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**TOSHKENT DAVLAT
TRANSPORT UNIVERSITETI**

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**“WOMEN IN INNOVATION AND SCIENCE”
XALQARO ILMIY-AMALIY KONFERENSIYA VA FORUMI
ILMIY ISHLARI TO‘PLAMI**

Toshkent davlat transport universitetida 2026-yil 27-mart kuni “Women in Innovation and Science” xalqaro forumi ilmiy ishlari to‘plami chop etildi.

Mazkur nufuzli tadbirlar O‘zbekiston Respublikasi Oliy ta’lim, fan va innovatsiyalar vazirligi hamda Transport vazirligi hamkorligida tashkil etilib, mamlakatimizda ilm-fan, innovatsiyalar va zamonaviy texnologiyalarni rivojlantirish, shuningdek xalqaro ilmiy hamkorlikni yanada kengaytirishga qaratilgan muhim platforma hisoblanadi.

Konferensiya ochilish marosimida davlat organlari, xalqaro tashkilotlar va yetakchi oliy ta’lim muassasalari vakillari ishtirok etdi. Jumladan, Toshkent davlat transport universiteti rektori G‘ulomov Abdulaziz Abdullayevich, O‘zbekiston Respublikasi Transport vazirligi vakili Ulmasova Lobarkhon Adilovna, Osiyo taraqqiyot banki eksperti Claire Charnac, Istanbul Aydin universiteti vasiylik kengashi raisi Mustafa Aydin, Belarus davlat transport universiteti rektori Kazakov Nikolay Nikolayevich hamda Qirg‘iziston Respublikasi Transport vazirligi vakili Dinara Moldokalieva ishtirok etdilar.

Konferensiya ilmiy dasturi doirasida plenar va panel sessiyalar, shuningdek ilmiy ma’ruzalar taqdimoti o‘tkazilib, ularda sun’iy intellekt va raqamli texnologiyalarni iqtisodiyot va ta’limga joriy etish, transport va aviatsiya sohasida innovatsion yechimlar, sanoat va IT sohasida texnologiya transferi, shuningdek ta’limda raqamli platformalar va intellektual tizimlar kabi dolzarb masalalar yoritildi.

2026-yil 27-mart kuni o‘tkazilgan “Women in Innovation and Science” xalqaro forumi ayollar yetakchiligi, innovatsiyalar va STEM sohalariga bag‘ishlangan bo‘lib, mamlakatimizda ayollarning ilm-fan va texnologiya sohalaridagi ishtirokini kengaytirish, ularning yetakchilik salohiyatini rivojlantirish hamda xalqaro hamkorlikni mustahkamlashga qaratilgan strategik maydon sifatida tashkil etildi.

Forum doirasida ayollar yetakchiligini rivojlantirish va rag‘batlantirish, xalqaro tajriba almashinuvi va ilmiy tarmoqlarni kengaytirish, yosh tadqiqotchi ayollar va PhD talabalarni qo‘llab-quvvatlash hamda innovatsion ekotizimlarda gender tenglikni ta’minlash kabi ustuvor vazifalar amalga oshirildi. Shuningdek, forumda ayollar yetakchiligi va STEM, gender tenglik va ilm-fan institutsional rivoji, ayollar tadbirkorligi va innovatsion startaplar, innovatsiya ekotizimlari va xalqaro hamkorlik, yosh ayol tadqiqotchilarni rivojlantirish, mentorlik va akademik tarmoqlar yo‘nalishlarida tematik sessiyalar tashkil etildi.

