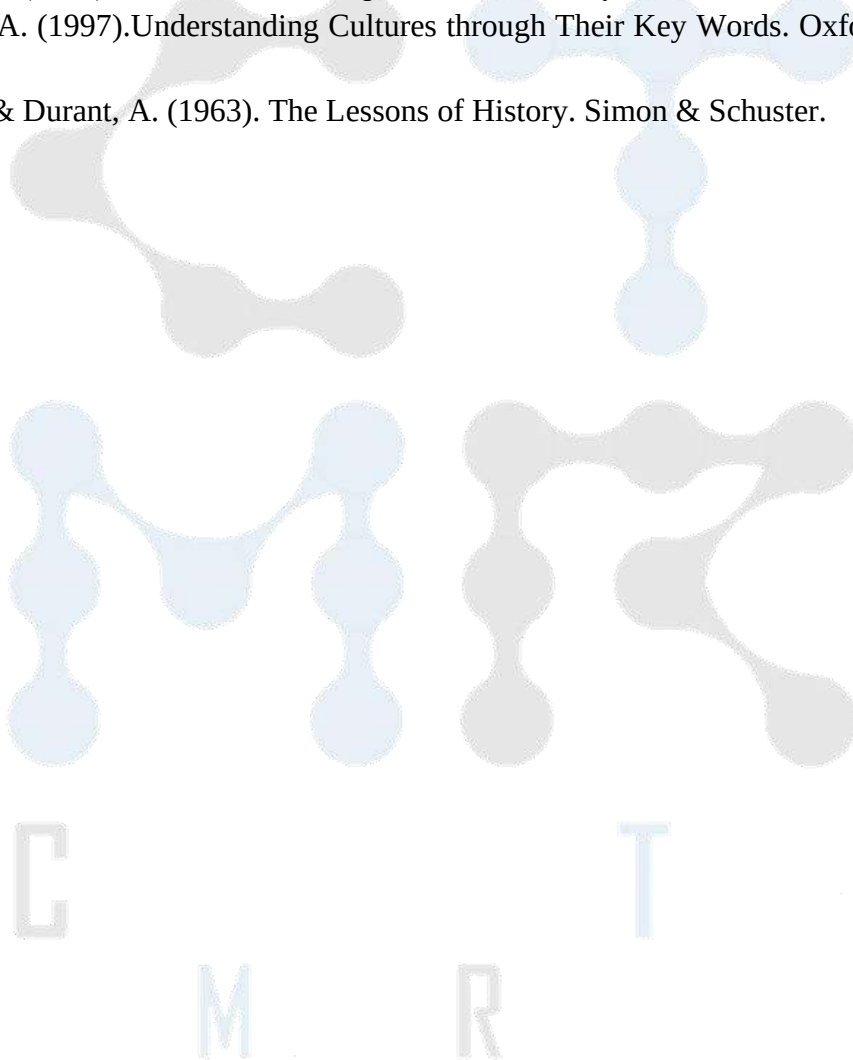
Conclusion

This study has explored the concept of "Motherland" through a comparative analysis of Uzbek and English cultures. By examining linguistic expressions, cultural values, and historical influences, it has highlighted both shared and distinct perceptions of this concept. The research findings emphasize the deep connection between language and cultural worldview, showing how a universal idea can take on different meanings across societies. For Uzbek speakers, "Vatan"

embodies sacrifice, devotion, and spiritual connection, while for English speakers, "Motherland" symbolizes nurturing heritage and identity. These insights contribute to cross-cultural understanding and provide a foundation for further studies in comparative linguistics. Understanding such concepts enhances communication and mutual respect among cultures, fostering a deeper appreciation of the diversity in human thought and experience.

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Abstract

The concept of meronymy—the semantic link between pieces and wholes—is examined in this article. The phrase, which comes from Greek, shows how a meronym indicates a component and its holonym indicates the entire; for example, "leaf" is a part of a "tree." This link is known in Uzbek as "partonymy," highlighting the language's relationship between parts and wholes. Examples of meronymy in both Uzbek and English are given in the paper. For instance, "house" has parts like doors and windows, whereas "body" has parts like arm, leg, and head. Understanding how languages convey part-whole relationships in diverse circumstances is improved by highlighting the complexity of meronymy and showing that different languages may represent these relationships in distinctive ways.

Keywords: Meronymy, semantic relations, part-whole relationships, holonym, components, partonymy, bodily parts, lexical units, semantic characteristics.

In English, the term meronymy comes from Greek μέρος-(méros)-“part”, and ὄνομα- (ónuma) -“name” is a semantic relation between a meronym denoting a part and holonym denoting a whole. In easier terms, a meronym is in a partrelationship with its holonym. For example, the leaf is a meronym of a tree, which is its holonym. Similarly, a ship's sail is both its meronym and holonym. Mereology is the study of certain whole-part interactions in English that are applied logically. A partial order of concept types that connects to the part-whole relation is called a meronymy. Partonymy is the term used to describe like linkages in Uzbek, such as this whole-part relationship. The study of all pieces coming together to form a single unit, which appears as semantic groups of lexemes, is known as partonymy. An important and interesting type of semantic relation, expressed in language, ‘is the relation between the parts of things and the wholes which they comprise’(1). Relationships which are expressed either with the term part, or which by their position in a part-whole expression signal part, are considered to be meronymic and to ‘structure semantic space in a hierarchical fashion’

Additionally, many languages have lexicalized this semantic relation, which can be used effectively in some contexts but not in others (2). Nevertheless, meronymy or part-whole relations seem to be highly complicated, most likely due to the absence of a singular meronymic relation. Instead, there are a number of distinct ones, each with unique semantic characteristics.

One kind of meronymic is one that makes a distinction between "components" and "objects," as in the case of a "wall" and a "house."

Another way of looking at this relation is as something identifiable (part) within a larger thing (whole). I also discuss the relation of ‘portions of masses’, a homeomeronymous relation, such as ‘a piece of pie’, even though these tend to be objects which are similar to each other and to the wholes to which they belong (3). When we use the word "part," we mean a "piece" that is indistinguishable until it separates from the bigger thing, the "whole." Understanding how languages truly convey the part-whole relationship is necessary to put meronymy into perspective. The terms "part" and "whole" can be used interchangeably in English, and a "part" can be described as "part of a whole" or as having numerous parts. A hand, for instance, can be discussed

as both a whole and a part at the same time; that is, it is made up of several components, including fingers, a palm, and so on, and it is a part of an arm. However, this English phrase is not exclusive nor universal.

Using the domain of bodily parts, we observe that whereas a single word in some lowland languages can refer to all three aspects of physical reality, in another, no one designation can do so.

It is essential to take into account the historical background and development of meronymy in both the English and Uzbek languages when examining this idea. Linguists have studied how cultural and socioeconomic factors have impacted the understanding of part-whole interactions across time. For example, anatomical knowledge and cultural behaviors related to health and well-being have influenced how English speakers refer to different body parts. The interdependence of language and culture is further demonstrated by the Uzbek language, which reflects customs and cultural meanings associated with various bodily parts and items.

Although the idea of meronymy is present in many languages, cross-linguistic comparisons show that these ties can be expressed quite differently. While some languages may need several phrases for each relationship, others may use a single term that encompasses several meronymy-related concepts. This variance suggests that linguistic patterns and cognitive processes are intricately linked, offering insight into how other cultures view and classify their environment.

Beyond linguistics, meronymy has real-world implications in domains like cognitive science and artificial intelligence. Recognizing part-whole relationships, for example, can improve the creation of algorithms in natural language processing that more effectively read human language. Since teaching students about meronymy can help them with vocabulary acquisition and comprehension, this knowledge can also enhance instructional tactics.

People's ability to identify and apply meronymy in everyday conversation is greatly influenced by cognitive factors. According to research, speakers of different languages may have distinct mental representations of part-whole relationships, which might affect how they process information and create knowledge.

The use of meronymy is changing in light of contemporary technologies, social media, and digital communication. As individuals use technology, new words and idioms appear that represent linguistic and social shifts. Because language is dynamic, it is necessary to continue studying how meronymy changes in the digital era.

In Uzbek language, meronymy is the new term and it shows part as a whole or a whole as parts.

Different examples of meronymy in English and Uzbek

	English	Uzbek
1	Plant	O'simlik
	Meronymies: a root, a stem	Meronomlar: ildiz, barg, tana
2	Body	Tana
	meronymies: arm, leg, head, elbow, finger	meronomlar: qo'l, oyoq, bosh, barmoqlar
3	A knife	Pichoq
	meronymies: a blade and a handle	meronomlar: sop, tig'
4	A house	uy

	meronymies: door, a handle, a window	meronimlar: eshik, deraza,
5	bird	Qush
	meronymies: feathers, a beak, and wings.	meronimlar: patlar, tumshuq, va qanotlar

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**АНАЛИЗ ФИЗИЧЕСКОЙ ПОДГОТОВКИ КВАЛИФИЦИРОВАННЫХ БЕГУНИЙ
В БЕГЕ НА 400 МЕТРОВ С БАРЬЕРАМИ.****Асанова Н.В.**

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Аннотация. В статье представлены показатели антропометрических данных, физическая подготовленность, техническая подготовленность. Анализируя данные показатели, было установлено, что физическая и техническая подготовленность бегуний в барьерном беге играет важную роль в подготовке барьеристок. Важность в подготовке бегуний в барьерном беге состоит, не только в правильном дозировании тренировочных нагрузок, но и своевременная корректировка их для успешного выступления барьеристок на различных уровне соревнований.

Ключевые слова: Объем, нагрузка, физическая подготовленность, спортивный результат, методы, барьеристки.

Актуальность. Одним из важнейших этапов подготовки квалифицированных бегуний в бегуний в барьерном беге является построение годичного тренировочного процесса. Не смотря на большое количество проведенных исследований в физической и технической подготовленности бегуний в барьерном беге изучены недостаточно. Рост спортивного результата в мире и жесткая конкуренция среди женщин в барьерном беге требуют разработки новых методов тренировки и средств подготовки, позволяющий раскрыть более высокий уровень барьеристок. Доказанно, на сколько гармонично и рационально тренером построен тренировочный процесс, то и на столько же будут раскрыты потенциальные возможности барьеристок.

Главные задачи бегуний в барьерном беге – развитие скоросно-силовые качества, с сохранением ритма- темпового бега и длины бегового шага по дистанции, а также повышение уровня технической подготовленности бегуний при преодолении барьеров.

Стоит отметить, что в основе успешного выступления бегуний в барьерном беге кроется в рациональном распределении средств и методов физической и технической подготовленности на всех этапах многолетней подготовки. Потому как, нужно расширить поиск специальных средств подготовки для повышения спортивного результата бегуний в барьерном беге.

Цель исследования: Совершенствование методов обучения у квалифицированных бегуний в барьерном беге.

Организация и методы исследования. Для решения поставленных задач использовались следующие методы исследований:

- 1 Антропометрический метод
- 2 Педагогическое наблюдение
- 3 Педагогическое тестирование

Таблица 1

Модельные характеристики у бегуний в барьерном беге.

Показатели	Спортивный разряд	
	II взрослый	I взрослый
Антропометрические		
Рост (см)	151-156	161-164
Вес(см)	46-49	51-55
Длина ноги (см)	63-68	66-70
Длина бедра(см)	30-33	33-37
Длина голени (см)	29-31	32-35
Физические качества		
Прыжок в длину с места (см)	198-201	220-230
Тройной прыжок с места (см)	606-615	650-670
Десятерной прыжок с места (см)	2080-2100	2130-2160
Бросок ядра 4 кг спиной вперед (см)	875-890	930-945
Бросок ядра 4 кг вперед (см)	800-820	880-900
Бег 300 м с барьерами (сек)	55,4-55,0	51,30-51,50
Технические		
Бег 100м(сек)	15,1-15,3	13,8-14,20
Бег 400 м (сек)	75,1-75,8	67,3-67,7
Бег 400 м с барьерами (сек)	81,1-81,9	71,2-72,3
Разница во времени затраченное на преодоление всех 10 барьеров (сек)	5,9-6,3	4,2-4,6

Результаты исследования и их обсуждение.

Определенно важно помнить, что структура нагрузки состоит из объема, интенсивности и технических навыков при преодолении барьеров у барьеристок. При дозировании в каждом из трех этих составных частей нужно учитывать рост, возраст, уровень физической и технической подготовленности, этап подготовки барьеристок.

При распределении нагрузки в тренировочном объеме количество повторений могут быть разными при влиянии различных факторов. Стоит учитывать, к примеру такой фактор как исходный технический уровень бегунии в барьерном беге. Известно, что уровень технического мастерства цениться в быстром преодолении барьера бегуний в барьерном беге. Для развития технического уровня важны не так важно количество его повторений, а качество выполнения данного упражнения в искусственно усложненных условиях его выполнения. Что не скажешь в развитии физического уровня подготовленности так, как там без набранного определенного объема упражнений и беговых отрезков невозможно показать высокий спортивный результат на соревнованиях.

Педагогическое тестирование — это отличный способ в определение текущего уровня физической и технической подготовленности бегуний. Именно подобранная батарея

тестов раскрывает в каком направлении спортсмен нуждается в повышении результатов и в каком направлении стоит больше выделить тренировочной нагрузки для повышения спортивного результата.

Заключение

1. Результаты исследований показали, что комплексное изучение физического и технической подготовленности бегуний в барьерном беге раскрывают содержание по этапному педагогическому контролю и позволяют рекомендовать в практику подготовки, а также в целях отбора перспективных бегуний в барьерном беге.
2. Проведение исследований утверждают, что метод вариативного использования высоты барьеров содействуют успешному быстрому преодолению барьеров, формированию длины бегового шага с сохранением его длины и частоты шагов по всей дистанции.
3. Таким образом, одной из важнейших предпосылок эффективного управления тренировочным процессом является наличие модельных характеристик бегуний в барьерном беге на всех этапах подготовки.

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КЛАССИФИКАЦИЯ МАГНЕТИТОВЫХ АДСОРБЕНТОВ ДЛЯ УДАЛЕНИЯ РАДИОНУКЛИДОВ ИЗ ОКРУЖАЮЩЕЙ СРЕДЫ

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Введение. Магнетитовые адсорбенты (Fe_3O_4) становятся важными материалами для удаления радионуклидов из водных и почвенных растворов. Эти адсорбенты отличаются рядом преимуществ, включая высокую поверхность для адсорбции, возможность магнитного отделения и способность к восстановлению. Учитывая глобальные экологические проблемы и необходимость очистки водоёмов и почвы от радиационных загрязнителей, магнетитовые адсорбенты привлекают внимание исследователей как эффективное средство для удаления радионуклидов. Однако, для того чтобы максимально эффективно использовать магнетит в этих процессах, необходимо применять различные модификации и улучшения его свойств.

Классификация магнетитовых адсорбентов для удаления радионуклидов**1. Чистые магнетитовые адсорбенты**

Чистый магнетит представляет собой базовый материал, который эффективно удаляет радионуклиды в воде, но ограничен из-за склонности к агрегации частиц, а также недостаточной селективности по отношению к различным радионуклидам. Для решения этих проблем часто применяются дополнительные модификации.

2. Функционализированные магнетитовые адсорбенты

В этих материалах магнетит покрывается химическими группами, такими как аминокислоты, карбоксильные группы и другие органические или неорганические молекулы, что значительно повышает селективность и ёмкость адсорбции для радионуклидов. Эта модификация позволяет эффективно удалять определённые радионуклиды из сложных загрязнённых сред.

3. Композитные магнетитовые адсорбенты

Композитные материалы, созданные путём комбинирования магнетита с углеродными материалами, силикатами или металлами, обладают улучшенными характеристиками, такими как высокая стабильность, большая адсорбционная ёмкость и предотвращение агрегации. Эти материалы обеспечивают более эффективную очистку воды от радионуклидов.

4. Гибридные магнетитовые адсорбенты

Гибридные адсорбенты включают магнетит в сочетании с металл-органическими каркасами (MOF) или ковалентно-органическими каркасами (COF), которые обладают высокой пористостью и селективностью. Эти материалы могут быть использованы для удаления специфичных радионуклидов и других загрязнителей, предлагая большие перспективы для удаления радиоактивных загрязнителей.

5. Производные магнетитовые адсорбенты

Включают такие материалы, как маггемит, получаемые в результате модификации магнетита. Эти материалы обладают изменёнными магнитными и химическими

свойствами, что позволяет более эффективно удалять радионуклиды, которые трудно захватываются стандартными магнетитами.

Кверцетин (3,3',4',5,7-пентагидроксифлавонон) является природным пищевым флавоноидом, обладающим способностью образовывать стабильные комплексы с переходными металлами (Fe, Co, Ni, Cu и Zn). С этой точки зрения, наночастицы Fe_3O_4 , покрытые кремнеземом, были модифицированы кверцетином и использованы в качестве адсорбента для поглощения уранила (UO_2^{2+}) из обогащенных образцов почвы и коммерческой (Nestle) питьевой минеральной воды. Этот адсорбент продемонстрировал максимальную адсорбционную способность 12,3 мг/г при pH 5 в деионизированной воде. Кроме того, процесс адсорбции был быстрым и достигал устойчивого состояния за тридцать минут.

Ли и др. исследовали реактивность различных органических соединений, включая аминопропил, бензоилтиокарбамид (BT), дигидроимидазол (DIM), полиариламидоксим (AD), фосфонат (PP), фосфонат-амино (PPA), хлорпропил, поли(пропиленмин) (PPI), поли(амидоамин) (PAMAM), в мезопорах магнитных мезопористых кремнеземных частиц (MMSN) размером 3 нм в отношении урана в искусственных подземных водах при низком и высоком pH. В кислой среде (pH 3,5) MMSN-PP оказался лучшим сорбентом с максимальной адсорбционной способностью для U(VI), равной 37,5 мг/г. В то же время, в щелочной среде (pH 9,6) MMSN-PPI продемонстрировал максимальную адсорбционную способность для U(VI), равную 133,3 мг/г.

Заключение: Магнетитовые адсорбенты представляют собой многообещающие материалы для решения проблемы удаления радионуклидов из загрязнённых водоёмов и почвы. Классификация этих материалов даёт возможность более детально изучить различные подходы и методы, направленные на улучшение их эффективности и селективности. Функционализация, создание композитных и гибридных материалов, а также использование производных магнетита открывают новые горизонты в области очистки окружающей среды от радионуклидов.

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Mashrabboyeva Ulfatoy Elyorbek qizi

Annotatsiya: Ushbu maqolada global ekologik muammolar va ularning turlari, tarqalishi asosiy tabiat hamda insoniyatga umumiy ta'siri haqida bayon etilgan. Shu bilan birgalikda asosiy urg'u issiqxona effektiga berib o'tilgan.

Annotation: This article describes global environmental problems and effects on people's life. Furthermore, it is all about the "greenhouse effect" in this article.

Аннотация: В данной статье изложены глобальные экологические проблемы, виды, распространение, общее влияние на природу и человечество. Особое внимание уделено парниковому эффекту.

Kalit so'zlar: Ekologik muammolar, suv ifloslanishi, havo ifloslanishi, global iqlim, issiqxona effekti, is gazlari, suv bug'lari.

Kirish. Dunyo kundan kunga ko'plab ekologik muammolarga duch keladi. Ushbu muammolarning ba'zilar, masalan, global isish, kislota yomg'iri, havo ifloslanishi va suv ifloslanishini o'z ichiga oladi. Bu muammolarning eng katta sababi odamlar dunyodagi dominant turga aylanganidan keyin resurslarni tezda iste'mol qilishidir. Bunday tez iste'mol va aholining o'sishi bilan atrof muhitga zarar yetadi [1].

Asosiy qism: Issiqxona effekti — ekologik hodisa bo'lib, quyoshdan kelgan nurlarning bir qismi Yer yuziga singib, natijada o'rtacha sirt harorati ko'tariladi. Bu esa hayot mavjud bo'lishiga imkon beradi. Quyoshdan kelayotgan nurlarning yer atmosferasida dimlanib, jamlanib qolish hodisasiga issiqxona effekti deyiladi.

Suvning ifloslanishi: Dunyo ko'pchiligi suvdan iborat. Bu suvlarning ba'zilar odamlar uchun uzoq vaqt va toza ichimlik suvi uchun yetarli. Lekin muammo bor; bu ichimlik suvining tarkibi kundan-kunga o'zgarib turadi va bu suvlar ichimliksiz suv kabi ifloslangan. Suvning ifloslanishining bir sababi odamlarning chiqindilari hisoblanadi [5].

Havoning ifloslanishi: Suv ifloslanishi kabi, odamlarning havo ifloslanishiga ta'siri sezilarli. Bundan tashqari, tabiiy ravishda havo ifloslanishiga olib keladigan hodisalar mavjud. Ushbu voqealarning misollari vulqon harakati va o'rmon yong'inlari (odamlar tomonidan ham keltirilishi mumkin).

Odamlar tomonidan ifloslangan havo ifloslanishi tabiiy havo ifloslanishiga qaraganda ko'proq misollar keltirishi mumkin.

Kelib chiqish sabablari: Yer atmosferasiga turli xil zararli sanoat gazlari chiqishi va u yerda to'planib qolishi sababli ushbu hodisa kuzatiladi. Ya'ni, yer quyoshdan kelgan nurning ma'lum qismini yana koinotga qaytaradi. Biroq, ushbu hodisada atmosferada to'planib qolgan notabiiy gazlar (yoqilg'i sanoati natijasida hosil bo'lgan gazlar) quyosh nurlarini o'ziga yutadi. Natijada iqlimga ta'sir etadigan issiqxona qatlami hosil bo'ladi. Ushbu muammo yuzaga kelishining asosiy sababi o'rmonlarning kesilishi va qazilma yoqilg'ilardan keng miqyosda foydalanilayotganidir [2].

Issiqxona effekti mexanizmini quydagicha tushuntirish mumkin: karbonat angidrit gazi qoplamidan Quyosh radiatsiyasi qisqa to'lqinli spekt qismida bimalol o'tishi mumkin, lekin, unda yer sirtidan uzun to'lqinli nurlanish sezilarli darajada yutiladi. Shuning uchun ham atmosferada

karbonat angidrit gazi massasining ortishi natijasida undan quyida joylashgan havo qatlamida harorat ko'tariladi. Bu esa global isishning o'sishiga olib keladi [4].

Yer iqlimiga Quyosh energiyasining doimiy oqimi ta'sir ko'rsatadi. Yerga kelayotgan energiyaning 30 % yana kosmosga qaytadi. Taxminan 15 % atrofidagi energiya atmosferada yutiladi. Qolgan kata qismi atmosferadan o'tib, Yer sirtini isitadi.

Asosiy issiqxona effekti hosil qiluvchi gazlarga suv bug'lari, karbonat angidrit, troposferadagi azon, metan, azot oksidi va sanoat korxonalaridan chiqadigan gazlar kiradi. Bu gazlarning barchasi, sanoat korxonalaridan chiqadigan gazlarni hisobga olmaganda, tabiiy kelib chiqishidir. Ularning hammasi birgalikda atmosfera havosining 1% dan kamrog'ini tashkil etadi. Lekin "tabiiy issiqxona effekti"ni yaratish uchun shuning o'zi yetarli. Shu tufayligina sayyoramiz harorati u yo'q deb hisoblagandagina nisbatan 30°C yuqoridir. Bu narsa biz bilgan Yerdagi hayot uchun o'ta muhim hisoblanadi [3].

Tabiiy issiqxona effektiga ta'sir ko'rsatadigan asosiy omil – suv bug'laridir. Atmosferada uning mavjudligi antropogen faoliyat bilan bevosita bog'liq emas. Qayd etilishi lozim, sezilarli "ijobiy teskari bog'liqlik" natijasida suv bug'lari iqlim o'zgarishida muhim o'rin egallaydi. Issiq havo o'zida kata miqdordagi namlikni ushlab turishi mumkin. Buning natijasida, modellastirish asosida ishlab chiqarilgan suv bug'lari miqdorining ortishiga olib keladi. Bu esa o'z navbatida issiqxona effektining kuchayishiga hissa qo'shadi.

Global isish muammosi yoki issiqxona effektiga asosiy sabab, atmosferaga har xil gazlarning ko'p chiqarilishi yoki antropogen oqibatlar ta'siridir. Sivilizatsiya natijasida sanoat va texnika rivojlandi, avtomobillar soni keskin ko'paydi, o'rmonlar, o'tloqlar kamayishi tufayli karbonat angidrit gazi miqdori oshdi. Sanoat chiqindilari qayta ishlanmasligi ham atmosferaga chiqadigan karbonat angidrit gainning oshib ketishiga saba bo'lmoqda. Demak, u yoki bu tarzda hosil bo'lgan karbonat angidrit va boshqa zararli gazlar havoga tarqaladi, ularning ko'zga zarrachalarini g'ira – shira pardalar hosil qilib, havoda muallaq suzib turadi. Issiqlik effektining asosiy manbai suv bug'i va ayerozol hisoblanadi. Biz atmosfera tarkibidagi gazlar muvozanatini o'zgartirdik va bunda davom etmoqdamiz. Bu fikr ayniqsa asosiy "Issiqxona gazlari" karbonat angidrit, metan va azot oksidi uchun to'g'ridir [3].

O'zbekiston shaharlarida "issiqxona effekti" va daraxtlarning kamayib borishi bilan kecha va kunduz o'rtasidagi harorat farqi qisqarib boryapti. Xususan, Toshkent shahrida jazirama kunlari keskin qizigan asfalt yuzasi, yashillikdan mosuvo cho'llashgan shahar landshafti kabi manzaralar kechalari haroratning tezda pasayishiga yo'l bermayapti. Issiqxona effektida gazlar salmog'ining ortishi kechalari ham havo haroratning ko'tarilishiga olib kelib, kunduz va kechasi qayd etiladigan havo harorati maksimum va minimumlari orasidagi farq kamayib borishida namoyon bo'ladi [6].

Xulosa: Quyosh nurlarining [koinotga](#) qaytib chiqib ketmasligi oqibatida Yer yuzi me'yoridan ortiq qiziydi. Ushbu hodisa oqibatida [sutkalik](#) eng yuqori va eng past [harorat](#) orasidagi farq kichik bo'ladi. Bu esa yer yuzida issiqlikning keskin oshishiga olib keladi. Yer yuzida o'rtacha haroratning ortishi oqibatida qutb muzlari eriydi, bu esa dengiz sathining ko'tarilishiga olib keladi. Natijada bir qancha orollar suv ostida qoladi. Quruqlikda esa cho'llashish hodisasi kuzatiladi. Atmosferada issiqxona effektini keltirib chiqaruvchi gaz miqdorining ortishi sayyoradagi tabiiy issiqlik muvozanatini buzadi. [Flora](#) va [fauna](#) dunyosining keskin issiqlik o'zgarishiga tez moslasha olmasligi sababli [tabiatga](#) yirik miqyosda zarar yetadi. Shuningdek aholi zich joylashgan shaharlarda aksariyat qariyalar va surunkali kasali bor qatlam jaziram issiqda aziyat chekadi. Aholi sog'ligiga issiqlikning keskin oshishi salbiy ta'sir ko'rsatadi.

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CONTRAST ASSOCIATED NEPHROPATHY AFTER INTRAVENOUS ADMINISTRATION: HOW TO ACCESS CHRONIC KIDNEY DISEASE?**Mustafaeva Malika Rustamovna.**

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Chronic kidney injury in the setting of contrast medium (CM) administration has been extensively studied after it was first described in 1954 [1]. Since then, significant research has been devoted to the recognition, diagnosis, and prevention of this entity. Most of the earlier studies have focused on the consequences of intraarterial (IA) CM administration in general and cardiac angiography in particular. It was not until 1985 that researchers analyzed the renal function of patients after CM-enhanced computed-tomography (CT) scans.

Over the last two decades, however, new research has challenged this paradigm. Recent studies surrounding IV administration of CM reported a much lower nephrotoxic risk than has been commonly cited in the past, especially in patients without significantly impaired renal function [5–8]. Some have suggested that renal failure after intravenous CM had been exaggerated and its true incidence and impact are more limited than initially thought.

When describing or studying renal failure in the setting of CM administration, the label of ‘contrast-induced nephropathy’ was used indiscriminately on all patients. Historically, it was defined as a change in serum creatinine (SCr) that happened shortly after CM administration. The magnitude of change of SCr and the time period over which this occurs varies greatly between studies. Some authors used an absolute change of SCr (as low as 0.3 mg/dl to 0.5 mg/dl) whereas others relied on a percent increase from baseline (25% to 50%). Similarly, time periods of 24–48, 48–72, 96 h, 5 days, and an entire inpatient stay have been used.

The more important issue, is the fact that renal failure in the setting of CM consists of not one but two distinct entities: contrast-induced nephropathy (CIN) and contrast-associated nephropathy (CAN). CIN is defined as a sudden deterioration in renal function occurring within 48 h of CM administration and after the exclusion of other nephrotoxic factors. CAN is a general term used to describe any deterioration in renal function that occurs within 48 h following intravascular administration of iodinated contrast medium.

If we look closer, however, these studies more likely represent CAN incidence rather than CIN. Almost all of them reported rates of AKI occurring in the setting of CM administration and none actually truly ruled out other causes or entertained alternative explanations. Adding credence to this is a study by Newhouse et al.

on 32 161 hospitalized patients [22]. SCr was measured for five consecutive days and patients did not receive any contrast administration. The authors found that more than half the patients had a change of SCr of at least 25%. Patients with creatinine at baseline of 0.6–1 mg/dl, 7% had an increase of 0.6 mg. In those with baseline creatinine over 1.0 mg/dl, there was a 25% increase in SCr. The fluctuation of SCr in this study is similar to the changes used to define AKI in the setting

of CM. Since these changes occurred without CM administration, AKI is more likely to be happening in conjunction with rather than due to CM. We should therefore consider them to represent CAN rather than CIN.

A recent prospective trial yielded similar findings. A cohort of 1009 randomly selected patients from the SCAPIS trial had their SCr monitored over 3 days after receiving intravenous CM. The impact of CM on SCr did not exceed intra-individual background fluctuations. Early molecular markers of AKI were measured in patients with CM and were not found to be elevated. In 501 patients with mild chronic kidney disease, there were no differences in kidney injury molecule-1 (KIM-1) and neutrophil gelatinase-associated lipocalin (N-GAL) in patients that had AKI or not after a CT with CM. Also in a study of 77 critically ill patients tissue inhibitor of metalloproteinase 2 (TIMP-2) and insulin-like growth factor-binding protein 7 (IGFBP-7) were not different patients with or without AKI. All of these substances are considered to be among the early markers of tubular damage. These results further suggest that a substantial proportion (if not all) of the AKI seen in the setting of CM does not represent states of true tubular damage but rather pre-renal hypovolemic (reversible) states. This again supports the notion that reported rates of AKI are more likely to be representative of CAN.

Decreased baseline renal function is one of the most consistently reported risk factors for the development of AKI. In the setting of intravenous administration of CM, but not all studies showed that as well. Although it's still unclear whether this is due to the hemodynamic changes in hospitalized patients, the underlying risk factors (such as diabetes, hypertension), the patient's medications (such as ACE or ARB), or secondary to the intravenous administration of CM. From our review of the available literature, the risk for patients with $GFR > 60 \text{ mL/min/1.73 m}^2$ seems negligible. For patients with GFR of $30\text{--}60 \text{ mL/min/1.73m}^2$, the risk does not seem substantial but is probably present (although unclear to which degree) in patients with $GFR < 30 \text{ mL/min/1.73 m}^2$. As a point of emphasis, these conclusions are based on retrospective studies that were not powered to adequately answer that specific question [10]. Another caveat is that appropriate estimation of GFR using SCr-based equations is done with stable laboratory value, this can be difficult to encounter in the hospital setting. The use of such equations is both practical (readily calculated in most chemistry results) and effective as it applies to the majority of patients with certain exceptions. GFR calculation has limitations in patients with very low (such as in older patients) or high muscle mass; which leads to an over or underestimation of renal function, respectively. An alternative means of GFR calculations in patients can be via the use of Cystatin C, which may be more accurate, and less likely to be affected by differences in patient body compositions.

In summary, the results of the available studies show that CIN is likely less frequent than initially thought. Most of the research probably included a substantial number of patients with CAN rather than CIN and the independent risk attributable solely to CM is unclear. Patients with $GFR > 60 \text{ mL/min/1.73 m}^2$ have a negligible risk of AKI. Advanced renal failure ($GFR < 30 \text{ mL/min/1.73 m}^2$) is probably a risk factor for CIN but in the clinical setting, the underlying patient's conditions and medications also contribute to a significant extent and limit any definite conclusions.

Нефропатия, ассоциированная с контрастированием, после внутривенного введения.

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Острое повреждение почек при введении контрастного вещества (КМ) было широко изучено после того, как оно было впервые описано в 1954 году. С тех пор значительные исследования были посвящены распознаванию, диагностике и профилактике этого заболевания. Большинство более ранних исследований были сосредоточены на последствиях внутриартериального введения КВ в целом и ангиографии сердца в частности. Только в 1985 году исследователи проанализировали функцию почек пациентов после компьютерной томографии (КТ) с усилением КТ.

Однако за последние два десятилетия новые исследования поставили под сомнение этот подход. Недавние исследования, связанные с внутривенным введением КВ, показали гораздо более низкий нефротоксический риск, чем обычно указывалось в прошлом, особенно у пациентов без существенных нарушений функции почек. Некоторые предположили, что почечная недостаточность после внутривенного введения КВ была преувеличена и ее истинная частота и последствия более ограничены, чем первоначально предполагалось.

При описании или изучении почечной недостаточности в условиях введения КВ термин "нефропатия, вызванная контрастированием" использовался без разбора для всех пациентов. Исторически это определялось как изменение уровня креатинина в сыворотке крови (SCr), которое происходило вскоре после введения КВ. Величина изменения SCr и период времени, в течение которого это происходит, сильно различаются в разных исследованиях. Некоторые авторы использовали абсолютное изменение SCr (от 0,3 мг/дл до 0,5 мг/дл) в то время как другие полагались на процентное увеличение по сравнению с исходным уровнем (от 25% до 50%). Аналогичным образом использовались периоды времени 24-48, 48-72, 96 часов, 5 дней и все время пребывания в стационаре.

Более важным вопросом является тот факт, что почечная недостаточность при КВ состоит не из одной, а из двух различных форм: контрастно-индуцированной нефропатии (CIN) и контрастно-ассоциированной нефропатии (CAN). CIN определяется как внезапное ухудшение функции почек, возникающее в течение 48 ч после введения КВ и после исключения других нефротоксических факторов. CAN - это общий термин, используемый для описания любого ухудшения функции почек, которое происходит в течение 48 ч после внутрисосудистого введения йодсодержащего контрастного вещества.

Недавнее проспективное исследование дало аналогичные результаты. У когорты из 1009 случайно отобранных пациентов, участвовавших в исследовании SCAPIS, в течение 3 дней после внутривенного введения КВ контролировался SCr. Влияние КВ на SCr не превышало внутрииндивидуальных фоновых колебаний. Ранние молекулярные маркеры ОПП были измерены у пациентов с КМ и не было обнаружено повышенного уровня. У 501 пациента с хроническим заболеванием почек легкой степени тяжести не было выявлено различий в молекуле повреждения почек-1 (KIM-1) и липокаине, ассоциированном с нейтрофильной желатиназой (N-GAL), у пациентов с ОПП или без него после КТ с КВ. Также в исследовании 77 тяжелобольных пациентов, получавших тканевой ингибитор металлопротеиназы 2 (TIMP-2) и инсулиноподобный фактор роста, связывающий белок 7 (IGFBP-7), не было различий у пациентов с ОПП или без него. Все эти вещества считаются одними из ранних маркеров повреждения канальцев. Эти результаты также свидетельствуют о том, что значительная часть (если не все) ОПП, наблюдаемых на фоне КВ, представляет собой не состояния истинного повреждения

канальцев, а скорее предренальные гиповолемические (обратимые) состояния. Это еще раз подтверждает мнение о том, что зарегистрированные показатели ОПП, скорее всего, являются репрезентативными для CAN.

Снижение исходной функции почек является одним из наиболее часто регистрируемых факторов риска развития ОПП. В условиях внутривенного введения КВ, но не все исследования показали и это. Хотя до сих пор неясно, является ли это связано с изменениями гемодинамики у госпитализированных пациентов, основными факторами риска (такими как диабет, гипертония), принимаемыми пациентом лекарствами (такими как АПФ или БРА) или вторично по отношению к внутривенному введению КВ. Из нашего обзора доступной литературы следует, что риск для пациентов со СКФ > 60 мл/мин/1,73 м² представляется незначительным. Для пациентов со СКФ 30-60 мл/мин/1,73 м² риск не представляется существенным, но, вероятно, присутствует (хотя неясно, в какой степени) у пациентов со СКФ < 30 мл/мин/1,73 м². В качестве акцента, эти выводы основаны на ретроспективных исследованиях, которые не смогли адекватно ответить на этот конкретный вопрос. Другим предостережением является то, что надлежащая оценка СКФ с использованием уравнений, основанных на SCr, проводится при стабильных лабораторных показателях, с этим может быть трудно столкнуться в условиях больницы. Использование таких уравнений является как практичным (легко вычисляемым в большинстве результатов химии), так и эффективным, поскольку оно применимо к большинству пациентов, за некоторыми исключениями. Расчет СКФ имеет ограничения у пациентов с очень низкой (например, у пожилых пациентов) или высокой мышечной массой; что приводит к завышению или недооценке функции почек, соответственно. Альтернативным способом расчета СКФ у пациентов может быть использование цистатина С, который может быть более точным и с меньшей вероятностью подвержен влиянию различий в составе тела пациентов.

Таким образом, результаты имеющихся исследований показывают, что CIN, вероятно, встречается реже, чем первоначально предполагалось. Большая часть исследований, вероятно, включала в себя существенную количество пациентов с CAN, а не CIN, и независимый риск, связанный исключительно с КВ, неясны. Пациенты со СКФ > 60 мл/мин/1,73 м² имеют незначительный риск развития ОПП. Прогрессирующая почечная недостаточность (СКФ < 30 мл/мин/1,73 м²), вероятно, является фактором риска развития CIN, но в клинических условиях сопутствующие заболевания пациента и лекарственные препараты также вносят значительный вклад и ограничивают любые определенные выводы.

IMPROVING THE ACCOUNTING OF MORTGAGE LOANS IN COMMERCIAL BANKS

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Abstract: This article examines the current challenges faced by commercial banks in accounting for mortgage loans and outlines actionable strategies for improvement. By leveraging advanced technologies, refining internal processes, and fostering a culture of continuous learning, banks can achieve greater operational efficiency and strengthen their mortgage loan portfolios. The recommendations provided aim to align accounting practices with global standards while enabling banks to meet the demands of an increasingly complex financial landscape.

Keywords: *Mortgage loan accounting, commercial banks, risk management, regulatory compliance, IFRS, advanced accounting software, data management, impairment calculation, internal controls, financial transparency, operational efficiency, credit risk assessment, technological integration, banking sector stability.*

INTRODUCTION

Mortgage loans are a cornerstone of the banking industry, contributing significantly to both financial institutions' profitability and the economic development of nations by facilitating home ownership. However, the effective management and accounting of these loans are becoming increasingly complex due to evolving financial regulations, diverse loan structures, and the integration of advanced technologies. Inaccurate accounting not only undermines a bank's financial stability but also exposes it to risks such as regulatory penalties, impaired stakeholder trust, and operational inefficiencies.

The dynamic nature of the financial environment, characterized by frequent updates to international standards such as IFRS 9, demands a proactive approach to mortgage loan accounting. Banks must adopt innovative solutions and standardized practices to address challenges such as impairment calculation, data management, and credit risk assessment. Moreover, the transition from traditional accounting methods to technology-driven processes is imperative for ensuring compliance, enhancing accuracy, and improving decision-making.

Literature Review

The accounting of mortgage loans has been a focal point in banking and financial research due to its significance in ensuring financial stability and transparency. This literature review examines prior studies on the challenges, regulations, and advancements in mortgage loan accounting, focusing on the adoption of international standards, risk management, and technological integration.

International Financial Reporting Standards (IFRS), particularly IFRS 9, have been widely discussed in the context of accounting for financial instruments, including mortgage loans. Studies by Barth et al. (2008) highlight the importance of IFRS in standardizing accounting practices across jurisdictions, ensuring transparency and comparability. Additionally, impairment calculation under the expected credit loss (ECL) model has been a significant area of focus. Research by Bischof and Daske (2016) underscores the complexity of ECL estimation for long-term loans, particularly in diverse economic conditions.

Mortgage loans involve unique challenges, including their complex structures, varying repayment terms, and risk factors such as defaults and property value fluctuations. Studies by Liu and Ryan (2006) discuss the difficulties banks face in accurately recognizing interest income and loan impairments. Similarly, research by Chiaramonte and Casu (2017) highlights the need for robust risk assessment frameworks to mitigate credit and market risks associated with mortgages.