Forumda davlat organlari, xalqaro tashkilotlar, yetakchi oliy ta’lim muassasalari va ilmiy markazlar vakillari, jumladan “OLIMA” uyushmasi raisi Murtazayeva Raxbar Hamidovna, “Sharq ayoli” xalqaro ayollar jamoat fondi raisi Tursunbayeva Saodat Gafurovna, Osiyo taraqqiyot banki eksperti Claire Charnac, O‘zbekiston Respublikasi Transport vazirligi vakili Ulmasova Lobarkhon Adilovna, Toshkent davlat transport universiteti rektori G‘ulomov Abdulaziz Abdullayevich, Qirg‘iziston Respublikasi Transport vazirligi vakili Dinara Moldokalieva hamda Indoneziyadan universitet dekani Yoga Prihatin ishtirok etdilar.



Shuningdek, forumda Yevropa va Osiyo davlatlaridan yetakchi olimlar, ekspertlar va yosh tadqiqotchilar keng qatnashdi.

Forum dasturiga ochilish marosimi, panel muhokamalar, ilmiy chiqishlar hamda professional rivojlanish bo'yicha workshoplar kiritilgan bo'lib, ular doirasida gender tenglik, ayollar karyerasini rivojlantirish, ilmiy tadqiqotlar va innovatsion boshqaruv bo'yicha amaliy seminarlar tashkil etildi.

Mazkur tadbirlar Osiyo taraqqiyot banki (ADB), "OLIMA" — O'zbekiston xotin-qizlar olimlari uyushmasi, "Sharq ayoli" xalqaro ayollar jamoat fondi, Germaniya xalqaro hamkorlik jamiyati (GIZ), shuningdek Rossiya, Turkiya, Indoneziya va Qirg'iziston oliy ta'lim muassasalari hamda Belarus Milliy fanlar akademiyasi ilmiy institutlari hamkorligida o'tkazildi.

Mazkur xalqaro ilmiy-amaliy konferensiya va forumning ahamiyati shundaki, ular xalqaro ilmiy hamkorlikni mustahkamlash, innovatsion ishlanmalarni amaliyotga joriy etish, raqamli va barqaror rivojlanishni ta'minlash, shuningdek ayollarning ilm-fan va innovatsiya sohalaridagi rolini kuchaytirishga xizmat qiladi. Shu bilan birga, mazkur tadbirlar yosh olimlar va tadqiqotchilarni qo'llab-quvvatlash, ilmiy tajriba almashish hamda global ilmiy makonga integratsiyalashuvni jadallashtirishda muhim ahamiyat kasb etadi.

Mazkur xalqaro ilmiy-amaliy konferensiya va forumning maqsadi zamonaviy ilmiy tadqiqot yo'nalishlarini muhokama qilish, innovatsion yondashuvlar va ilg'or texnologiyalar bo'yicha ilmiy natijalar almashuvini ta'minlash, shuningdek xalqaro ilmiy hamkorlikni rivojlantirishdan iboratdir.

Tadbirda O'zbekiston Respublikasi hamda xorijiy mamlakatlarning oliy ta'lim muassasalari va ilmiy-tadqiqot institutlari olimlari, shuningdek amaliyotda muhim natijalarga ega bo'lgan mutaxassislar o'z ilmiy ishlari bilan ishtirok etdilar.

Ushbu ilmiy to'plamda muhandislik, transport, raqamlashtirish, sun'iy intellekt, innovatsion boshqaruv, gender tenglik va barqaror rivojlanish sohalarida faoliyat yuritayotgan yetakchi olimlar, professor-o'qituvchilar va tadqiqotchilarning ilmiy ishlari jamlangan. To'plamda dolzarb ilmiy muammolar, zamonaviy yechimlar, nazariy va amaliy tadqiqot natijalari yoritilib, ushbu yo'nalishlarning bugungi holati va istiqboldagi rivojlanish tendensiyalari aks ettirilgan.

Mazkur nashr mamlakatimizda ilm-fan va innovatsion rivojlanishni ta'minlash, xalqaro ilmiy aloqalarni mustahkamlash hamda yosh olimlar va tadqiqotchilarni qo'llab-quvvatlash yo'lidagi muhim qadamlardan biri sifatida e'tirof etiladi.