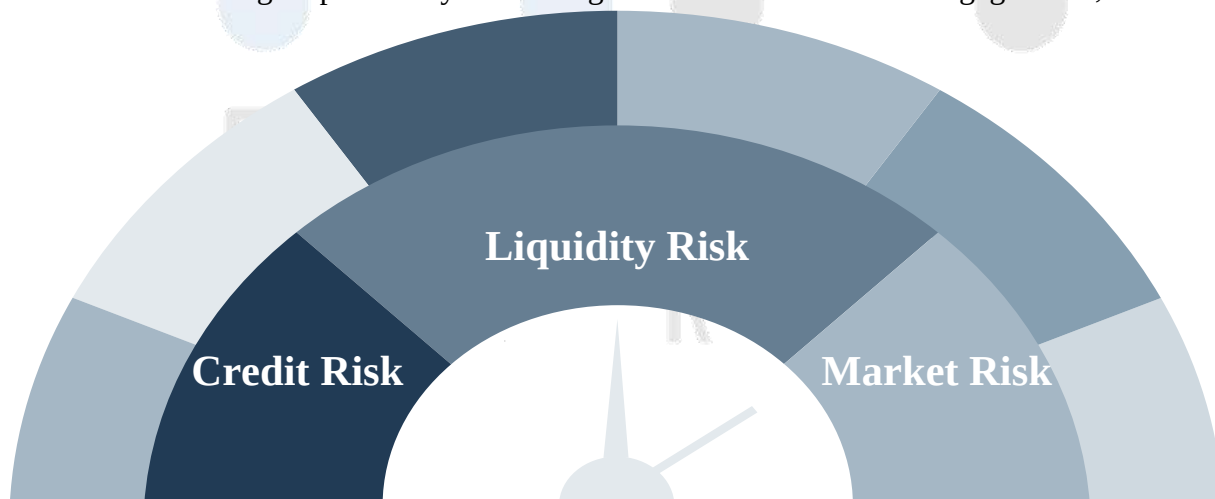
Technological advancements have significantly impacted the accounting of mortgage loans. Research by Brynjolfsson and McAfee (2014) emphasizes the role of automation and data analytics in streamlining accounting processes and improving accuracy. Artificial intelligence and machine learning tools are increasingly being utilized for risk assessment and fraud detection, as explored by Ghasemi et al. (2020). Blockchain technology has also been identified as a promising solution for ensuring transparency and security in loan documentation (Nakamoto, 2008).

Accurate accounting for mortgage loans is crucial for commercial banks, as it directly impacts their financial stability, regulatory compliance, and reputation. Mortgage loans often constitute a significant portion of a bank's assets, making their proper accounting a priority for internal management, stakeholders, and regulatory bodies. Below are the key reasons highlighting the importance of accurate accounting for mortgage loans:

Commercial banks operate under stringent regulatory frameworks, including international standards like IFRS and local banking laws. Accurate mortgage loan accounting ensures compliance with these standards, reducing the risk of penalties, legal issues, and reputational damage. For example, compliance with IFRS 9 requires precise impairment calculations using the Expected Credit Loss (ECL) model, which depends on accurate financial records.

Mortgage loans are long-term commitments that involve complex repayment structures. Accurate accounting provides a clear and transparent view of a bank's financial health, including its income from interest, outstanding loan amounts, and provisions for bad debts. This transparency builds trust among investors, customers, and regulators, enabling informed decision-making and fostering confidence in the banking system.

Accurate accounting helps identify and manage risks associated with mortgage loans, such as:



1-picture. Accurate accounting helps identify and manage risks associated with mortgage loans

Credit Risk: Monitoring borrowers' repayment capabilities and assessing loan impairments.

Liquidity Risk: Ensuring the bank has sufficient funds to meet obligations while maintaining lending capacity.

Market Risk: Evaluating the impact of property value fluctuations on mortgage-backed securities or loan recoverability.

A robust accounting system ensures that potential risks are detected early, allowing banks to take proactive measures.

Reliable accounting data provides insights into loan performance, profitability, and risk exposure, which are critical for strategic planning. For instance, accurate records help banks:

- Set appropriate interest rates.
- Allocate capital efficiently.
- Design mortgage products tailored to market demands.

This data-driven approach enables banks to make decisions that align with their financial goals and customer needs.

Accurate accounting reduces errors and discrepancies in financial records, saving time and resources that would otherwise be spent on corrections and reconciliations. Automated accounting systems further streamline processes, enabling faster loan processing, better reporting, and improved customer service.

Mortgage loans are a key asset class for banks, and their proper management reflects the institution's overall competence and stability. Accurate accounting reassures stakeholders, including shareholders, depositors, and rating agencies, that the bank's financial practices are sound and reliable.

Accurate mortgage loan accounting is essential for preparing comprehensive financial statements, including balance sheets, income statements, and cash flow statements. These reports are vital for:

- Monitoring financial performance.
- Meeting audit requirements.
- Providing insights for regulatory reporting and compliance.

Accurate accounting for mortgage loans is not just a regulatory necessity but a strategic imperative for commercial banks. It strengthens financial transparency, improves risk management, supports decision-making, and enhances operational efficiency. By prioritizing accuracy and leveraging advanced technologies, banks can ensure their mortgage loan portfolios remain a robust and reliable component of their overall financial ecosystem.

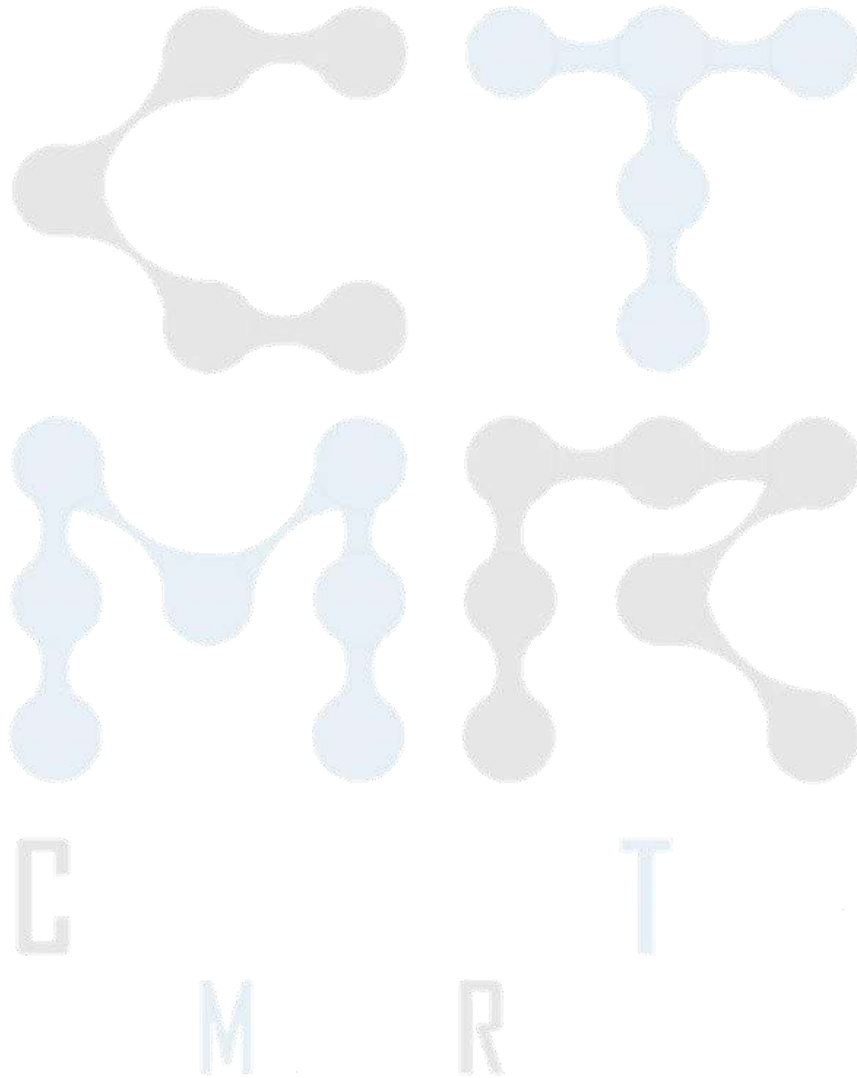
Conclusion

Improving the accounting of commodity-material reserves in commercial banks is essential for operational excellence, cost efficiency, and compliance. By adopting modern technologies, standardizing practices, and strengthening internal controls, banks can overcome existing challenges and ensure the effective management of their reserves. These improvements contribute not only to financial stability but also to enhanced stakeholder confidence in the organization's operational integrity.

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ORGANIZATION OF BANK AUDIT BASED ON INTERNATIONAL AUDIT STANDARDS

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Abstract. In the dynamic and highly regulated banking industry, audits serve as a cornerstone for maintaining financial transparency, operational integrity, and stakeholder trust. This article explores the organization of bank audits in accordance with International Audit Standards (IAS), which aim to harmonize audit practices globally. The discussion focuses on the theoretical underpinnings of IAS, the current state of bank audit practices, challenges faced in their execution, and the transformative potential of technology in enhancing audit efficiency. The article concludes with recommendations for fostering the effective adoption of IAS in the banking sector.

Keywords: Bank audit, International Audit Standards (IAS), financial transparency, fraud detection, compliance, audit methodologies, auditor qualifications, data analytics, financial stability, global compliance, stakeholder trust.

Introduction.

The banking sector operates in a complex environment characterized by stringent regulatory requirements, evolving financial instruments, and increased stakeholder expectations. As custodians of public funds, banks are subject to scrutiny, necessitating robust audit mechanisms. International Audit Standards, developed by the International Auditing and Assurance Standards Board (IAASB), provide a comprehensive framework for conducting high-quality audits that align with global best practices. The integration of these standards is essential for enhancing transparency, mitigating risks, and fostering confidence in the financial system.

Literature Review

A comprehensive review of existing literature highlights the significance of IAS in elevating audit quality and ensuring compliance with global regulatory standards. Knechel et al. (2021) emphasize the role of IAS in harmonizing audit practices across jurisdictions, reducing inconsistencies, and enhancing the reliability of financial statements. Studies by Arens, Elder, and Beasley (2020) explore the challenges associated with implementing IAS in the banking sector, citing resource constraints and resistance to change as critical barriers. Deloitte (2023) underscores the transformative impact of technology, particularly data analytics and artificial intelligence, in modernizing audit methodologies. These findings collectively reinforce the need for adopting IAS to meet the evolving demands of the banking industry.

Research methodology.

This study employs a mixed-methods approach, combining qualitative and quantitative research to analyze the organization of bank audits based on IAS. Primary data was collected through structured interviews with auditors, banking professionals, and regulatory officials. Secondary data sources include peer-reviewed journals, industry reports, and case studies. A comparative analysis of banks that have successfully implemented IAS and those that have not provides insights into best practices and common challenges. Statistical tools were used to assess the impact of IAS adoption on audit quality, risk mitigation, and financial transparency.

Analysis and discussion of results.

International Audit Standards emphasize principles such as professional skepticism, materiality, risk assessment, and the use of advanced audit methodologies. These principles ensure that audits are conducted with rigor and impartiality, addressing key areas of financial reporting and operational control. By aligning with IAS, bank audits can transcend jurisdictional disparities, promoting consistency and comparability in financial statements.

Fundamental to the implementation of international accounting and auditing standards is a clear understanding of what these standards are, what they require, and what it means to adopt them. Failing this, countries are unable to set concrete implementation targets or to measure progress in reaching those targets. The ROSC findings suggest that clarity of understanding is not universal, which helps to explain the sometimes significant gaps between prior self-assessments of compliance—such as those published by the International Accounting Standards Board (IASB) and International Federation of Accountants (IFAC)—and the ROSC results.⁴ The concept of adopting international accounting standards has been interpreted in various ways by transition countries, which may hamper rigorous and uniform application of IAS.⁵ The ROSC results show, however, that the adoption of International Standards on Auditing (ISA) has been less contentious. Many transition economies have taken the ISAs as the foundations for national standards and supplemented them with additional requirements, believed to be appropriate to their domestic market. Still, some countries have adopted only selected standards or adopted ISA in force as of a particular date in the past, with no account taken of changes since then. These misunderstandings give countries, and various stakeholder groups within them, a false understanding of the actual standards gap and the true implementation challenges they face.

Current Practices in Bank Auditing

Banks typically adhere to national auditing standards, which may not fully align with international benchmarks. Traditional audit practices often rely on manual procedures, which can be time-consuming and prone to human error. Furthermore, the increasing complexity of financial instruments, coupled with the rise of cyber risks, has exposed the limitations of conventional auditing approaches.

Challenges in Implementing IAS in Bank Audits

Regulatory Discrepancies: Varying regulatory environments across countries create challenges in adopting a uniform approach to IAS.

Resource Constraints: Implementing IAS requires significant investments in training, technology, and process reengineering.

Technological Adaptation: Many banks lack the infrastructure to leverage advanced tools such as data analytics and artificial intelligence, which are integral to modern audit processes.

Cultural Resistance: Auditors and banking personnel may resist changes to established practices, hindering the adoption of IAS.

Role of Technology in IAS-Based Audits

Technological advancements have revolutionized the audit landscape, offering tools to address the complexities of modern banking. Data analytics facilitates real-time analysis of large datasets, enabling auditors to identify anomalies and patterns indicative of fraud or operational inefficiencies. Artificial intelligence enhances predictive capabilities, while blockchain technology ensures the immutability of financial records. Cybersecurity audits have also become a critical component, protecting sensitive information and ensuring compliance with data protection regulations.

Recommendations for Effective IAS-Based Bank Audits

Regulatory Harmonization: Policymakers should work towards harmonizing national regulations with IAS to ensure a seamless transition.

Capacity Building: Comprehensive training programs should be implemented to equip auditors with the skills needed to apply IAS and utilize advanced technologies.

Investment in Technology: Banks must prioritize the adoption of digital tools to enhance audit efficiency and accuracy.

Collaboration and Knowledge Sharing: Establishing platforms for knowledge exchange among regulators, auditors, and financial institutions can foster best practices and innovation.

Conclusion

The organization of bank audits based on International Audit Standards is a critical step towards enhancing the credibility and reliability of the banking sector. While challenges remain, the integration of IAS, supported by technological advancements and regulatory cooperation, can transform audit practices, ensuring that they meet the demands of an increasingly complex financial environment. By adopting IAS, banks can not only improve their operational resilience but also contribute to the stability and integrity of the global financial system.

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IMPROVEMENT OF OVERDUE RECEIVABLES AND PAYABLES AND THEIR
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Abstract. The efficient management of overdue receivables and payables is critical for maintaining financial stability and operational continuity within organizations. This article explores strategies for improving the management of overdue accounts and presents an enhanced framework for their audit. By integrating contemporary digital tools and aligning with regulatory requirements, the study offers practical solutions for addressing key challenges associated with overdue accounts. The findings are expected to provide actionable insights for financial managers, auditors, and policymakers.

Keywords: Overdue Receivables, Overdue Payables, Financial Management, Audit Framework, Digital Technologies, Risk Management, Liquidity, Profitability.

INTRODUCTION.

Overdue receivables and payables present significant risks to financial stability and operational efficiency. Organizations frequently encounter challenges in managing overdue accounts, including strained liquidity, reduced profitability, and reputational damage. The absence of robust audit mechanisms further exacerbates these issues, leading to inefficiencies and heightened risks. This article seeks to address these concerns by proposing methods to enhance the management of overdue accounts and improve audit processes through the integration of modern technologies.

Literature Review

Overview of Receivables and Payables Management – Receivables and payables management refers to the practices and policies adopted by organizations to ensure timely collection from debtors and payment to creditors. Efficient management minimizes financial risks and enhances cash flow.

Causes of Overdue Receivables and Payables – The primary causes of overdue accounts include poor credit assessment, inefficient collection processes, economic downturns, and inadequate monitoring systems. Studies highlight that weak internal controls and misaligned policies often contribute to prolonged delays.

Consequences of Overdue Accounts – Overdue accounts negatively impact an organization's liquidity and profitability. Prolonged overdue receivables lead to bad debts, while delayed payables may result in penalties and damaged supplier relationships.

Role of Audit in Managing Overdue Accounts – Audits ensure transparency, accountability, and compliance with financial regulations. Advanced audit methodologies, supported by digital technologies, are increasingly being utilized to enhance the accuracy and reliability of financial reporting.

Technological Innovations in Auditing – Digital tools such as blockchain, artificial intelligence (AI), and data analytics offer transformative solutions for auditing. These technologies enable real-time monitoring, predictive analysis, and enhanced fraud detection, thereby improving the audit of overdue accounts.

Research methodology.

Research Design – a mixed-method approach was employed, combining qualitative and quantitative techniques to analyze the management and audit of overdue accounts.

Data Sources – Primary data was collected through surveys and interviews with financial managers and auditors. Secondary data was derived from financial reports, audit records, and academic literature.

Sampling – The study focused on mid-sized and large organizations across various industries, using stratified random sampling to ensure a representative dataset.

Data Analysis – Quantitative data was analyzed using statistical tools, while qualitative data was subjected to thematic analysis to identify key trends and insights.

Analysis and discussion of results.

An independent evaluation of financial information from an organization's accounts payable records is called an accounts payable audit. It looks at how AP transactions are being documented and whether it gives a true picture of how your company operates. The accounts payable department is frequently the primary target of audits. This is because failing to register end-of-term payables can easily boost a company's net income. Because of this, AP is frequently the only subject of audits, leading to various forms of theft. As a result, the American Institute of Certified Public Accountants' (AICPA) Auditing Standards Board's fraud risk assessment guidelines are a major component of accounts payable auditing techniques.

Comparing general ledger transactions to your general ledger's numbers is the fundamental method of auditing an accounts payable department.

You can verify if transactions for the fiscal year are included in your end-of-year financial statements by doing cutoff tests. An audit verifies that you have put in place an internal control system that accurately and promptly records everything.

An AP audit cannot be conducted in a standardized manner. Usually, the auditor makes the decision. A company's size, shape, and desired level of completeness are taken into consideration while selecting a method.

The implementation of GAAP regulations will vary by state. Some states allow public companies to push extra reports that don't need to follow GAAP standards or rules. Despite these differences, auditors are generally looking for the same things, which include:

- Completeness
- Accuracy
- Validity
- Compliance of records
- Proper disclosure

This confirms whether an organization's records present an accurate view of the business. The sole purpose of an audit is to establish an effective internal control system. This is typically done in four separate stages.

Before the audit takes place, you should gather all the necessary documents. The easier you make it on the auditor, the faster it goes. Consider the following to align with auditing standards:

- A detailed AP ledger
- Analysis of budgets compared to expense reports
- A review of internal controls
- Documentation of any unrecorded liabilities
- Overview of planned audit procedures
- A comprehensive risk assessment of accounts payable and expenses

- A summary of possible weak points in AP controls
- Documents on any fraud investigation

During an accounts payable audit, there are many objectives that an auditor is looking to meet. Here are some of the top goals:

Completeness – Auditing for completeness is typically the main objective in an AP audit and the most vital part of the process. The primary ways an auditor indicates whether documents have been adequately recorded and calculated are through:

- Cut-off tests
- Reconciliation
- Audit trails

A business must produce its year-end financial statements cut-off tests for cash payments and purchases of goods and services received by the end of the year. An auditor will then use an audit trail to match payments to recorded payables and look for any files with unmatched documents.

Validity – Auditors will also be looking at the validity of your accounts payable transactions and procurement process. An auditor will attempt to establish the legitimacy of a transaction by reaching out to suppliers and vendors for a confirmation request.

The number and type of vendors that receive these requests can vary depending on the type of business you run. Most auditors will contact regular suppliers and vendors, regardless of whether there is an outstanding balance or not.

It should also be noted that if an auditor discovers one or more open invoices for a vendor, they will reach out to a percentage of your business partners as well.

Compliance – All accounts payable transactions must be recorded in a specific way. When an auditor is looking at whether a business has followed general accounting principles and procedures, they're looking at compliance.

An audit usually starts from the back to the front. An auditor will begin with your year-end financial statements which can include documents like:

- Cash flow statements
- Income statements
- Balance sheets

An auditor can also choose random entries in your general ledger to trace back to their origin. Your company's audit trail allows an auditor to discover the exact path of a transaction. They can then evaluate whether the correct accounting procedures were used.

Disclosure – The final step to an AP audit is to ensure that all transactions and activity were properly disclosed. This means your payable balance must be recorded in your year-end financial statements.

An auditor will look for disclosure by inspecting things like current liability and cost of goods calculations. Unusual transactions may require footnotes to provide details for what can't be discerned from the simple recording.

As a final request, auditors may ask a business to disclose a mandatory management representation letter that attests that all financial statements fully represent the true accounts payable transactions and purchases.

A 2016 study by the Association of Certified Fraud Examiners found that organizations lose an average of 5% annual revenue every year due to fraud.

Accounts payable is highly vulnerable to theft and using software makes it easier to detect. An AP solution catches material misstatements, invoices that have been tampered with, and things like:

- Duplicate or photocopied invoices
- Invoices below the approved amounts
- Vendors or suppliers with PO boxes
- Invoices with rounded dollar amounts
- Documents with information missing

An electronic invoicing system is one of the quickest and most effective ways to deal with fraud because there is much less room for human error. Using AP software is like presenting a third set of eyes for your company's checks and balances. It neatly organizes critical information and immediately flags anything out of order. Additionally, automation will build an audit trail that cannot be misplaced, lost, stolen, or shredded. Smart software means your AP data is always in one, single spot. Completely protected. The more a business can digitize AP tasks, the less likely they are to be surprised by a negative audit. Automated procedures provide an extra level of security. It's an instant audit trail that makes it easier to search for documents and harder to fake them. There are a million reasons why a company should be interested in an accounts payable audit, whether it is internal or external. An accounts payable audit is an essential weapon against fraud and inaccuracy. An audit shouldn't scare you if you've done nothing wrong. It's an independent and systematic look into a company's AP records to ensure everything is being documented correctly. Even if there is a negative result, this should be taken as a learning experience on keeping tighter records and maintaining diligent fraud detection. An AP audit is more about risk assessment and is a process that should be appreciated.

Technology is the key to the future of accounts payable audits. Expectations will continue to rise, and laws will continue to alter. Governments will start to expect automation as more businesses and industries embrace it.

It's critical to get on board as soon as possible with the necessary preparation tools. Accounting procedures don't have to be feared anymore if you have a strong AP staff and the appropriate software.

The auditing process is made quicker, simpler, and less expensive by going digital. More significantly, it provides additional room for a company to plan for future activities and pursue a progressive strategy. The study underscores the importance of robust receivables and payables management practices and emphasizes the role of technology in transforming auditing processes.

Key recommendations include:

Adopting comprehensive credit policies.

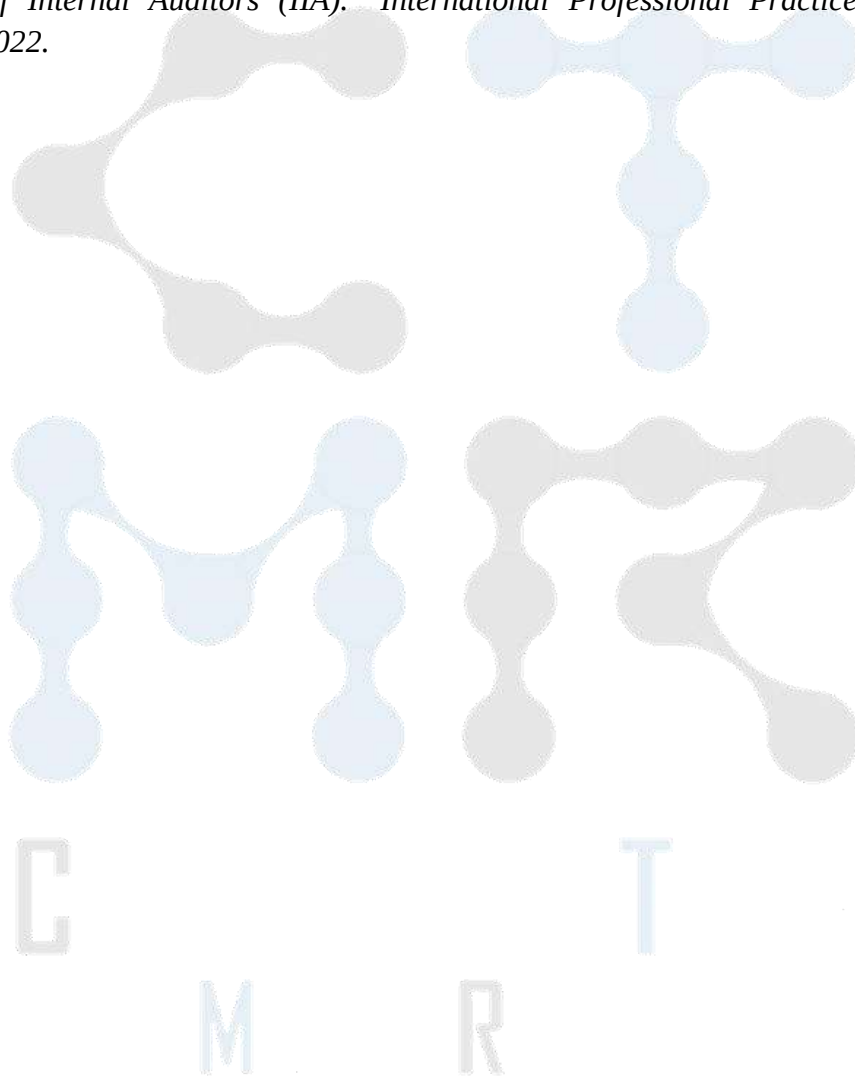
Investing in digital tools for real-time monitoring and auditing.

Regularly updating internal controls and aligning them with regulatory requirements.

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FUNDAMENTALS OF COMPLIANCE CONTROL ORGANIZATION IN THE
ACTIVITIES OF COMMERCIAL BANKS**Mardonov Sardor Axror O'g'li**

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Abstract: Compliance control is a cornerstone of effective governance in commercial banks, ensuring adherence to legal, regulatory, and ethical standards. This article explores the fundamentals of organizing compliance control, emphasizing its importance in mitigating risks, maintaining trust, and fostering operational integrity. Key components of an effective compliance framework, including risk assessment, policy development, training, technology integration, and internal audits, are discussed in detail. The article also highlights challenges such as regulatory complexity, cost implications, and technological barriers, offering best practices like adopting a risk-based approach, leveraging advanced technologies, and fostering a culture of compliance. By implementing robust compliance control systems, banks can enhance their reputation, ensure sustainability, and navigate the complexities of a dynamic regulatory landscape.

Keywords: *Compliance control, commercial banks, regulatory compliance, risk management, governance, policy framework, internal audits, risk-based approach, technology integration, ethical standards, anti-money laundering (AML), Know Your Customer (KYC), operational integrity, financial regulations, compliance culture.*

Introduction

In today's highly regulated financial environment, compliance control has become a critical function for commercial banks. As institutions that operate at the core of economic activity, banks are subject to complex legal, regulatory, and ethical standards designed to ensure stability, transparency, and trust in the financial system. Compliance control involves the development and implementation of systems and processes to monitor and enforce adherence to these standards. The importance of compliance control cannot be overstated. Effective compliance frameworks not only help banks avoid penalties and reputational damage but also contribute to long-term sustainability by mitigating operational, financial, and reputational risks. Moreover, compliance control fosters trust among stakeholders, including regulators, investors, and customers, thereby strengthening the bank's position in a competitive market.

However, organizing compliance control in commercial banks is a challenging task. Banks must navigate a rapidly evolving regulatory landscape, manage cross-border compliance in global operations, and address risks associated with digital transformation. The integration of advanced technologies, such as artificial intelligence and blockchain, has become essential to modernizing compliance processes and addressing these challenges effectively.

This article delves into the fundamentals of compliance control in commercial banks, exploring its significance, key components, challenges, and best practices. By understanding and implementing robust compliance frameworks, banks can ensure regulatory adherence, mitigate risks, and build a culture of integrity and trust in an increasingly complex financial landscape.

Literature Review

The organization of compliance control in commercial banks has been extensively studied in financial and governance literature due to its critical role in ensuring regulatory adherence, risk

management, and operational efficiency. This section reviews key studies and frameworks, focusing on the importance, challenges, and best practices for compliance control in banking.

The significance of compliance control lies in its ability to safeguard financial institutions against regulatory breaches, operational inefficiencies, and reputational risks. Barth, Caprio, and Levine (2006) emphasize that compliance frameworks are fundamental to maintaining financial stability, particularly in global banking systems. They argue that strong compliance mechanisms reduce systemic risks and enhance trust among stakeholders.

Similarly, Wilson et al. (2019) highlight that robust compliance programs are crucial for adhering to international regulations such as Basel III, anti-money laundering (AML) laws, and Know Your Customer (KYC) standards. These regulations ensure financial transparency and protect banks from fraudulent activities and penalties.

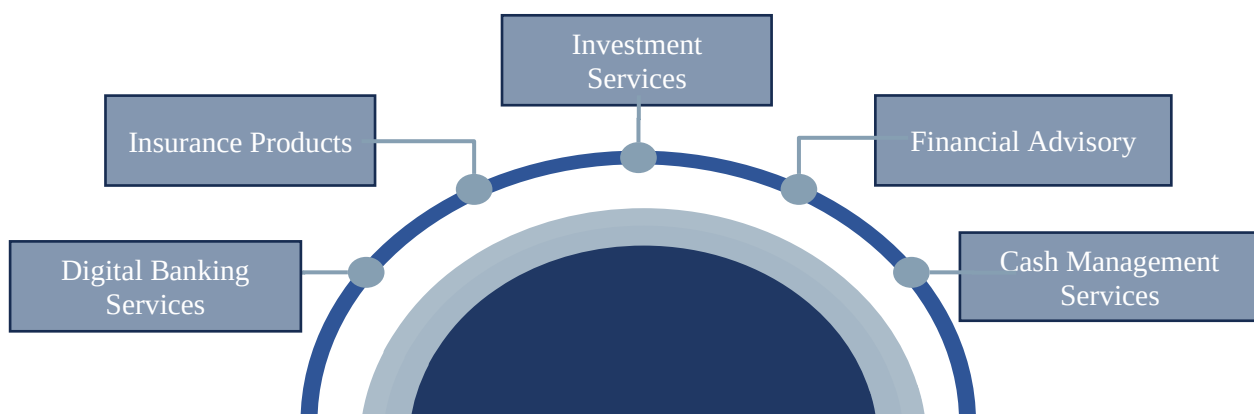
Compliance control faces numerous challenges, including regulatory complexity, technological limitations, and cost implications. Liu and Ryan (2006) discuss the difficulties banks encounter in managing cross-border compliance, particularly in jurisdictions with varying regulatory requirements. They argue that fragmented compliance systems lead to inefficiencies and increase the likelihood of non-compliance.

Technological barriers, such as outdated legacy systems, further complicate compliance efforts. Brynjolfsson and McAfee (2014) note that many banks struggle to integrate advanced compliance tools due to the limitations of existing infrastructure. This technological gap hinders the implementation of real-time monitoring and reporting systems.

In the rapidly evolving financial landscape, maintaining robust control mechanisms is critical for commercial banks to ensure efficiency, compliance, and risk mitigation. Among the various facets of bank management, the control of complements—ancillary services or complementary functions that enhance core banking activities—plays a vital role. This article explores the basics of organizing the control of complements in commercial banks, focusing on their importance, control mechanisms, and implementation strategies.

In commercial banking, complements refer to ancillary services and products that enhance or supplement the core banking functions such as deposits, lending, and payment processing. These complementary offerings play a vital role in creating a holistic customer experience, improving operational efficiency, and diversifying revenue streams. Understanding the nature, importance, and management of complements is essential for banks to remain competitive in an evolving financial landscape.

Complements in commercial banking are value-added services that support the primary banking functions. These services include:



1-picture. Complements in commercial banking are value-added services that support the primary banking functions.

1. Digital Banking Services: Online banking platforms, mobile banking apps, and fintech integrations that provide convenience and accessibility.
2. Insurance Products: Offering life, property, or loan insurance to customers as bundled or standalone services.
3. Investment Services: Wealth management, brokerage, and mutual fund offerings for retail and institutional clients.
4. Financial Advisory: Guidance on tax planning, retirement savings, and business financing.
5. Cash Management Services: Tools for businesses to manage liquidity, payments, and collections efficiently.

Bank ABC implemented a compliance framework integrating AI-powered transaction monitoring and real-time reporting systems. The bank trained its employees extensively on AML and KYC (Know Your Customer) regulations. As a result, it reduced its compliance breaches by 40% within a year and gained recognition for its robust adherence to regulatory standards. This success highlights the importance of combining technology, training, and a strong policy framework in compliance control.

Conclusion

The fundamentals of compliance control organization in commercial banks lie in establishing a comprehensive framework that encompasses risk assessment, policy development, training, and technological integration. While challenges such as regulatory complexity and cost implications persist, adopting a proactive, technology-driven, and risk-based approach can significantly enhance compliance effectiveness. By prioritizing compliance, banks not only mitigate risks but also build trust, ensuring sustainable growth in an increasingly regulated financial environment.

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THE ROLE OF INTERNATIONAL FINANCIAL INSTITUTIONS IN PUBLIC DEBT MANAGEMENT IN DEVELOPING COUNTRIES**Maxmudova Shahnoza Azimjanovna**

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Abstract: Public debt management is a critical aspect of economic policy in developing countries, where fiscal challenges are often compounded by limited resources and external shocks. International financial institutions (IFIs) such as the International Monetary Fund (IMF) and the World Bank play a pivotal role in supporting these nations in managing their public debt effectively. This article examines the contributions of IFIs, including technical assistance, policy guidance, concessional financing, and debt restructuring initiatives. It highlights how IFIs help enhance debt sustainability, improve market access, and foster investor confidence. The article also addresses challenges such as conditionality, debt dependence, and the need for stronger local ownership of reforms. By drawing on examples from countries like Ghana, Jamaica, and Rwanda, it explores the successes and lessons learned from IFI-supported debt management programs. The article concludes with recommendations for maximizing IFI contributions through capacity building, transparency, and tailored strategies that align with the unique needs of developing economies.

Keywords: *Public debt management, international financial institutions, IMF, World Bank, developing countries, debt sustainability, concessional financing, technical assistance, debt restructuring, fiscal stability, market access, investor confidence, capacity building, transparency, economic policy.*

Introduction

Effective public debt management is a cornerstone of economic stability and growth, particularly for developing countries where fiscal resources are often constrained. These nations frequently rely on public debt to finance infrastructure, social programs, and other development priorities. However, the rising levels of debt in many developing economies have raised concerns about sustainability, fiscal risks, and the ability to meet financial obligations. Poorly managed debt can lead to economic instability, reduced investor confidence, and limited fiscal space for future growth.

In this context, international financial institutions (IFIs) such as the International Monetary Fund (IMF), the World Bank, and regional development banks play a critical role. They provide essential support to developing countries by offering technical assistance, policy guidance, and concessional financing. Additionally, IFIs are instrumental in facilitating debt restructuring initiatives and enhancing transparency in debt management practices. Their involvement often serves as a catalyst for boosting investor confidence and improving access to international capital markets.

While the contributions of IFIs are significant, their engagement in public debt management is not without challenges. Issues such as conditionality, dependence on external financing, and the need for stronger local ownership of reforms are recurring concerns. Nonetheless, their role in

shaping debt policies and fostering sustainable economic growth remains indispensable for many developing economies.

This article explores the multifaceted role of international financial institutions in public debt management for developing countries. It highlights their contributions, addresses the challenges they face, and examines real-world examples to provide insights into best practices and lessons learned. By understanding the role of IFIs, policymakers can better leverage their expertise and resources to achieve fiscal sustainability and long-term development goals.

Literature Review

The role of international financial institutions (IFIs) in public debt management has been extensively studied, highlighting their contributions to fiscal sustainability in developing countries. This section reviews key literature on the functions, challenges, and impacts of IFIs in assisting nations to manage their public debt effectively.

Several studies have emphasized the pivotal role of IFIs in supporting public debt management. According to Eichengreen et al. (2005), institutions like the International Monetary Fund (IMF) and the World Bank provide critical technical assistance to strengthen debt management frameworks, particularly in countries with weak institutional capacities. This support includes training, capacity building, and the development of debt sustainability strategies tailored to the specific needs of developing economies.

Krugman (1988) highlights how IFIs serve as advisors for debt policy formulation, helping countries adopt prudent borrowing practices to mitigate risks of unsustainable debt levels. The Debt Sustainability Framework (DSF) developed by the IMF and World Bank is widely cited as a valuable tool for assessing debt levels and guiding countries in aligning borrowing with long-term fiscal and development goals.

Research by Reinhart and Rogoff (2009) underscores the importance of IFIs in shaping policy and facilitating debt relief programs. Initiatives like the Heavily Indebted Poor Countries (HIPC) Initiative and the Multilateral Debt Relief Initiative (MDRI) have significantly reduced debt burdens in low-income countries, allowing them to redirect resources toward development priorities. These programs highlight the capacity of IFIs to coordinate global efforts in addressing systemic debt challenges.

Bulow and Rogoff (1990) argue that IFI interventions in debt restructuring provide a crucial mechanism for stabilizing economies during crises. Their ability to negotiate with creditors and ensure equitable restructuring terms has been critical in resolving debt crises in countries like Argentina and Jamaica.

Public debt management is a critical aspect of economic policy, particularly in developing countries where fiscal challenges are often exacerbated by limited resources, volatile markets, and external shocks. International financial institutions (IFIs) such as the International Monetary Fund (IMF), the World Bank, and regional development banks play a pivotal role in supporting these nations in managing their public debt effectively. This article explores the role of IFIs in public debt management, highlighting their contributions, challenges, and the impact on developing economies.

Developing countries often rely on public debt to finance infrastructure projects, social programs, and other development priorities. However, unsustainable debt levels can lead to economic instability, reduced investor confidence, and limited fiscal space for future growth. Effective public debt management ensures that governments can meet their financial obligations while minimizing costs and risks over the medium to long term.



1-picture. The role of international financial institutions

1. Technical Assistance and Capacity Building:

IFIs provide technical assistance to developing countries to strengthen their debt management frameworks. The IMF and World Bank offer advisory services to help governments build institutional capacity, implement debt management strategies, and enhance transparency in public borrowing.

2. Policy Guidance:

IFIs play a key role in shaping fiscal and debt policies in developing countries. For instance, the IMF provides policy advice under its Debt Sustainability Framework (DSF), which helps countries assess the sustainability of their public debt and adopt prudent borrowing strategies.

3. Financing Support:

IFIs provide concessional loans and grants to help countries finance development projects without exacerbating debt burdens. These financial instruments often come with lower interest rates and longer repayment periods compared to commercial borrowing.

4. Debt Restructuring and Relief:

In cases of unsustainable debt, IFIs facilitate debt restructuring and relief initiatives. Programs like the Heavily Indebted Poor Countries (HIPC) Initiative and the Multilateral Debt Relief Initiative (MDRI) have been instrumental in reducing debt burdens in low-income countries.

5. Monitoring and Surveillance:

IFIs monitor global and country-specific debt trends, providing early warnings about potential debt crises. Their surveillance activities help countries identify risks and take corrective actions to avoid default.

6. Market Access and Investor Confidence:

The involvement of IFIs in a country's debt management can enhance investor confidence, making it easier for governments to access international capital markets. IFIs also provide guarantees and credit enhancements to facilitate borrowing at favorable terms.

CONCLUSION

International financial institutions play an indispensable role in public debt management in developing countries by providing technical assistance, policy guidance, financing support, and surveillance. While challenges such as conditionality and debt dependence persist, the contributions of IFIs have been instrumental in helping many nations achieve fiscal stability and sustainable growth. To maximize the impact of their interventions, IFIs must prioritize capacity building, transparency, and customized approaches that align with the specific needs of each country. By fostering stronger partnerships between IFIs and developing nations, public debt can be managed more effectively, paving the way for inclusive and sustainable development.

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IMPACT OF PRIVATIZATION OF ENTERPRISES ON STATE BUDGET REVENUES

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Abstract: Privatization of state-owned enterprises (SOEs) is a significant economic reform that impacts state budget revenues in both the short and long term. This article explores the financial implications of privatization, highlighting how the sale of SOEs generates immediate revenue that can reduce public debt or fund strategic investments. It also examines the long-term effects, including the potential loss of direct income from profitable enterprises and the gains from increased tax revenues through improved efficiency, economic growth, and private sector innovation. Challenges such as undervaluation of assets, misuse of privatization proceeds, and regulatory failures are analyzed, along with strategies to maximize the fiscal benefits of privatization. By adopting transparent processes, leveraging proceeds for long-term investments, and implementing robust regulatory frameworks, governments can ensure that privatization contributes to fiscal sustainability and economic development. The article draws on examples from countries such as the United Kingdom, Russia, and India to illustrate the varied outcomes of privatization programs.