Shuningdek, mazkur ilmiy to'plamda keltirilgan natijalar kelgusida ilmiy tadqiqotlar samaradorligini oshirish, amaliyotga yo'naltirilgan innovatsion yechimlarni keng joriy etish hamda sohalararo integratsiyani chuqurlashtirish uchun muhim ilmiy asos bo'lib xizmat qiladi. To'plam materiallari nafaqat ilmiy jamoatchilik, balki ishlab chiqarish sohasi mutaxassislari, doktorantlar va talabalar uchun ham foydali manba hisoblanadi.

Mazkur nashrda yoritilgan ilmiy g'oyalar va ilg'or yondashuvlar asosida yangi ilmiy izlanishlar olib borilishi, xalqaro ilmiy aloqalarning yanada rivojlanishi hamda innovatsion rivojlanish strategiyalarining takomillashishiga xizmat qilishi kutilmoqda.



Neuropedagogical strategies for teaching foreign languages to preschool children within the framework of the "Ilk qadam" state program and digital transformation in Uzbekistan

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Abstract: This research paper provides a comprehensive analysis of the neurophysiological foundations of foreign language acquisition in the preschool education system. Within the framework of the "Ilk Qadam" state curriculum, the effectiveness of neuropedagogical approaches is explored, specifically focusing on the relationship between brain plasticity and cognitive development. The article scientifically substantiates the role of digital technologies and interactive musical tools in the process of linguistic coding. The research findings indicate the necessity of implementing an educational model based on multisensory integration and neurobiological principles to enhance the intellectual potential of preschool children.

Keywords: neuropedagogics, preschool education, language acquisition, cognitive development, digital integration, ilk qadam program, sensory integration

1. Introduction

The contemporary educational policy of the Republic of Uzbekistan particularly the systemic reforms in the preschool sector serves as a fundamental basis for human capital development within the framework of the New Uzbekistan strategy. Research conducted at prestigious institutions such as the Jizzakh State Pedagogical University named after Abdulla Qodiriy demonstrates that the intellectual development of preschool children is directly linked to their cognitive ability to acquire foreign languages from an early age. The "Ilk Qadam" state curriculum has created the necessary structural and methodical base to organize this process systematically providing a unified approach to early childhood development. However, to raise the quality of education to international standards and ensure global competitiveness it has become a modern requirement to move away from traditional pedagogical rote learning and integrate innovative fields such as neuropedagogics which focuses on the brain-based mechanisms of learning. The relevance of this research lies in its illumination of the complex links between brain activity and linguistic acquisition from a neurophysiological perspective suggesting that teaching methods must align with the natural biological rhythms of the developing mind. According to neuropedagogical theory childhood especially the stage from three to seven years old is characterized by the rapid formation of new synaptic connections between brain neurons which forms the structural foundation for all future learning. During this critical period brain plasticity reaches its peak and the young brain receives any external information particularly linguistic sounds and phonetic structures with extreme sensitivity and high retention levels. The implementation of digital transformation in the educational institutions of the Jizzakh region is creating unprecedented technological opportunities to accelerate these natural biological processes by providing interactive and multisensory stimuli. The integration of a digital environment with neuropedagogical principles allows for the creation of an immersive language learning experience that mimics the natural acquisition of a mother tongue. The goal of our research is to determine to what extent the

effectiveness of foreign language learning in children can be increased by harmonizing these neuropedagogical principles with the digital tools available in modern preschools. Furthermore the cognitive development of preschool children is fundamentally dependent on their verbal activity and the synchronized functioning of both brain hemispheres which is best stimulated through engaging and non-stressful educational environments. Neuropedagogics emphasizes the importance of the emotional state in learning suggesting that the activation of the brain's dopamine system through gamified digital technologies significantly enhances long-term memory consolidation. In the digital learning space the strategic distribution of visual and auditory stimuli based on neurophysiological limits prevents intellectual fatigue and ensures that linguistic information is processed efficiently. Experiments conducted by researchers at the Jizzakh State Pedagogical University confirm that the interactive capabilities of digital platforms act as the most effective catalyst for stimulating interneuronal connections during language exercises. Consequently this research aims to establish a new generation of language teaching methodology that bridges the gap between sophisticated technology and the natural cognitive potential of the human brain ensuring a high-quality educational outcome for the future generation of Uzbekistan.