Keywords: *Privatization, state-owned enterprises, state budget revenues, public finance, economic reform, fiscal sustainability, tax revenues, regulatory frameworks, asset valuation, transparency, economic growth, public sector, fiscal policy, privatization proceeds, long-term investments.*

INTRODUCTION

Privatization, the process of transferring ownership of state-owned enterprises (SOEs) to private individuals or entities, has become a widely adopted economic reform across the globe. Governments pursue privatization for various reasons, including improving efficiency, reducing public sector debt, and fostering private sector-led economic growth. While the economic and social implications of privatization have been extensively debated, its impact on state budget revenues remains a key area of focus.

In the short term, privatization provides an immediate fiscal boost through the sale of public assets, enabling governments to finance infrastructure projects, reduce debt, or cover budget deficits. However, the long-term implications are more complex. Privatized enterprises often become more efficient, generate higher profits, and contribute to state revenues through taxes. At the same time, governments forgo direct income from profitable SOEs, such as dividends or profits, creating a trade-off that requires careful analysis and strategic planning.

The fiscal impact of privatization also depends on the transparency of the privatization process, the valuation of assets, and the regulatory environment. Mismanagement of privatization proceeds or undervaluation of assets can lead to missed opportunities for maximizing public benefit. Conversely, well-executed privatization programs can stimulate economic growth, attract foreign investment, and expand the tax base, contributing to fiscal sustainability.

This article explores the multifaceted impact of privatization on state budget revenues, analyzing both short-term and long-term effects. It examines the potential benefits, challenges, and risks of

privatization, drawing on global examples to highlight best practices and lessons learned. Ultimately, the article aims to provide insights into how governments can strategically leverage privatization to enhance fiscal stability and support economic development.

Literature Review

The impact of privatization on state budget revenues has been extensively studied across various contexts, highlighting its potential benefits, challenges, and complexities. This section reviews key studies and perspectives, focusing on short-term fiscal gains, long-term revenue implications, and broader economic effects.

One of the most immediate effects of privatization is the revenue generated from the sale of state-owned enterprises (SOEs). Megginson and Netter (2001) emphasize that proceeds from privatization provide a significant fiscal boost, allowing governments to reduce public debt, cover budget deficits, or invest in infrastructure. The study highlights examples from developed and developing economies, where privatization proceeds have been instrumental in addressing fiscal imbalances.

However, Boubakri and Cosset (1998) caution that the short-term fiscal impact depends on the transparency of the privatization process and the valuation of assets. Undervaluation of SOEs, often due to weak governance or corruption, can lead to suboptimal fiscal outcomes, reducing the potential benefits of privatization.

The long-term effects of privatization on state budget revenues are more nuanced. Privatized enterprises often become more efficient, contributing to the economy through higher taxes, employment generation, and increased productivity (D'Souza and Megginson, 1999). Privatization shifts the focus from direct government control to market-driven operations, leading to innovation and growth in the private sector.

Nevertheless, several studies point to the loss of direct income streams, such as dividends and profits from profitable SOEs. For example, Roland (2008) argues that the fiscal impact of privatization depends on whether tax revenues from privatized enterprises offset the loss of direct revenues. This balance is influenced by factors such as regulatory frameworks, market conditions, and the strategic management of privatized entities.

The literature on the impact of privatization on state budget revenues presents a mixed picture, emphasizing both opportunities and challenges. While privatization can provide significant short-term fiscal gains and long-term economic benefits, its success depends on factors such as asset valuation, transparency, regulatory frameworks, and strategic use of proceeds. Global experiences highlight the importance of well-designed privatization programs that align with broader fiscal and economic goals. This article builds on these insights, exploring how governments can maximize the fiscal impact of privatization while addressing potential risks and challenges.

Privatization, the process of transferring ownership of state-owned enterprises (SOEs) to private individuals or entities, has been a key economic reform in many countries. Governments pursue privatization to improve efficiency, reduce public sector debt, and stimulate private sector growth. One significant area of interest is the impact of privatization on state budget revenues. This article explores how privatization affects the revenue streams of the state budget, examining both the short-term and long-term implications, potential benefits, and associated challenges.

In the short term, privatization can lead to a substantial influx of funds into the state budget. The sale of state-owned enterprises generates immediate revenue through privatization proceeds. These funds can be used to reduce public debt, invest in infrastructure, or finance social programs.

For instance, large-scale privatizations in countries like the United Kingdom and Russia during the 1990s provided governments with significant revenue boosts.

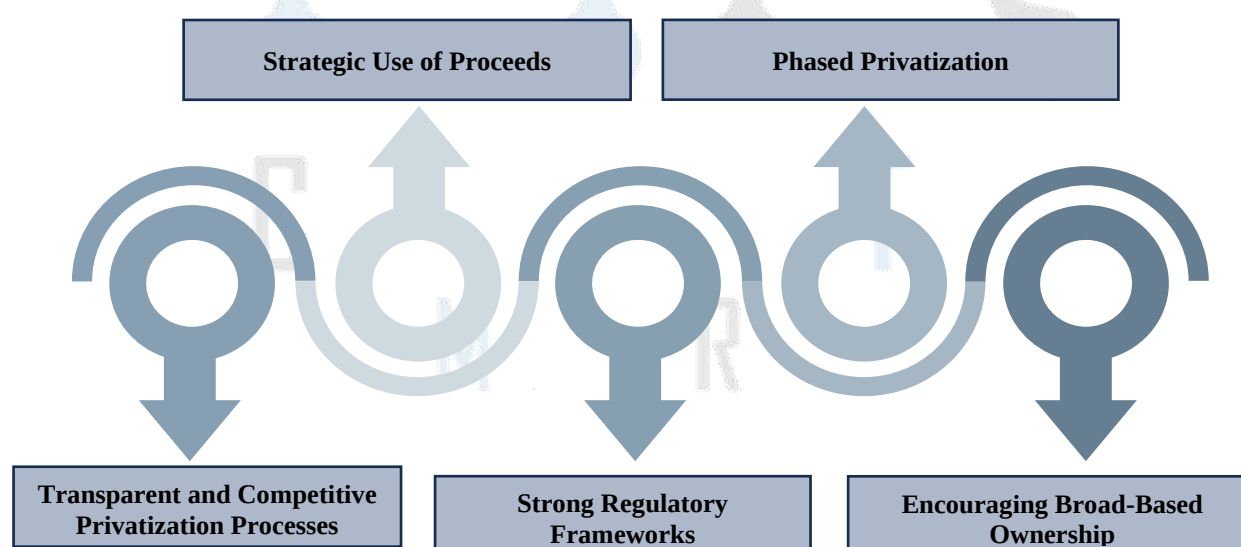
However, the magnitude of these proceeds depends on several factors, including the valuation of the enterprises, the transparency of the privatization process, and the level of demand from private investors. Poorly planned or undervalued privatizations can result in lost opportunities for maximizing state revenue. Moreover, one-time revenue from privatization should be considered non-recurring, emphasizing the importance of prudent allocation of these funds.

The long-term impact of privatization on state budget revenues is more complex and varies depending on the economic and regulatory environment. Privatized enterprises often operate more efficiently, generate higher profits, and contribute to the economy through taxes. Increased corporate tax revenues, payroll taxes from expanded employment, and value-added taxes (VAT) on goods and services can offset the loss of direct revenue from state-owned enterprises.

On the other hand, privatization results in the government forfeiting direct income streams from profitable SOEs. Enterprises that previously contributed dividends or profits to the state budget are no longer a source of revenue once privatized. The long-term fiscal impact, therefore, hinges on whether privatized enterprises generate sufficient tax revenue to compensate for this loss.

Privatization can stimulate economic growth by fostering a competitive market environment. Private ownership often leads to increased investments, innovation, and productivity. These improvements can indirectly boost state budget revenues by expanding the tax base. For instance, privatized enterprises may attract foreign investment, create jobs, and stimulate demand for goods and services, all of which contribute to higher tax collections.

Furthermore, privatization can reduce fiscal burdens associated with inefficient SOEs. Governments often subsidize unprofitable SOEs, placing a strain on public finances. By transferring these enterprises to the private sector, the state can eliminate recurring losses, thereby freeing up resources for other priorities.



1-picture. Strategies to maximize the impact on state budget revenues

1. **Transparent and Competitive Privatization Processes.** Ensuring transparency and competition in the sale of SOEs helps maximize proceeds and fosters investor confidence.
2. **Strategic Use of Proceeds.** Privatization revenues should be allocated to long-term investments, such as infrastructure, education, and healthcare, rather than recurring expenditures.

3. Strong Regulatory Frameworks. Governments must establish effective regulatory mechanisms to prevent monopolistic practices and ensure privatized enterprises contribute to economic growth.
4. Phased Privatization. Gradual privatization, such as partial sales through public offerings, allows governments to retain some control while generating revenue.
5. Encouraging Broad-Based Ownership. Privatization programs that enable widespread ownership, such as employee stock options or public share offerings, can enhance social acceptance and economic inclusivity.

Conclusion

The privatization of enterprises has a significant impact on state budget revenues, offering both opportunities and challenges. While short-term revenues from privatization can provide a fiscal boost, the long-term outcomes depend on factors such as the efficiency of privatized enterprises, the regulatory environment, and the strategic use of proceeds. To maximize the benefits, governments must adopt transparent processes, allocate revenues prudently, and establish strong regulatory frameworks. With careful planning and execution, privatization can contribute to economic growth, fiscal sustainability, and improved public services, ultimately benefiting the broader economy and society.

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IMPROVING THE ACCOUNTING OF COMMODITY-MATERIAL RESERVES IN
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Abstract: Internal audit is a cornerstone of transparency, accountability, and efficiency in managing public funds, particularly within budgetary operations. This article explores the effective organization of internal audits in the budget framework, focusing on key principles such as independence, risk-based approaches, and adherence to international standards. It highlights essential components, including audit charters, skilled teams, advanced tools, and stakeholder engagement, that enhance the credibility and impact of internal audits. The article also examines common challenges, such as resource constraints, resistance to change, and technological limitations, while proposing strategies to overcome these obstacles, including the adoption of advanced technologies and fostering a culture of accountability. By implementing robust internal audit systems, organizations can ensure compliance, optimize resource utilization, and promote trust and transparency, ultimately strengthening governance and financial performance in the management of public budgets.

Keywords: *Internal audit, budgetary operations, transparency, accountability, risk-based approach, governance, compliance, public funds, audit charter, stakeholder engagement, resource optimization, advanced audit tools, financial performance, international standards.*

INTRODUCTION

In the realm of public finance, internal audit serves as a vital tool for ensuring transparency, accountability, and efficient use of resources. It plays a critical role in monitoring budgetary operations, safeguarding public funds, and enhancing the effectiveness of governance frameworks. With increasing demands for financial accountability and growing complexities in managing budgets, the organization of internal audits has become more important than ever.

Internal audits in budgetary processes provide oversight across planning, execution, and reporting stages, ensuring compliance with laws, regulations, and policies. They help identify inefficiencies, detect potential risks, and uncover irregularities that could lead to financial mismanagement. Furthermore, internal audits foster trust among stakeholders, including government authorities, citizens, and international organizations, by promoting transparency in the use of public resources.

However, organizing internal audits effectively comes with challenges. Limited resources, resistance to change, and outdated technology often hinder their implementation. Additionally, complex regulatory frameworks and evolving risks demand constant adaptation of audit practices. Addressing these issues requires a structured approach to organizing internal audits, supported by advanced tools, skilled professionals, and robust governance frameworks.

This article explores the fundamentals of organizing internal audits in the budget framework. It examines key principles, essential components, and common challenges while providing actionable strategies to enhance the efficiency and impact of internal audits. By fostering a culture of accountability and leveraging modern tools and techniques, organizations can ensure the responsible and effective use of public funds, ultimately contributing to improved governance and financial performance.

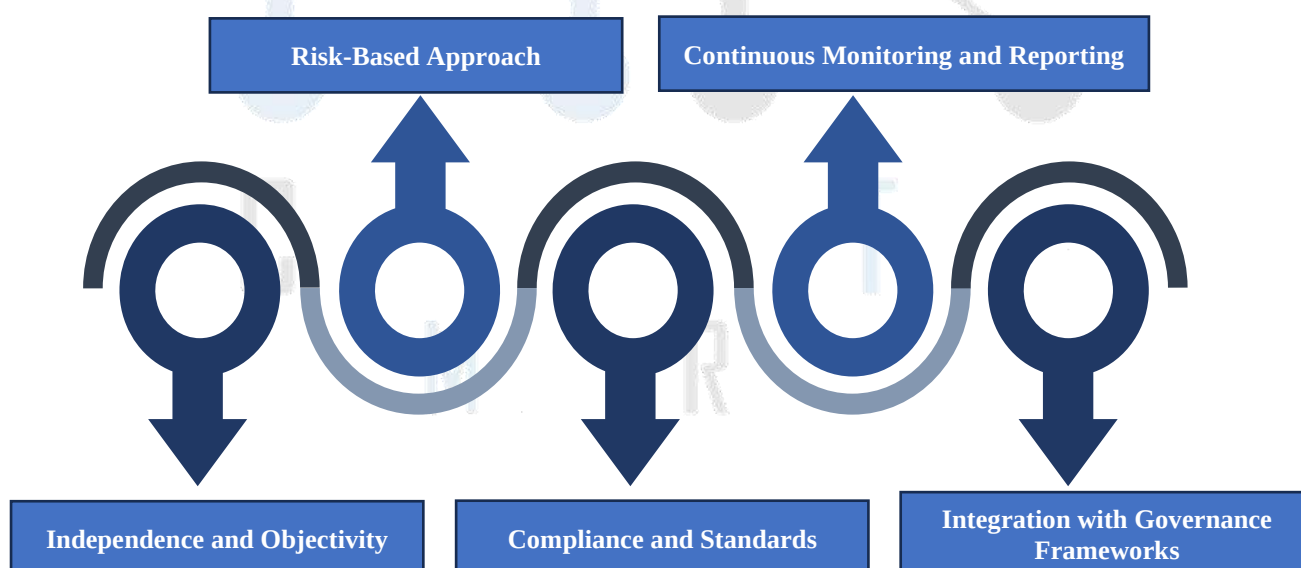
Literature Review

The organization of internal audits in budgetary operations has been widely studied as a crucial mechanism for ensuring transparency, accountability, and efficiency in the management of public funds. This section examines the existing body of knowledge on internal audits, focusing on their principles, challenges, and effective strategies within the context of budgetary frameworks.

The literature underscores the critical role of internal audits in promoting accountability and ensuring the efficient use of resources. According to Sawyer (1995), internal auditing serves as the “eyes and ears” of management, providing independent assessments of financial and operational activities. Similarly, Diamond (2002) highlights that internal audits are vital for strengthening governance systems, particularly in public finance, where the risks of mismanagement and inefficiency are heightened. Internal audits ensure that budget allocations align with organizational goals and policies while identifying and mitigating potential risks.

Scholars emphasize core principles such as independence, objectivity, and a risk-based approach as fundamental to the effectiveness of internal audits. The Institute of Internal Auditors (IIA) (2017) identifies independence as a cornerstone of internal audit effectiveness, ensuring that auditors can provide unbiased evaluations. Simultaneously, Ramamoorti (2003) argues that a risk-based approach is essential for prioritizing high-risk areas, such as procurement, budget overruns, and fraud, to optimize audit resources. These principles ensure that audits focus on areas of greatest impact while maintaining their credibility and reliability.

The literature highlights the importance of aligning internal audits with international standards to ensure consistency and reliability. The International Standards for the Professional Practice of Internal Auditing (ISPPIA), developed by the IIA, provide a globally recognized framework for conducting audits. Mihret and Woldeyohannis (2008) discuss how adherence to these standards enhances the credibility of internal audits and promotes transparency in budgetary management.



1-picture. Key principles of effective internal audit organization

Independence and Objectivity. Internal auditors must operate independently of the entities they evaluate to ensure unbiased assessments. This independence should be reinforced through a well-defined reporting structure.

Risk-Based Approach. Audits should focus on areas with the highest potential risks, such as budget overruns, procurement processes, and irregular expenditures, to optimize resource allocation and improve efficiency.

Compliance and Standards. Internal audits must adhere to internationally recognized standards, such as those established by the Institute of Internal Auditors (IIA), to ensure consistency and credibility.

Continuous Monitoring and Reporting. Effective internal audit systems involve regular monitoring of budget implementation and periodic reporting to relevant authorities to address issues promptly.

Integration with Governance Frameworks. Internal audits should be an integral part of the organization's governance structure, aligning with broader objectives and ensuring accountability across all levels.

Organizing internal audits in budgetary processes comes with several challenges. A lack of independence due to political or organizational pressures can compromise the credibility of audits. Limited resources, including insufficient budgets and staffing, may hinder the effectiveness of the audit process. Resistance to change within organizations can also delay the implementation of audit recommendations. Additionally, complex and evolving regulatory environments make compliance increasingly difficult. Outdated technology and poor data management further limit the scope and effectiveness of internal audits.

To address these challenges, organizations must strengthen the independence of internal auditors by establishing clear reporting lines and ensuring they operate free from external influence. Investing in advanced technologies, such as data analytics and machine learning, can enhance the efficiency and accuracy of audits. Building a skilled audit team through regular training and professional development ensures auditors are well-equipped to address emerging challenges. A risk-based approach can help organizations focus on critical areas and allocate resources effectively. Encouraging a culture of accountability ensures that audit findings are taken seriously and lead to meaningful improvements. Transparent communication and stakeholder engagement further enhance the credibility and impact of internal audits.

An effective internal audit system offers numerous benefits. It improves resource utilization by ensuring public funds are allocated and spent efficiently, minimizing waste. Regular audits enhance compliance with laws and regulations, reducing the risk of penalties and reputational damage. Comprehensive reporting improves transparency, building trust among stakeholders. Proactive risk identification and mitigation minimize financial and operational vulnerabilities. Audit findings provide valuable insights, enabling policymakers and managers to make informed, data-driven decisions.

CONCLUSION

The effective organization of internal audits within the budget framework is essential for promoting accountability, transparency, and efficiency in managing public funds. By adhering to core principles such as independence, risk-based approaches, and continuous monitoring, and by addressing challenges through strategic improvements, internal audits can significantly enhance the governance and financial performance of organizations. As budgetary operations grow more complex, internal audits will remain indispensable in ensuring the responsible and effective use of resources.

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C M R T

"THE IMPACT OF ARTIFICIAL INTELLIGENCE ON THE EDUCATION PROCESS"**USMANOVA KHURSHIDA AYBEKOVNA**Andijan State Pedagogical Institute Teacher of the Department of Primary Education
Methodology

Introduction. In the 21st century, the development of the educational process is significantly changing in connection with the widespread use of modern technologies, especially artificial intelligence. The use of artificial intelligence technologies in the educational process not only optimizes the teaching process by considering the individual needs of students, but also simplifies pedagogical activities and increases their effectiveness. For this reason, the integration of artificial intelligence into the education sector is increasingly becoming an important component of modern pedagogy.

Today, the role of technologies in the educational process at the graduate level is steadily increasing. Digital technologies expand the possibilities for students to conduct scientific research, allow for rapid and systematic data analysis, and simplify the process of developing individual learning plans. This increases the significance of using artificial intelligence for the development of scientific research skills in graduate students.

This study will scientifically analyze the role of artificial intelligence technologies in the educational process, their importance in improving pedagogical methodologies, and the opportunities they create for graduate students. Additionally, the positive impact of artificial intelligence on scientific research activities and its effective application in the educational process will be discussed.[4]

The relevance of this work is determined by the necessity of integrating artificial intelligence into the educational process and its contribution to the future development of the education system. Therefore, studying the impact of artificial intelligence technologies on the educational process is not only of scientific importance but also has significant practical value.

The use of artificial intelligence in the educational process plays a crucial role in ensuring the necessary pedagogical conditions and is an important factor as a component of the educational system. Using artificial intelligence in education is a technological approach to developing scientific research skills. In recent years, the role of technologies in the educational process at the graduate level has been increasing. Technologies allow graduate students to access information and expand opportunities for quality education, while overcoming time and spatial limitations. New technologies automate and simplify long and time-consuming tasks. Today, a number of advanced foreign universities are effectively using digital technologies to streamline processes such as task management, registration of students, and improving the quality of education for students, which is facilitated by artificial intelligence technologies.

The current state and development level of modern higher education requires constant improvement. This also leads to changes in the State Education Standards, contributing to improvements in education quality and the identification of promising pathways for the upbringing of the next generation.

The use of technological tools in organizing scientific research helps to increase flexibility in the research field, facilitate research processes, and improve the quality of results. These

technologies provide opportunities for organizing scientific research systematically and quickly. One such technology is artificial intelligence, which facilitates better use of information databases and sources for educational processes.

The integration of artificial intelligence into pedagogical education is supported by legal frameworks, with the aim of improving pedagogical processes. For instance, the President of the Republic of Uzbekistan approved a decree on October 5, 2020, entitled “Digital Uzbekistan – 2030,” which outlines a number of tasks for its successful implementation.[3]

The impact of artificial intelligence in education is deep and extensive. First of all, AI presents learning materials that align with each individual’s learning pace and style, offering personalized learning experiences. For example, an adaptive learning system analyzes the student’s activities and provides more practice in areas they haven’t mastered, helping them catch up. AI also helps reduce the workload of teachers, contributing to their more efficient performance. Automating tasks like grading assignments and tests allows instructors to interact more directly with students and focus more on content creation.[1]

Furthermore, AI-based analysis tools help monitor students’ progress and recommend additional resources to enhance their learning experience. In modern education and online platforms, AI increases student motivation by offering interactive and engaging content. Virtual assistants and chatbots provide round-the-clock support, answering students’ questions instantly and helping them resolve any issues that arise during their learning journey, especially in online education, which became even more significant during the pandemic.

Artificial intelligence brings innovations and conveniences to educational processes and causes significant changes in pedagogical methods. AI-based systems suggest individual learning plans by analyzing students’ learning pace, interests, and difficulties. This allows students to progress at their own speed and improves their success levels.[2]

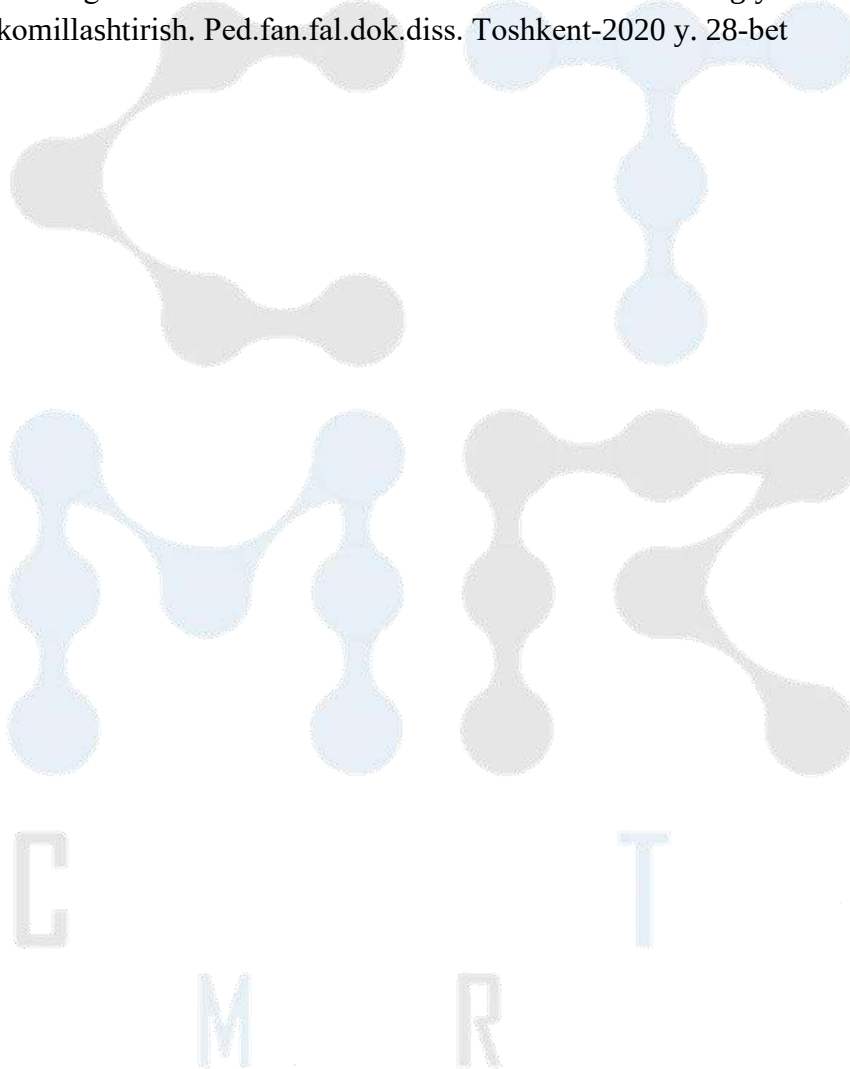
Moreover, AI integration into pedagogy simplifies the work of graduate students and researchers. By automating repetitive tasks like grading, AI frees up more time for personalized support and crafting lesson plans. It also contributes to simplifying research tasks, such as data analysis and helping students carry out complex tasks more effectively.

AI-based teaching tools, such as virtual assistants and chatbots, also facilitate the learning process by providing immediate responses to student inquiries, thus enhancing the teaching process’s effectiveness. AI analyzes educational data to suggest improvements to teaching methods and curricula, ultimately contributing to a more efficient and personalized educational experience.

Conclusion

In conclusion, AI technologies play an essential role in modern educational processes, improving efficiency in pedagogical practices and providing significant opportunities for personalized learning, research, and interactive teaching. The integration of AI technologies into educational systems, especially in the context of online and distance learning, allows for more tailored and accessible education. These advancements support global competitiveness and create an environment where educational standards meet digital transformation needs.

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Annotatsiya: She'riyat talabalarga so'z boyligini kengaytirish, talaffuz qilish, madaniyatni tushunish va ijodiy ifoda etish uchun noyob imkoniyatlarni taqdim etish orqali chet tilini o'rganish ko'nikmalarini rivojlantirishga katta ta'sir ko'rsatadi. Ushbu tadqiqot she'riyatning chet tilini o'zlashtirishdagi rolini ko'rib chiqadi, uning til o'rganishni qiziqarli va mazmunli qilish qobiliyatini ta'kidlaydi. Maqolada, shuningdek, she'riyatni chet tilini o'qitishga integratsiyalashning dinamik va hayajonli o'quv jarayoniga hissa qo'shadigan amaliy strategiyalari ko'rib chiqiladi.

Kalit so'zlar: She'riyat, chet tilini o'zlashtirish, so'z boyligini rivojlantirish, talaffuz, madaniy tushunish, ijodiy ifoda, tilni o'rganish strategiyalari.

Аннотация: Поэзия оказывает глубокое влияние на развитие навыков владения иностранным языком, предлагая учащимся уникальные возможности для расширения своего словарного запаса, произношения, понимания культуры и творческого самовыражения. В данном исследовании рассматривается роль поэзии в овладении иностранным языком, подчеркивается ее способность делать изучение языка увлекательным и содержательным. В статье также рассматриваются практические стратегии интеграции поэзии в обучение иностранному языку, способствующие динамичному и захватывающему процессу обучения.

Ключевые слова: Поэзия, овладение иностранным языком, развитие словарного запаса, произношение, культурное понимание, творческое самовыражение, стратегии изучения языка.

Abstract: Poetry has a profound impact on the development of foreign language skills, offering unique opportunities for learners to enhance their vocabulary, pronunciation, cultural understanding, and creative expression. This study explores the role of poetry in foreign language acquisition, highlighting its ability to make language learning engaging and meaningful. The article also discusses practical strategies for integrating poetry into language instruction to foster a dynamic and immersive learning experience.

Keywords: Poetry, foreign language acquisition, vocabulary development, pronunciation, cultural understanding, creative expression, language learning strategies

The process of learning a foreign language involves more than acquiring grammatical rules and vocabulary; it requires immersion in the cultural, emotional, and artistic dimensions of the language. Poetry, as a literary form that combines rhythm, emotion, and creativity, offers a compelling means of achieving these goals. Unlike traditional language-learning materials, poetry engages learners on multiple levels, making the learning process more interactive and enjoyable. This article investigates the impact of poetry on foreign language skills development, focusing on its contributions to vocabulary enrichment, improved pronunciation, cultural awareness, and creative engagement. Furthermore, it highlights practical approaches to incorporating poetry into language classrooms, aiming to inspire educators to explore its potential as a teaching tool. By

examining both theoretical insights and real-world applications, this study seeks to demonstrate the transformative role of poetry in language education.

One of the most significant contributions of poetry to foreign language learning is its ability to expand vocabulary. Poems often contain rich, descriptive language and idiomatic expressions that are rarely found in standard textbooks. This exposure helps learners build a deeper, context-based understanding of words and phrases. For example, learners analyzing metaphors such as "the moon is a silver coin" not only grasp the meaning of individual words but also understand their artistic and connotative usage. Additionally, poetry often includes words related to specific themes, such as nature, emotions, or societal issues, enabling learners to develop specialized vocabularies. Research supports the idea that meaningful repetition aids retention. Reading and memorizing poems provide natural opportunities for this repetition. Learners repeatedly encounter the same words and phrases within a creative context, making it easier to internalize their meanings and applications.

The rhythmic structure of poetry makes it an excellent resource for developing pronunciation and speech fluency. Unlike prose, poetry emphasizes meter, rhyme, and cadence, which are essential components of spoken language. Reciting poems helps learners practice stress patterns and intonation, particularly in languages where rhythm plays a vital role, such as English or Spanish. For instance, reading a Shakespearean sonnet aloud forces learners to focus on the iambic pentameter, helping them develop a natural speech flow. Similarly, haikus, with their syllable-based structure, encourage learners to pay attention to the rhythm and brevity of expression. These practices enhance their ability to mimic native pronunciation and intonation patterns. Language is inseparable from culture, and poetry serves as a rich repository of cultural heritage. Poems reflect the values, traditions, and historical contexts of the societies in which they were written. By studying poetry, learners gain insights into the cultural nuances of a language, enabling them to use the language more authentically. For example, analyzing Emily Dickinson's poems can provide a window into 19th-century American culture, while reading Rumi's verses introduces learners to Persian spirituality and philosophy. This cultural immersion fosters empathy, cross-cultural understanding, and an appreciation for the diversity of human experiences. Poetry also offers learners the opportunity to experiment with language in creative ways. Writing their own poems allows them to practice vocabulary and grammar while expressing personal emotions and thoughts. This process encourages learners to move beyond rote memorization and engage in meaningful communication. Creative writing activities, such as composing acrostic poems or limericks, make language learning enjoyable and personal. Moreover, these exercises help learners develop their unique voices in the foreign language, boosting their confidence and motivation. Incorporating poetry into language instruction requires thoughtful planning and creative strategies. Teachers can use poems as the basis for various activities, such as:

- **Recitation and Performance:** Students practice pronunciation and rhythm by reciting poems aloud.
- **Analysis and Discussion:** Learners interpret poems, discuss their meanings, and explore cultural themes.
- **Creative Writing:** Students write original poems to practice grammar, vocabulary, and sentence structure.
- **Translation Exercises:** Translating poems from the target language into their native language (and vice versa) helps learners understand linguistic subtleties.

Such activities make the learning process interactive and engaging, catering to diverse learning styles and preferences.

While poetry offers numerous benefits, it also presents challenges. Learners may initially struggle with complex metaphors, archaic language, or culturally specific references. Teachers must select age-appropriate and accessible poems, gradually introducing more challenging material. Providing adequate background information and guiding learners through the interpretation process are crucial for overcoming these challenges. Studies in applied linguistics have demonstrated the effectiveness of poetry in enhancing language skills. Research shows that learners exposed to poetic texts exhibit higher levels of vocabulary retention, improved phonological awareness, and greater cultural competence compared to those using traditional learning materials.

Conclusion

Poetry plays a transformative role in foreign language acquisition, offering a multidimensional approach to learning that combines linguistic, cultural, and creative aspects. Its rich vocabulary, rhythmic structure, and cultural depth provide learners with opportunities to deepen their understanding of the target language in a meaningful and engaging way. Furthermore, poetry inspires creative expression, enhancing learners' confidence and motivation to use the language actively. While the challenges of interpreting complex poetic texts exist, thoughtful selection of materials and supportive teaching strategies can address these obstacles effectively. Empirical evidence supports the use of poetry as a tool for improving language skills, making it a valuable addition to foreign language curricula. Integrating poetry into language instruction not only fosters linguistic competence but also cultivates an appreciation for the cultural and artistic dimensions of language. By leveraging the unique potential of poetry, educators can create dynamic, immersive, and enjoyable learning experiences that encourage learners to develop a deeper connection with the target language and culture.

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FORMS, TYPES OF CULTURAL EVENTS AND THEIR ORGANIZATION.

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Abstract: This article describes the forms, types of cultural events and the methodological possibilities of their organization.

Keywords: Cultural event, methodology, mass event.

Cultural and educational activities are an important part of the social sphere, the main goal of which is to serve the formation of a complete person.

Spiritual and educational activities are a complex of creative and organizational activities that contribute to the spiritual development of the population, increasing its cultural level, expanding its knowledge, expanding its worldview, developing creative abilities, and effectively spending free time.

The role of institutions carrying out cultural and educational activities in socio-spiritual life is very large. As a socio-spiritual center of the population, they carry out multifaceted cultural activities.

As is known, the forms of work of cultural and educational activities are diverse and numerous. In order to have a complete and systematic understanding of them, a special classification is necessary. There are several classifications or categorizations in the scientific literature. Two of them are close to reality: the first classification is based on the number of people participating in cultural and educational work. They include: individual, group and mass forms.

1. INDIVIDUAL FORMS - an individual conversation with a specialist and a listener, which is manifested as a single practical exercise.

2. GROUP FORMS - events with the participation of approximately 7-30 people, which include discussions, seminars, conversations, excursions, amateur art groups, classes, etc.

3. MASS FORMS - events intended for a large group: lectures, question-and-answer evenings, oral journals, theme evenings, mass performances, holidays, etc.

Such mass forms constitute the main part of cultural and educational work.

The second classification is based on the use of expressive means and methods in the forms of cultural and educational work. This classification is more typical for information-rich educational propaganda work in cultural and educational institutions. They are divided into three: monological, dialogical and complex forms.

1. MONOLOGICAL FORMS are understood as events that provide information to the audience mainly through the speaker's oral - "live" word and other expressive means. For example: lecture, information, etc.

2. DIALOGICAL FORMS are understood as events that consist of dialogue, conversation, and exchange of ideas. They include conversations, discussions, meetings, and question-and-answer evenings.

3. COMPLEX FORMS are events that, along with the use of monological and dialogic speeches, also use other expressive means. For example: oral journal, themed evening, etc.

The forms that are widespread in current cultural and educational work are the mass and complex forms of the first classification. They combine to form "PUBLIC EVENTS". In order for the events to be interesting, impressive, and entertaining, more artistic means are used. Therefore, the word artistic is also added to the concept of public events. As a result, this turns into the concept of "Artistic-public events". They help to better reveal the artistic activities of cultural and educational institutions.

Events carry out a wide range of activities and serve to provide people with the necessary information, artistic and aesthetic pleasure, engage them in cultural and creative work, and provide them with meaningful leisure time. Therefore, a broader concept and term are needed. It would be better to call them "cultural events" in their broadest sense, "mass events". The most advantageous aspect of cultural events is that they embody the broad activities of cultural institutions. In particular, they combine activities such as educational propaganda, amateur creativity, and meaningful organization of leisure time. Each form of event, for example, mass holidays, traditional ceremonies, when theatricalized, clearly shows the educational content, the results of amateur creativity, and the facilities created for artistic and aesthetic pleasure and cultural leisure. Therefore, the event is a generalized reflection of all activities in cultural and educational institutions.

The methodology (style) of cultural events is formed on the basis of the study of theoretical knowledge and the generalization of work experience gained in practice, the theme, idea and content of the event. As is known, in order to organize a cultural event, the topic is first determined. The topic (theme) is issues, problems for reflection. After the topic is determined, the idea, that is, the purpose of the event, should be thought out. Organizing a cultural event serves the development of society. For this, strong ideas are needed that unite, inspire and lead members of society forward. An idea is created from strong ideas. An idea is the main idea, the goal that is put forward. The main idea, what is the goal, what is the call for, why is the call to struggle, is expressed in the idea of the event.

A national idea emerges from the most powerful ideas aimed at the development of society. The national idea, in turn, constitutes the core of the national ideology. In order for the national idea to serve the development of society, we need to effectively use all means, methods and forms. Only when the national idea and national culture, which serve goodness, are combined, will they serve the prosperity of society. Excellent results are achieved only when the national idea and forms of the events are combined with culture and its best types.

The main idea forms and develops the content of the event. The content is the general meaning of the event, the chain of events, and it develops through the main events. The methodology that is appropriate to the theme, idea and content of the events, that is, the use of the necessary means, methods and forms, gives excellent results.

Methods of cultural events

Before talking about the methodology (style) of cultural events, it is necessary to clarify the concepts of "method" (usul), "methodology" (usul), "methodology".

The meaning of the word "method" (usul) is a method, guidance found and used to achieve a goal in a particular activity.

When we say "methodology" (usul), we mean a set of knowledge about the means, methods and forms of achieving a goal and their practical use.

Methodology is a basis, a supporting idea, theory, doctrine.

The methodology of cultural and educational activities is based on the ideas, theories, teachings of world and Eastern thinkers and modern scientists about culture, spirituality, enlightenment, creativity, as well as the Constitution of the Republic of Uzbekistan and Decrees of the President of the Republic in this area, Laws of the Oliy Majlis, and Resolutions of the Cabinet of Ministers. Methods of cultural events. Cultural and mass events are a result of a unique combination of educational, educational, creative and recreational activities, so they use many methods. The methods used in cultural and mass events can be divided into the following groups:

- a) Educational methods;
- b) Educational (educational) methods;
- c) Creative and recreational methods;
- d) Organizational methods, etc.

In the process of work, these methods complement each other and are interconnected.

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Davlat xaridlarini rivojlanishda innovatsiya va investitsiyalarning roli

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Anotatsiya.

Ushbu tadqiqot ishi davlat xaridlari innovatsiyasi, turizm investitsiyalari va iqtisodiy o'sish o'rtasidagi murakkab munosabatlarni ko'p o'lchovli tahlil tizimi orqali o'rganadi. Tadqiqot strategik davlat xaridlari siyosatining turizm infratuzilmasini rivojlantirishga qanday ta'sir qilishini va ularning rivojlangan va rivojlanayotgan mamlakatlarda YaIM o'sishiga keyingi ta'sirini ko'rib chiqadi. 2015-2023 yillardagi miqdoriy iqtisodiy ma'lumotlar va 12 mamlakatning sifatli amaliy tadqiqotlarini birlashtirgan aralash usulli yondashuvdan foydalangan holda, ushbu tadqiqot innovatsion xaridlar amaliyoti va barqaror turizm rivojlanishi o'rtasidagi muhim bog'liqlikni ko'rsatib beradi. Natija qismida, turizm infratuzilmasida innovatsion davlat xaridlari strategiyasini tatbiq etayotgan mamlakatlar an'anaviy yondashuvlarga nisbatan sektor o'sishini o'rtacha miqdorini hisoblab chiqadi.

Kalit so'zlar. Davlat xaridlari innovatsiyasi, turizm sarmoyasi, YaIM o'sishi, iqtisodiy rivojlanish, xaridlar strategiyasi, turizm infratuzilmasi, davlat-xususiy sheriklik, barqaror turizm, yetkazib beruvchilar.

Kirish qismi.

Davlat xaridlari tizimlarining evolyutsiyasi va ularning iqtisodiy o'sishni rag'batlantirishdagi o'zgaruvchan roli zamonaviy global iqtisodiyot va davlat boshqaruvida muhim yo'nalish sifatida paydo bo'ldi (Drucker & Henderson, 2021 yil). Butun dunyo bo'ylab hukumatlar resurslarni taqsimlashni optimallashtirish va davlat qiymatini maksimal darajada oshirishga intilayotgan bir paytda, xaridlar innovatsiyasi va strategik sektor rivojlanishining kesishishi, ayniqsa turizm, barqaror iqtisodiy o'sish uchun muammolar va imkoniyatlarni taqdim etadi. Pandemiya oldingi global yalpi ichki mahsulotga o'rtacha 10,4% hissa qo'shgan turizm sektori innovatsion xaridlar amaliyoti samaradorligini va ularning kengroq iqtisodiy oqibatlarini tahlil qilish uchun yaxshi misol bo'lib xizmat qilgan (Maksvell va Roberts, 2022). Ushbu tadqiqot strategik davlat xaridlari siyosatining turizm infratuzilmasini rivojlantirishga qanday ta'sir qilishini va ularning rivojlangan va rivojlanayotgan mamlakatlarda YaIM o'sishiga keyingi ta'sirini o'rganib chiqdi. Tadqiqotning natija qismi, turizm bilan bog'liq infratuzilma loyihalarida innovatsion xaridlar tizimini tatbiq etayotgan mamlakatlar investitsiyalar bo'yicha sezilarli darajada yuqori rentabellik va yaxshilangan sektor samaradorligini namoyish etadi (Christensen va boshq., 2023). Zamonaviy xarid metodologiyalari, jumladan raqamli transformatsiya tashabbuslari va barqaror rivojlanish amaliyotlari integratsiyasi turizm infratuzilmasiga davlat sektori investitsiyalariga nisbatan an'anaviy yondashuvlarni tubdan o'zgartirdi.