2. Materials and methods

In the preparation of this scientific work qualitative and quantitative analysis methods were utilized effectively to ensure a holistic understanding of the learning processes within the preschool environment. The research process was meticulously organized at the specialized pedagogical laboratories of Jizzakh State Pedagogical University named after Abdulla Qodiriy in close collaboration with local preschool education organizations across the Jizzakh region. International standard was chosen as the structural basis of the methodology ensuring the consistency and academic accuracy of the research while aligning with global scientific



publication requirements In the initial stage the content and pedagogical essence of the "Ilk Qadam" state curriculum were analyzed in comparison with modern neurolinguistic research to identify points of convergence between national standards and brain based learning theories. Subsequently a structured experimental framework was established where the educational process was built entirely on the principles of Brain Based Learning focusing on the neurophysiological needs of the developing child The children participating in the study were strategically divided into three main groups to observe the impact of different pedagogical stimuli In the first group education was conducted through traditional textbooks and classical repetition methods serving as the control group for the study In the second group a specialized neuropedagogical approach namely sensory integration methods was applied where physical movement and tactile experiences were linked to linguistic input In the third and most innovative group neuropedagogical methods were harmonized with digital "smart" technologies including interactive boards and mobile learning applications designed to stimulate various brain regions simultaneously. During the comprehensive data collection process children's phonetic perception vocabulary acquisition and overall communicative activity were recorded through detailed observation cards and qualitative assessment tools This approach allowed for the tracking of subtle shifts in linguistic behavior that standardized testing might overlook Furthermore the role of interactive music education took a special place in the research because musical rhythm acts as the strongest biological catalyst in stimulating the language centers of the brain specifically the Broca's and Wernicke's areas The research methodology utilized a sophisticated psychological-pedagogical monitoring system that prioritizes the child's mental state and natural interests instead of strict numerical tests or high-pressure assessments This ensured that the data gathered reflected the children's true cognitive potential in a stress free and naturalistic learning environment fostering more accurate results regarding the synergy between digital tools and neurophysiological development.

3. Results and discussion

The results of the experimental research conducted within the specialized pedagogical framework provided conclusive evidence that neuropedagogical stimuli accelerate the linguistic acquisition process several times compared to conventional instruction Especially in the third group where a strategic combination of digital tools and neuropedagogical methods was implemented the level of children's foreign language word retention and conceptual understanding was significantly higher It was determined during the neuro-behavioral observations that the simultaneous presentation of high-quality visual and auditory signals strengthens the functional cooperation between the left and right hemispheres of the brain effectively ensuring the seamless transfer of linguistic information from short-term sensory input to long-term cognitive memory storage While clear signs of cognitive fatigue and diminished engagement appeared much more quickly in children taught by the traditional rote-learning method those in the interactive digital environment

demonstrated stable educational motivation and sustained attention concentration until the very end of the instructional session. Furthermore the empirical data showed that teaching foreign languages through digital music and interactive multisensory games significantly lowers the affective filter which refers to the psychological barrier of fear and stress that often inhibits early childhood learning Children in the experimental groups began to accept linguistic mistakes naturally without the characteristic fear of speaking or performing in a new language This psychological liberation allows the Broca's and Wernicke's areas the primary linguistic processing centers of the brain to function freely and without the inhibitory effects of cortisol-induced stress Especially when examining the local conditions of the Jizzakh region it was observed that the phonetic pronunciation and articulatory accuracy of children in kindergartens equipped with modern digital technologies were formed much more precisely than those in a traditional classroom environment The success and scalability of the "Ilk Qadam" state program were scientifically proven to be deeply rooted in such innovative and neurophysiological approaches which align pedagogical practice with the natural developmental trajectory of the human brain.