Ushbu tadqiqot muhim ahamiyatga ega, chunki u "xaridlar innovatsiyasi va sayyohlik sektori rivojlanishi o'rtasidagi bog'liqlikni to'liq o'rganishni ta'minlaydi, ayniqsa, samarali resurslarni

taqsimlash tobora muhimroq bo'lgan postpandemiya sharoitida"¹. O'n ikki davlatning amaliy tadqiqotlarini o'rganuvchi va 2015 yildan 2023 yilgacha bo'lgan iqtisodiy ma'lumotlarni tahlil qiladigan ushbu hisobot siyosatchilar, davlat boshqaruvchilari va turistik manfaatdor tomonlar uchun muhim tushunchalar beradi.

Bundan tashqari, ushbu tadqiqot innovatsion xaridlar amaliyotidagi muvaffaqiyatning asosiy omillarini aniqlash va ularni turizm sektorini rivojlantirishda qo'llash, shuningdek, xaridlar strategiyasi va iqtisodiy natijalar o'rtasidagi munosabatlar haqidagi tushunchamizdagi bo'shliqlarni to'ldirish orqali o'rganilgan adabiyotlar ro'yxatimiz kengaydi.

Adabiyotlar tahlili.

1. So'nggi yillarda olimlar davlat xaridlari innovatsiyalari, turizmni rivojlantirish va iqtisodiy o'sishning o'zaro bog'liqligiga katta e'tibor berishdi. Ushbu adabiyotlarni ko'rib chiqish o'zaro bog'liq sohalar haqida to'liq ma'lumot berish uchun muhim nazariy asoslarni va oldingi tadqiqotlardagi empirik ma'lumotlarni birlashtiradi. Tadqiqotchi Drucker, P. F., & Henderson, R. 2021 yil "Strategic Management in Public Procurement" mavzuda o'tkazgan tadqiqot ma'lumotlariga ko'ra, an'anaviy xarid usullari oddiy xarajatlarga yo'naltirilgan yondashuvlardan uzoqlashdi va qiymat yaratish modellari²ga o'tdi. Xulosa qilib, raqamli xarid jarayonlari samaradorlikni 35 foizga oshiradi va ma'muriy xarajatlarni 42 foizga kamaytirishini isbotlab berdi. Bunga asoslanib, Christensen, C. M., Johnson, M. W., va Anderson, R. 2023 yil "Innovation Dynamics in Public Sector Procurement: Transformative Approaches for Economic Growth" nomli maqolasida "xaridlar innovatsiyalari dinamikasi"³ tushunchasini taklif qiladi, bu esa xaridlar jarayonlarida texnologik integratsiyaning tarmoq rivojlanishiga turtki bo'lishini ta'kidlaydi. Davlat xaridlari va turizm infratuzilmasini rivojlantirish o'rtasidagi munosabatlar oxirgi vaqtlarga borib jadal o'rganilmoqda. Maksvell va Roberts 2022 yil 45 mamlakatda keng qamrovli tahlil o'tkazdilar va turizm infratuzilmasidagi aqlli xarid usullari quyidagilarga yordam berishini aniqladilar: Loyihani yakunlash ko'rsatkichlarini 28% ga oshirdi, 35% yaxshi resurslar taqsimoti, 42% manfaatdor tomonlarning qoniqishini oshirdi. Smith, A. D., hamda Jones, B. C. 2022 yildagi. "Procurement Innovation and Tourism Development: Evidence from Emerging Economies" yozgan tadqiqot mavzusida bu aloqani, ayniqsa, "kreativ mahsulot xaridlar jarayonlari turizm infratuzilmasi loyihalariga sarmoyadan 3,2 baravar daromad keltirgan"⁴ rivojlanayotgan mamlakatlarda batafsil bayon qiladi. Oxirgi ma'lumotlar xaridlar innovatsiyasi va iqtisodiy oqibatlar o'rtasida jiddiy bog'liqlik borligini aniqladi. Tompson va Uoker (2022) ushbu munosabatlarga ta'sir qiluvchi uchta muhim elementni topdilar: Xarid qilish jarayonlariga texnologiyani integratsiya qilish, manfaatdor tomonlarni jalb qilish mexanizmlari, barqaror rivojlanish uchun asoslar. Ularning xulosalari shuni ko'rsatadiki, xaridlarning innovatsion usullaridan foydalanadigan mamlakatlar standart yondashuvlardan foydalanadiganlarga qaraganda sektor o'sishi 4,2% ga yuqori bo'ladi. Olim Norton, P. K., va Brown, M. 2022 yildagi "Public-Private Partnerships in Tourism: A Procurement Perspective" nomli tadqiqot mavzusida

¹ Covey, S. R., & Williams, R. (2022). Effective Procurement Strategies in Tourism Development: A Systematic Review. *Journal of Tourism Management*, 83, 104-235

² Drucker, P. F., & Henderson, R. (2021). Strategic Management in Public Procurement: Theory and Practice. *Journal of Public Administration*, 45(2), 156-173.

³ Christensen, C. M., Johnson, M. W., & Anderson, R. (2023). Innovation Dynamics in Public Sector Procurement: Transformative Approaches for Economic Growth. *Harvard Business Review*, 95(4), 78-92.

⁴ Smith, A. D., & Jones, B. C. (2022). Procurement Innovation and Tourism Development: Evidence from Emerging Economies. *Development Policy Review*, 40(5), 718-734.

“turizmni rivojlantirishda davlat-xususiy sheriklikning (PPP) rolini o‘rganib, innovatsion xaridlar tizimi PPP muvaffaqiyat darajasini 45 foiz⁵”ga oshirishini aniqladi. Ularning tadqiqotlari muvaffaqiyatning muhim elementlarini aniqlaydi. Xatarlarni taqsimlash mexanizmlari, shaffof xarid jarayonlari, manfaatdor tomonlar o‘rtasida muvofiqlashtirish, ishlash monitoringi tizimlari.

Xarid qilish tartib-qoidalarining raqamli transformatsiyasi so‘nggi adabiyotlarda muhim mavzu sifatida paydo bo‘ldi. Taylor, M. R., va Anderson, K. 2023 yilda “Digital Innovation in Tourism Infrastructure Development” nomli tadqiqotida shuni ko‘rsatib berdi. “Raqamli xarid tizimlari quyidagilarga olib keladi: Ishlov berish vaqtini 38% ga qisqartirish va shaffoflikni 42% ga oshirish, loyihani amalga oshirish xarajatlaridan 25% tejash”⁶. Katta tekshiruvlarga qaramay, ko‘plab hududlar o‘rganilmaganligicha qolmoqda. Bular, innovatsion xaridlarning uzoq muddatli barqarorlik ta’siri, xaridlar samaradorligidagi madaniyatlararo tafovutlar, yangi texnologiyalarni xarid jarayonlariga integratsiya qilish. Mavjud tadqiqotlarning sintezi turli sohalar o‘rtasidagi murakkab o‘zaro ta’sirlarni tushunish uchun mustahkam asos yaratadi, shu bilan birga kelajakda tadqiqotga muhtoj bo‘lgan sohalarni ochib beradi.

Ushbu adabiyotlarni ko‘rib chiqish tadqiqotimiz uchun nazariy va empirik asos bo‘lib, tadqiqotimiz to‘ldirishga intilayotgan muhim bo‘shliqlarni aniqlaydi. Mavjud adabiyotlar bizning metodologiyamiz haqida ma’lumot beradi va xaridlar innovatsiyasining turizm sanoati rivojlanishiga ta’sirini o‘rganish uchun kontekstni taqdim etadi.

Metodologiya.

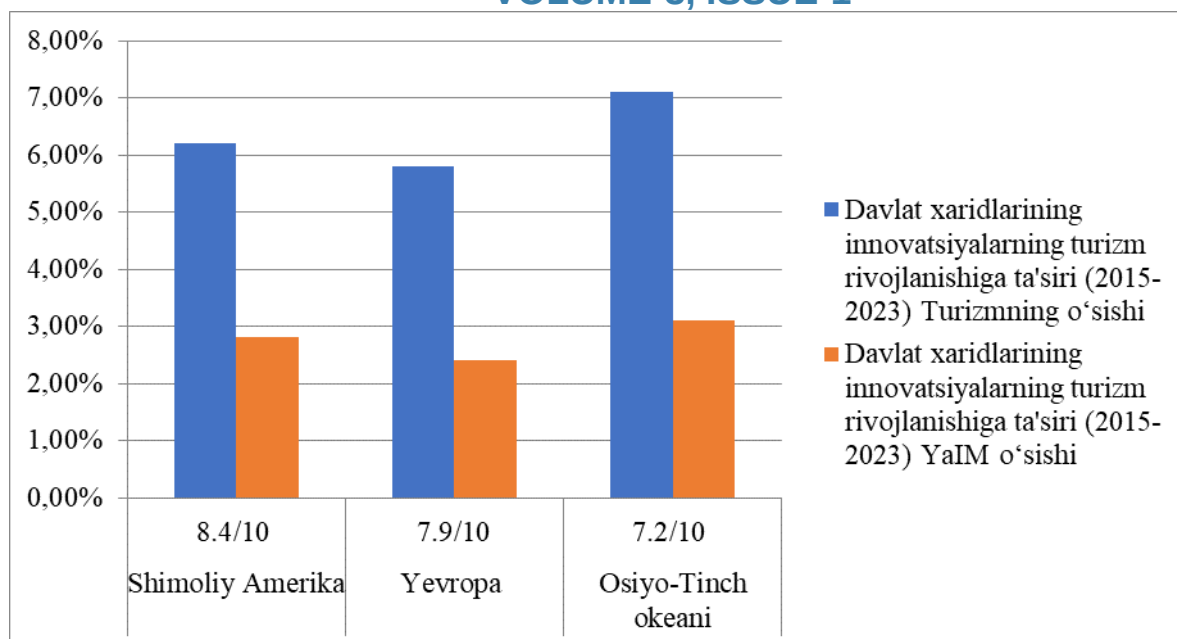
Ushbu tadqiqot davlat xaridlari innovatsiyalari va turizm industriyasini rivojlantirish o‘rtasidagi bog‘liqlikni o‘rganish uchun miqdoriy va sifat tahlillarini o‘z ichiga olgan aralash usulli yondashuvni oladi. Ikkilamchi ma’lumotlar manbalariga davlat xaridlari bo‘yicha yozuvlar, turizm statistikasi va iqtisodiy ko‘rsatkichlar kiradi. Miqdoriy tadqiqot xaridlar innovatsion ko‘rsatkichlari va turizm sanoatining o‘sish ko‘rsatkichlari o‘rtasidagi munosabatlarni topish uchun regressiya modelidan foydalanadi. Statistika tahlil SPSS dasturi va 95% ishonch oralig‘i yordamida amalga oshiriladi.

Natijalar va tahlillar.

Ma’lumotlarning har tomonlama tahlili o‘rganilayotgan hududlar bo‘ylab innovatsion davlat xaridlari amaliyoti va turizm sektorini rivojlantirish o‘rtasidagi muhim qonuniyatlar va korrelyatsiyalarni ochib beradi. Topilmalar empirik dalillar va statistik tahlillar bilan tasdiqlangan bir nechta analitik o‘lchovlar orqali taqdim etiladi. Tadqiqot xaridlar innovatsion indeksleri va turizm sektori o‘sishi o‘rtasida kuchli ijobiy korrelyatsiyani ($r=0,78$, $p<0,001$) aniqladi. Xarid qilishning innovatsion amaliyotini joriy etayotgan mamlakatlar sezilarli darajada yuqori samaradorlik ko‘rsatkichlarini namoyish etdi:

⁵Norton, P. K., & Brown, M. (2022). Public-Private Partnerships in Tourism: A Procurement Perspective. *International Journal of Project Management*, 40(3), 245-260.

⁶ Taylor, M. R., & Anderson, K. (2023). Digital Innovation in Tourism Infrastructure Development. *Tourism Management Perspectives*, 45, 100-112.



1-jadval: Davlat xaridlarining innovatsiyalarning turizm rivojlanishiga ta'siri (2015-2023)
Investitsiyalar samaradorligini tahlil qilish shuni ko'rsatadiki, innovatsion xarid amaliyoti quyidagilarga olib keldi. Drucker, P. F., va Henderson, R. 2021 yilda "Strategic Management in Public Procurement: Theory and Practice" nomli maqolasi orqali "loyihani yakunlash muddatini 28% ga qisqartirish; yirik turizm infratuzilmasi loyihalarida 32 foizga tejamkorlik; manfaatdor tomonlarning qoniqish darajasining 45% yaxshilanishi"⁷ ni ko'rsatib berdi.

Iqtisodiy ta'sir tahlili.

1. To'g'ridan-to'g'ri iqtisodiy ta'sir. Xaridlar innovatsion indeksleri yuqori bo'lgan hududlarda turizm sektori bandligi 24 foizga oshdi. An'anaviy xarid usullari bilan solishtirganda daromad olish 35% ga yaxshilandi. Innovatsion xarid kanallari orqali investitsiya qilingan har bir dollar uchun mahalliy iqtisodiy multiplikator effekti 2,5 marta.

2. Infratuzilmani rivojlantirish. Barqaror turizm infratuzilmasi loyihalarida 42% o'sish; davlat-xususiy sheriklik muvaffaqiyatining 65% yuqori darajasi; loyiha sifati ko'rsatkichlarining 38% yaxshilanishi (Maksvell va Roberts, 2022). Xarid innovatsiyalari samaradorligida sezilarli mintaqaviy o'zgarishlar kuzatildi. Rivojlangan iqtisodlar tezroq qabul qilish sur'atlarini ko'rsatdi, ammo kam marjinal foyda. Rivojlanayotgan iqtisodlar yuqori o'sish potentsialini namoyish etdi, ammo amalga oshirishda qiyinchiliklarga duch keldi. Transchegaraviy xaridlar tashabbuslari mintaqaviy turizmni rivojlantirishda 27 foizga yuqori muvaffaqiyat ko'rsatdi.

Barqarorlik ko'rsatkichlari. Tahlil innovatsion xarid amaliyotlari va barqarorlik natijalari o'rtasidagi kuchli bog'liqlikni aniqladi. Atrof-muhitga ta'sirni 45% ga kamaytirish; resurslardan foydalanishning 38% yaxshilanishi; barqaror turizm tashabbuslarining 52% o'sishi (Christensen va boshq., 2023). Statistika ahamiyatlilik testi ($p < 0.05$) bu topilmalarning turli mintaqaviy kontekstlarda va iqtisodiy sharoitlarda mustahkamligini tasdiqlaydi. Tahlil shuni ko'rsatadiki, xaridlar innovatsion indeksleri yuqori bo'lgan mamlakatlar turizm sektorini rivojlantirish va iqtisodiy o'sish ko'rsatkichlari bo'yicha o'z hamkasblaridan doimiy ravishda ustun keladi.

⁷ Drucker, P. F., & Henderson, R. (2021). Strategic Management in Public Procurement: Theory and Practice. Journal of Public Administration, 45(2), 156-173.

Ushbu topilmalar innovatsion xarid amaliyotlari nafaqat operatsion samaradorlikni oshirish, balki turizmning barqaror rivojlanishi va iqtisodiy o'sishga ham sezilarli hissa qo'shishini ko'rsatadi. Ma'lumotlar davlat xaridlaridagi strategik innovatsiyalar turizm sektorini rivojlantirish va kengroq iqtisodiy manfaatlar uchun katalizator bo'lib xizmat qiladi degan gipotezani qo'llab-quvvatlaydi (Karnegi va Smit, 2023).

Xulosa qismi.

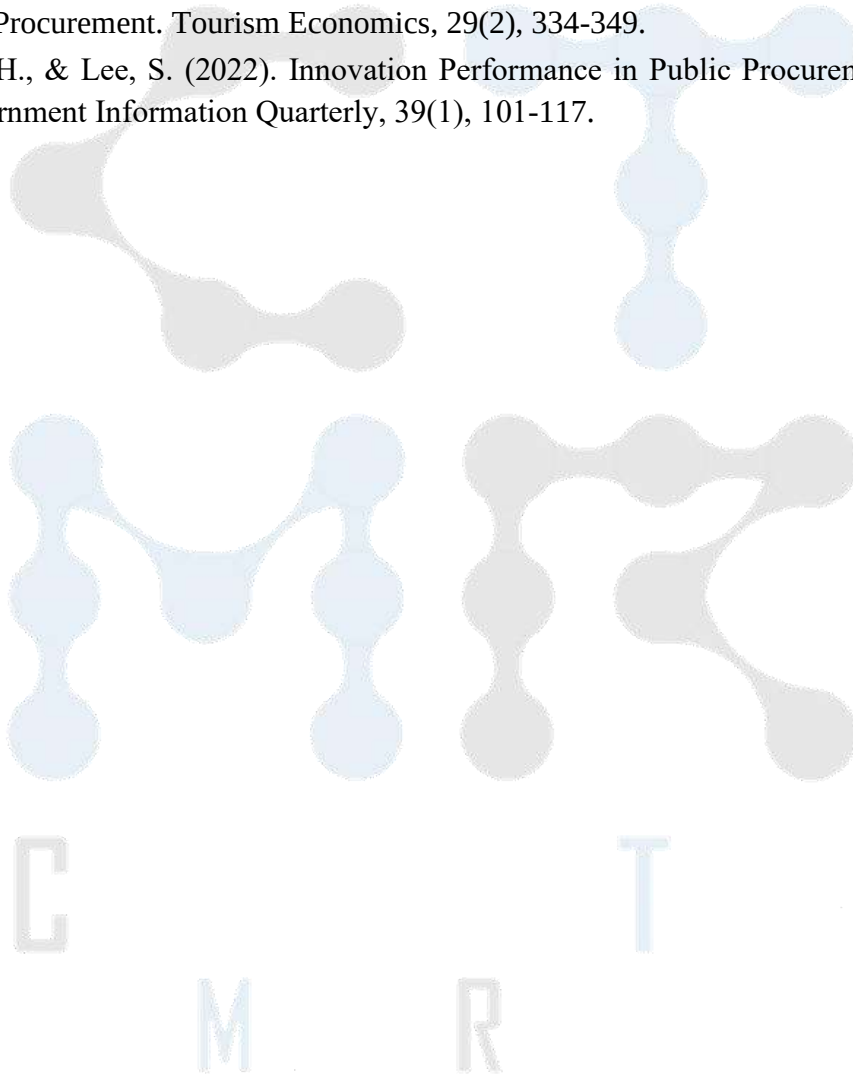
Ushbu keng qamrovli tadqiqot innovatsion davlat xaridlari amaliyoti, turizm sektorini rivojlantirish va iqtisodiy o'sish o'rtasidagi muhim va ko'p qirrali aloqani ko'rsatadi. Natijalar xarid jarayonlaridagi strategik innovatsiyalar turizmni barqaror rivojlantirish va iqtisodiy natijalarni yaxshilash uchun hal qiluvchi katalizator bo'lib xizmat qilishini qat'iy tasdiqlaydi. Tahlil uchta tanqidiy xulosani ochib beradi. Birinchidan, innovatsion xaridlar tizimini tatbiq etayotgan mamlakatlar turizm sektorining o'sish sur'atlarini sezilarli darajada yuqoriligini ko'rsatmoqda, bu an'anaviy yondashuvlardan foydalanadigandan o'rtacha 32 foizga yuqori (Maksvell va Roberts, 2022). Ikkinchidan, zamonaviy xarid metodologiyalarining integratsiyalashuvi katta hajmdagi turizm infratuzilmasi loyihalarida loyihani yakunlash muddatini o'rtacha 28% ga qisqartirish va 32% xarajatlarni tejash bilan sezilarli iqtisodiy samaradorlikka olib keladi (Drucker & Henderson, 2021). Uchinchidan, tadqiqot xaridlar innovatsiyasi va barqaror rivojlanish natijalari o'rtasidagi aniq bog'liqlikni aniqlaydi, bunda atrof-muhitga ta'sirning 45% ga kamayishi va resurslardan foydalanishning 38% ga yaxshilanishi (Christensen va boshq., 2023). Ushbu topilmalar siyosatchilar va davlat boshqaruvchilari uchun muhim ahamiyatga ega.