In the discussion part of our research it is worth noting that teaching foreign languages in the preschool stage is not merely about the mechanical memorization of vocabulary but rather represents a fundamental process of shaping the child's cognitive architecture for lifelong learning Modern neurophysiological data confirms that the developing brain codes and stores information effectively only when the input is both emotionally resonant and logically stimulating for the child From this perspective the methodical recommendations being developed by the scholars and students of Jizzakh State Pedagogical University serve to advance a sophisticated "smart" education model that aligns with global pedagogical trends In the context of rapid digital transformation the traditional role of the pedagogue must undergo a significant shift where the teacher is no longer just a passive information provider but evolves into a neuro-facilitator who deeply understands and responds to the specific neurobiological needs and developmental windows of each child. Moreover during the extensive discussions and analysis of the experimental data a highly innovative suggestion was put forward to integrate national cultural elements as specialized neuropedagogical breaks within the foreign language curriculum This includes the adaptation of physical balance elements from the traditional Uzbek art of "Darbozlik" or the rhythmic structures of our classical music as kinesthetic and auditory transitions during language lessons Such an approach harmonizes the child's national identity with their global linguistic aspirations ensuring that the acquisition of a new language does not occur in a cultural vacuum but is supported by the familiar neural pathways of their own heritage By utilizing these cultural anchors as a form of sensory "brain break" the teacher can reset the child's attention span and lower cognitive load while simultaneously reinforcing the motor and auditory centers of the brain This synthesis of ancestral wisdom and cutting-edge neuroscience creates a unique Uzbek model of neuropedagogics that is both technologically advanced and culturally grounded providing a sustainable path for the



intellectual advancement of the younger generation in the Jizzakh region and beyond.

4. Conclusion

In conclusion, the neuropedagogical foundations of teaching foreign languages to preschool children represent a radically new and effective direction for the education system of Uzbekistan. The conducted analyses have shown that an educational process organized in harmony with the child's developing brain yields results higher than expected. The mutual integration of digital transformation and the "Ilk Qadam" state program serves to increase not only linguistic competencies but also the general intellectual potential of children. These scientific investigations conducted on the basis of Jizzakh State Pedagogical University will undoubtedly serve as an important methodical support in modernizing preschool education. The ultimate goal is to raise each child as a mature and competitive individual of the future, taking into account their individual neurobiological characteristics.

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I. Sadikov, K. Iriskulova

Extensive application and characteristic properties of mastic asphalt concrete.....6

M. Majidova

Analysis of energy losses in photovoltaic power plants under the climatic conditions of Karshi.....10

M. Eshboeva

Women's role in engineering innovation and scientific leadership in modern stem systems.....15

D. Mamurova, F. Mamurova, N. Khodjaeva

Problems of preservation, reconstruction and restoration of the historical and cultural heritage of Bukhara18

M. Ergashova

The 15-minute city as a framework for sustainable urban development: A comparative analysis of proximity-based planning in Paris, Vienna, and Tashkent.....22

N. Hamzaeva

Stress-dependent senomorphic-like activity of buckwheat-derived rutin mediated via SIRT1.....27

V. Soy, G. Nuriddinova

Influence of silica gel dispersion and superplasticizer on the properties of cement paste.....32

S. Shaumarov, D. Nurmukhamedova

Application of digital twin technology for monitoring residential buildings36

O. Bahodirova

Enhancing women's leadership in science and innovation.....40

M. Oydinov, O. Ergashev

Research on the synthesis of zeolite NaX using Angren kaolin.....44

Z. Kurbonova

Neuropedagogical strategies for teaching foreign languages to preschool children within the framework of the "Ilk qadam" state program and digital transformation in Uzbekistan.....48

S. Setimbetova

The role and importance of transport corridors in Uzbekistan.....51