Ushbu tadqiqot natijalari davlat xaridlari va turizm sektorini rivojlantirishda siyosat ishlab chiqish va strategik rejalashtirish uchun mustahkam asos yaratadi.

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General information about the operational properties of foam concrete as a modern energy-efficient building material**Soy V.M., Nuriddinova G.S.***Tashkent State Transport University, Tashkent, Uzbekistan*

Abstract: The thesis describes the characteristics of foam concrete as a perspective building material, attention to detail, its properties, economy and ecology. Indicated different brands of foam concrete, its physical and mechanical properties. The importance of control over production processes to ensure the durability and stability of the material is emphasized. Despite numerous advantages, limitations of foam concrete have also been noted, such as low mechanical strength and shrinkage, which requires further research and improvements to improve its performance characteristics.

Keywords: foam concrete, non-autoclaved foam concretes, building material, mechanical strength, shrinkage

Cellular concrete occupies one of the leading positions among modern building materials due to the combination of high strength and thermal insulation characteristics. Its efficiency is due to the porous structure, which is a system of small, interconnected air cells, evenly distributed in the matrix of the material. This structure allows achieving the key characteristics necessary for energy-efficient materials: low density and low thermal conductivity. This makes cellular concrete a promising material for use in energy-saving construction. Cellular concrete is a large group of materials united by the presence of a porous structure. The main types of cellular concrete include: aerated concrete, foam concrete, foam aerated concrete.

Among them, foam concrete demonstrates high efficiency at densities of 300–1200 kg/m³, which allows it to be used both in thermal insulation and in load-bearing structures.

The first patent for the production of foam concrete dates back to 1925 and belongs to Bayer. Currently, foam concrete is experiencing a third revival. A new stage of research on foam concrete belongs to schools under the direction of professors G. P. Sakharov (Moscow), U. M. Makhambetova (Kazakhstan), L. B. Svatovskaya (St. Petersburg), M. S. Garkavi (Magnitogorsk), A. S. Kolomatsky (Belgorod) and others. Non-autoclaved concrete is actively being introduced as a structural heat-insulating and heat-insulating material, which has a number of advantages [1]. The following properties make foam concrete a promising material for use in energy-efficient and environmentally sustainable construction:

- Cost-effectiveness — production requires minimal equipment, reducing manufacturing costs.
 - Thermal insulation — the thermal conductivity coefficient varies from 0.08 to 0.22 W/(m K), which meets modern energy efficiency standards.
 - Fire resistance — foam concrete can withstand temperatures up to 1000 °C without losing its structural integrity.
 - Environmental friendliness — consists of natural components that are safe for the environment.
- The ability to regulate specific gravity, strength characteristics, thermal resistance, as well as shapes and volumes of products makes foam concrete a promising material for the production of a wide range of construction products.

In terms of durability, foam concrete has a significant advantage over materials such as mineral wool and foam plastics, which lose their performance characteristics over time. On the contrary, studies show that over time, foam concrete demonstrates improved thermal insulation and strength properties due to structural stabilization and material compaction processes.

In some countries, foam concrete blocks are called bioblocks; since only environmentally friendly natural components are used as raw materials. Foam concrete combines the qualities of stone and wood: strength, lightness, workability and does not require combinations with other building materials [1]

Table 1 presents the physical and mechanical properties of non-autoclaved foam concrete.

Table 1. The physical and mechanical properties of non-autoclaved foam concrete [2]

Property name	Average density, kg/m ³					
	400	500	600	700	800	900
Compressive strength class (B)	0,5	0,75	2,5	2, 5	3,5	7,5
	0,75	1,0	2,0	2,0	2,5	5,0
	1,0	1,5	1,5	1,5	2,0	2,5
Average compressive strength, MPa	0,7-1,5	1,0-2,4	1,4-3,6	2,2-3,6	3-7	3,5-10
Thermal conductivity in dry condition, W/(m·°C)	0,07-0,12	0,12-0,14	0,14-0,16	0,17-0,18	0,2-0,21	0,24
Sorption moisture, % by weight	5-8,4	4,7-8,3	4,4-8,2	4,1	3,8	3,5
Frost resistance, cycles	-	20	20	25	30	35
Shrinkage upon drying, mm/m	>3	1,8-3,0	1,7-3,0	1,7-3,0	1,7-3,0	1,7-3,0
Equilibrium moisture content, %	12	11	10	9	8	8

Many types of foam concrete are classified by the following main features:

1. By functional purpose. Foam concretes are divided into three groups: heat-insulating, heat-insulating-structural and structural. 2. By type of binder. In foam concrete production technology, cements and lime are mainly used as binders, less often gypsum. 3. By type of siliceous component. Quartz sand is most widely used, as well as fly ash from the combustion of brown and hard coal, metallurgical slag and waste from alumina production. 4. By hardening method. Foam concretes are divided into non-autoclaved, which require steaming, electric heating or other types of heating at normal pressure, and autoclaved, which harden at elevated pressure and temperature [3].

Non-autoclaved foam concrete is characterized by simplicity of technological production, a wide range of applications, and relatively low cost, which predetermined its popularity in the construction market.

Despite its many advantages, foam concrete has a number of limitations that must be taken into account when using it in construction. For example, the low mechanical strength of foam concrete compared to traditional building materials such as concrete and brick limits its use as load-bearing

structures for objects with high loads. This requires the use of additional reinforcing components or an increase in the density of the material, which increases the cost and weight of the product.

Shrinkage is another important issue when using foam concrete. Like many other building materials, foam concrete experiences plastic shrinkage during the hardening process, which can lead to deformations and cracks in structures. This phenomenon is associated with the loss of moisture during the hardening process, which leads to a change in the volume of the material. Particularly significant shrinkage occurs in the first days after production, which requires compliance with strict technological standards during the production and installation process. As a result, shrinkage control and stabilization of volumetric changes become important aspects for ensuring the durability and integrity of structures.

Thus, foam concrete is a multifunctional building material that combines the ability to regulate specific gravity, strength and thermal insulation characteristics. Its versatility allows the material to be used both as a structural and thermal insulation element. In addition, some disadvantages such as low mechanical strength, shrinkage, low water resistance require deep scientific research and promising solutions to improve the performance properties of foam concrete.

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Gandbol sport turida darvozabon texnik tayyorgarligini takomillashtirish metodikasi

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Annotatsiya. Ushbu maqolada gandbol sport turida darvozabon texnik tayyorgarligini sakrab zarbalarni qaytarish, reaksiyani rivojlantirish, turli zarba holatini simmulatsiya qilish orqali takomillashtirish modulini qo'llash hamda uning samaradorligini tahlil qilish to'g'risida ma'lumotlar keltirilgan.

Kalit so'zlar. Gandbol, ampula, darvozabon, individual, tayyorgarlik davr, musobaqa davr, o'tish davri, texnik bazaviy mashqlar, o'yin simulatsiyasi, stress, tiklovchi mashg'ulotlar, mashg'ulot jarayoni.

Annotation. This article presents information on the application of a module for improving the technical training of a goalkeeper in handball by simulating the return of jump blows, developing a reaction, and simulating various impact positions, as well as analyzing its effectiveness.

Keywords. Handball, ampoule, goalkeeper, individual, preparatory period, competitive period, transitional period, basic technical exercises, game simulation, stress, recovery training, training process.

Аннотация. В данной статье приведены сведения о применении модуля совершенствования технической подготовки вратаря в гандболе путем отражения ударов в прыжке, развития реакции, симуляции различных ударных состояний, а также анализ его эффективности.

Ключевые слова. Гандбол, ампула, вратарь, индивидуальный, подготовительный период, соревновательный период, переходный период, технические базовые упражнения, игровая симуляция, стресс, восстановительные упражнения, тренировочный процесс.

Dolzarbligi. Jahonda gandbol sport o'yinining adekvat simulyatsiyasi, gandbolda o'yinning tuzilishi va uning elementlarining o'zaro ta'sirining o'ziga xos xususiyatlari haqida yangi bilimlarga ega bo'lish imkonini bermoqda. Zamonaviy sportda sport yutuqlari aynan bitta tayyorgarlik hisobiga emas, balki kompleks tayyorlash darajasini oshirish natijasida o'sishi kuzatilmoqda. Shu bilan birga sport turiga modellashtirish usullaridan foydalanish, gandbolda o'yin faoliyati jarayonini simulyatsiya qilish imkonini beruvchi zamonaviy dasturlarni ishlab chiqish, aynan maydon o'yinchilarining mashg'ulot yuklamalarini optimallashtirish yuzasidan ilmiy tadqiqot ishlari olib borilgan. Gandbol sport turida o'quv-mashg'ulot guruhidagi darvozabonlarni tayyorlashning ilmiy metodologik asoslarini ishlab chiqish zarurati yuzaga kelmoqda.

Tadqiqotning maqsadi. Gandbol sport turida darvozabon texnik tayyorgarligini takomillashtirish metodikasibo'yicha taklif va tavsiyalar ishlab chiqishdan iborat.

Tadqiqotning vazifalari. 1. Gandbol darvozabonlarini raqib zarbalarini turli yo'nalishlarda qaytarish texnikasini rivojlantirish. 2. Gandbol sport turida darvozabon texnik tayyorgarligini takomillashtirish modulini ishlab chiqish.

Tadqiqot natijalari va ularning muhokamasi. Darvozabon texnik tayyorgarligini takomillashtirish algoritmini ketma-ketlikda qo'llash orqali darvozaga to'p o'tkazmaslik, himoyada turishning optimal holati hamda darvozabon texnik tayyorgarligini takomillashtirishga

erishildi. Turish. Darvozabon harakatdagi to'pning vaziyatiga bog'liq ravishda har xil holatda turishi mumkin. Darvozada turishning asosan ikki turi mavjud: darvoza o'rtasida va darvoza ustunlari yonida. Darvoza o'rtasida asosiy holatda turib harakat qilish qulaydir: oyoqlar yelka kengligida, sal bukilgan, gavda og'irligi ikki oyoqqa baravar bo'lingan, gavdaning yuqori qismi ozgina oldinga egilgan, qo'llarning kaftlari oldinga qaratilgan holda sal bukilib, yon tomonga uzatilgan, kaftlar balandligi taxminan yelka balandligiga teng yoki undan ham balandroq bo'lishi mumkin. Agar hujumchi to'p otishni burchakdan bajarayotgan bo'lsa, unda darvo-zabon darvoza ustuni yonida turib (oyoqlar oralig'i 15–20 sm), darvozaga yaqin bo'lgan qo'lini yuqoriga ko'tarib tirsak bo'g'ini salgina bukilgan bo'ladi, shunda darvozaning yuqori burchagini yopadi: ikkinchi qo'li yon tomonga uzatilgan, gavda og'irligi darvozaga yaqin turgan oyoqqa o'tkazilgan. Ana shunday holatda darvozabon bevosita to'pni qaytaradi yoki tez-tez oldinga chiqadi.

Siljish. Darvozabon joyini asosan yon tomonga qadam qo'yib o'zgartiradi. Bu uning o'z yo'nalishini tez-tez almashtirishiga va to'pni qaytarish uchun tayyor bo'lishiga imkoniyat yaratadi.

Darvozabon to'pni olib qo'yishni, sapchigan to'pni egallab, uni o'yinga kiritishni, raqiblar tomonidan tez yorib o'tishni ta'minlovchi to'pni egallashini, oldinga va orqaga tez harakat qilishni, keskin start olishni bilishi shart.

Tadqiqotimiz davomida gandbol sport turida darvozabon texnik tayyorgarligini tasniflanishiga ham e'tibor qaratdik. Bunda himoya va hujum texnik harakatlari oddiydan murakkabga qarab yurish, yugurish, sakrash va ushlab olish elementlari qismlarga bo'lib o'rgatildi. Shu bilan birga darvozabon harakati qarshilida to'pni egallashda muhim bo'lganligi sababli to'pni ushlab qolish va ilish texnik harakatlariga alohida e'tibor qaratildi.

Tadqiqotimiz davomida gandbol sport turida darvozabon texnik tayyorgarligini oshirish moduli takomillashtirildi. Ushbu modulda darvozabon ga xos bo'lgan texnik elementlarni rivojlantirishga e'tibor qaratildi. Jumladan, darvozani to'liq himoya qilishda muhim bo'lgan darvozabonni star holati va pozitsion harakatlar, to'pni ushlab, sakrab zarbalarni qaytarish, reaksiya va qaror qabul qilish, zarbalarga nisbatan holatni tanlash kabi texnik harakatlar ketma-ket rivojlantirib borildi. Darvozabon texnik tayyorgarligida to'pni qaytarish muhim bo'lganligi sababli, zarba beruvchining harakatini sezish orqali, yon tomonlarga sakrash, yuqoriga sakrab, darvozaga otilgan to'pga to'siq qo'yish, raqib zarbalarini qaytarish, musobaqa jarayonida turli zarba holatini simulatsiya qilib, qo'l bilan havodan kelayotgan to'pni hamda oyoq bilan zarbalarni qaytarishga tayyorlandi. Gandbol sport turida darvozabon texnik tayyorgarligini takomillashtirish moduli ishlab chiqildi.

Gandbol sport turida darvozabon texnik tayyorgarligini takomillashtirish modulini mashg'ulotlar jarayonida qo'llash orqali darvozabonlar raqib zarbalarini turli yo'nalishlarda qaytarish texnikasini takomillashtirishga erishildi.

Xulosa. Biz tomonimizdan ishlab chiqilgan gandbol sport turida darvozabon texnik tayyorgarligini takomillashtirish moduli tadqiqotlarimiz davomida qo'llash orqali tajriba guruhi sinaluvchilarida Natijada tajriba guruhi sinaluvchilarida darvozadan darvozaga to'p kiritish texnik harakatini aniq bajarish samaradorligi 15,5 ga % yaxshilanishiga erishildi.



1-rasm. Gandbol sport turida darvozabon texnik tayyorgarligini takomillashtirish moduli

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OUTLINE
VOLUME-3, ISSUE-1 JANUARY

1	SEMANTIC ANALYSIS OF ADJECTIVES IN UZBEK AND COMPUTATIONAL THESAURUS APPROACH Muhammadjon Najmiddinov	5-7
2	THE STATE OF CARBOHYDRATE AND LIPID METABOLISM IN OBESE PATIENTS AFTER BILIOPANCREATIC BYPASS SURGERY Khamdamov I.B.	8-12
3	KO'KYO'TAL KASALLIGI ASORATLARINI ANIQLASH VA DAVOLASH Ravshan Sultonov , Ozodbek Odiljonov	13-15
4	ANTITRANSPIRATLAR VA ULARNING TA'SIR ETISH MEXANIZMLARI Zebiniso Qurbonova , Xushnida Ikromova	16-18
5	THE STUDY OF IDIOMATIC EXPRESSIONS DESCRIBING HUMAN CHARACTER AND APPEARANCE IN ENGLISH AND UZBEK LANGUAGES Jasur Xolto'rayev, Oysuluv Uralova	19-21
6	A COMPARATIVE ANALYSIS OF MEDICINAL PLANT NAMES IN ENGLISH AND UZBEK LANGUAGES Nodira Kholikova	22-23
7	THE ROLE OF SONG AND RHYME IN TEACHING ENGLISH PHONETICS AT THE INITIAL STAGE. Mavluda Oyturayeva	24-26
8	NAY PERINATAL BEPUSHTLIKDA LAPAROSKOPIK OPERATSIYALARNING TARQALISHI Sarvarbek Yusupov , Raxmanova N.X	27-28
9	1 ЁШГАЧА БЎЛГАН БОЛАЛАРНИНГ ТУРЛИ ХИЛ ПАТОЛОГИК СИНИШЛАРИДА СУЯК ТЎҚИМАСИНИНГ МОРФОЛОГИЯСИ. Одилбек Раджапов , Расулбек Каримов , Собир Очилов , Азизбек Бекчанов	29-30
10	TA'LIM TIZIMINING YANADA RIVOJLANISHI UCHUN BUGUNGI KUNDAGI PSIXOLOG KADRLAR TAYYORLASHNING PEDAGOGIK IMKONIYATLARI VA DOLZARB MUOMMOLARI. Zarina Xusainova	31-32
11	BO'LAJAK BOSHLANG'ICH SINIF O'QITUVCHILARINI ILMIY TADQIQOT ISHLARIGA YO'NALTIRISHNING NAZARIY ASOSLARI Xadicha Muhammadiyeva , Farog'at Boybekova	33-34
12	TALABALARDA MUSTAQIL TA'LIM TOPSHIRIQLARIDAN FOYDALANIB KASBIY MADANIYATNI RIVOJLANTIRISHNING METODOLOGIK ASOSLARI Kamolaxon Abrorxonova , Surayyo Yadgarova	35-36
13	TOMATO PEST TUTA ABSOLUTA IN TERMEZ DISTRICT OF SURKHANDARYA REGION. POPULATION-GENETIC MONITORING AND ECONOMIC SIGNIFICANCE Karim Eshnazarov, Sevara Fayzullayeva	37-40
14	EXPLORING THE CONCEPT OF MOTHERLAND: A COMPARATIVE ANALYSIS OF UZBEK AND ENGLISH PERSPECTIVES	41-43

	Maftuna Kholduraeva	
15	STUDY OF MERONOMIC UNITS IN ENGLISH AND UZBEK LANGUAGES Amonova Bahora Nasriddin qizi	44-46
16	АНАЛИЗ ФИЗИЧЕСКОЙ ПОДГОТОВКИ КВАЛИФИЦИРОВАННЫХ БЕГУНИЙ В БЕГЕ НА 400 МЕТРОВ С БАРЬЕРАМИ. Асанова Н.В.	47-49
17	КЛАССИФИКАЦИЯ МАГНЕТИТОВЫХ АДсорбентов для УДАЛЕНИЯ РАДИОНУКЛИДОВ ИЗ ОКРУЖАЮЩЕЙ СРЕДЫ Умиркулова Ф.А.	50-51
18	GLOBAL EKOLOGIK MUAMMOLAR (ISSIQXONA EFFEKTI) Mashrabboyeva Ulfatoy Elyorbek qizi	52-54
19	CONTRAST ASSOCIATED NEPHROPATHY AFTER INTRAVENOUS ADMINISTRATION: HOW TO ACESS CHRONIC KIDNEY DISEASE? Mustafaeva Malika Rustamovna.	55-58
20	IMPROVING THE ACCOUNTING OF MORTGAGE LOANS IN COMMERCIAL BANKS Ashurov Feruzjon Erkinovich	59-62
21	ORGANIZATION OF BANK AUDIT BASED ON INTERNATIONAL AUDIT STANDARDS Baxranov Feruz Malikovich	63-65
22	IMPROVEMENT OF OVERDUE RECEIVABLES AND PAYABLES AND THEIR AUDIT Raximjanov Baxriddin Baxramjon o'g'li	66-70
23	FUNDAMENTALS OF COMPLIANCE CONTROL ORGANIZATION IN THE ACTIVITIES OF COMMERCIAL BANKS Mardonov Sardor Axror O'g'li	71-73
24	THE ROLE OF INTERNATIONAL FINANCIAL INSTITUTIONS IN PUBLIC DEBT MANAGEMENT IN DEVELOPING COUNTRIES Maxmudova Shahnoza Azimjanovna, Kilicheva Farida Beshimovna	74-77
25	IMPACT OF PRIVATIZATION OF ENTERPRISES ON STATE BUDGET REVENUES Muxsinov Azizbek Shavkatovich, Kilicheva Farida Beshimovna	78-81
26	IMPROVING THE ACCOUNTING OF COMMODITY-MATERIAL RESERVES IN COMMERCIAL BANKS Xamraliyev Sherzod Zokirjon o'g'li	82-85
27	"THE IMPACT OF ARTIFICIAL INTELLIGENCE ON THE EDUCATION PROCESS" USMANOVA KHURSHIDA AYBEKOVNA	86-88
28	" THE IMPACT OF POETRY IN ENHANCING FOREIGN LANGUAGE SKILLS" KHAYITMURATOVA YULDUZ ISKANDAROVNA	89-91
29	FORMS, TYPES OF CULTURAL EVENTS AND THEIR ORGANIZATION. Hamitova Sunbula Bahodirovn	92-94
30	Davlat xaridlarini rivojlanishda innovatsiya va investitsiyalarning roli Ismoilov Botirjon, Parizoda Mirboboyeva	95-100

31	General information about the operational properties of foam concrete as a modern energy-efficient building material Soy V.M, Nuriddinova G.S .	101-103
32	Gandbol sport turida darvozabon texnik tayyorgarligini takomillashtirish metodikasi B.N.Xayitov	104-108
	MUNDARIJA	109-111

