



- Qayta ishlash issiqxona gazlari emissiyasini kamaytiradi va energiya sarfini tejaydi [5:136067]
- Poligonlarga tashlanadigan chiqindilar hajmini minimallashtirishga yordam beradi [2:e1700782]
- Atrof-muhit ifloslanishini kamaytiradi va tabiiy resurslarni saqlaydi [4:2049]

Iqtisodiy jihatdan:

- Qayta ishlash sanoati katta iqtisodiy potentsialga ega va daromad keltiradi [7:54000]
- Aylanma iqtisodiyot modeli millionlab yangi ish o‘rinlarini yaratish imkoniyatini beradi [7:45]
- Samarali qayta ishlash uchun kamida 63% qayta ishlash darajasi talab etiladi [6:7578]

O‘zbekiston uchun tavsiyalar:

- EPR tizimini samarali joriy etish va nazorat qilish
- Qayta ishlash infratuzilmasini rivojlantirish va zamonaviy texnologiyalarni joriy etish
- Aholini ekologik xabardor qilish dasturlarini kuchaytirish
- Xususiy sektor va xalqaro hamkorlik orqali investitsiyalarni jalb qilish

Plastik chiqindilarni qayta ishlashning ekologik va iqtisodiy manfaatdorligi shubhasizdir. Aylanma iqtisodiyot tamoyillariga asoslangan yondashuv nafaqat atrof-muhitni muhofaza qiladi, balki iqtisodiy o‘sish va barqaror rivojlanishni ham ta’minlaydi. O‘zbekiston uchun bu yo‘nalishda izchil ishlash Markaziy Osiyoda yetakchi davlatga aylanish imkoniyatini beradi.

Foydalanilgan adabiyotlar ro‘yxati:

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**INTERACTIVE ICT AND AI-POWERED TOOLS THAT MAKE VOCABULARY
ACQUISITION ENGAGING**

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Abstract. The research investigates how Information and Communication Technology (ICT) and Artificial Intelligence (AI) tools affect students' language learning vocabulary development. It explains vocabulary as a core component of communication and highlights the growing use of technology-enhanced language learning (TELL) methods in higher education. The research examines how Quizlet and Memrise



interactive learning systems and AI-based chatbots enable students to receive immediate feedback during personalized practice sessions at their own learning pace. Research evidence shows that students achieve better learning results when ICT and AI are integrated because these technologies increase student participation and motivation and enhance their ability to remember vocabulary. The implementation of AI in education faces ongoing obstacles because students lack equal access to technology and they need better digital skills and they depend too heavily on automated systems. The research shows that ICT and AI tools achieve their best results when teachers use them within credit-modular systems that receive proper guidance and maintain appropriate human involvement. The method allows students to build their vocabulary skills progressively toward achieving complete language proficiency.

Keywords: Vocabulary acquisition, ICT, AI, TELL, MALL, interactive learning tools, adaptive learning systems, chatbots, learner autonomy, digital literacy, higher education, learning outcomes.

SO‘Z BOYLIGINI OSHIRISHDA INTERAKTIV AKT VA SUN’IY INTELLEKT VOSITALARINING SAMARADORLIGI

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Annotatsiya. Ushbu maqolada Axborot va Kommunikatsiya Texnologiyalari (AKT) hamda Sun’iy Intellekt (SI) vositalarining talabalar til o’rganishi va so’z boyligini oshirishga ta’siri masalasi o’rganilib yoritilgan.

Kalit so’zlar: AKT, Sun’iy Intellekt, so’z boyligini o’rganish, interaktiv o’qitish, Quizlet, Memrise, SI-chatbotlar, raqamli ko’nikmalar, til o’rganish.

ЭФФЕКТИВНОСТЬ ИНТЕРАКТИВНЫХ ИКТ И ИНСТРУМЕНТОВ ИСКУССТВЕННОГО ИНТЕЛЛЕКТА В ОСВОЕНИИ СЛОВАРНОГО ЗАПАСА

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Аннотация: В данной статье рассматривается влияние Информационно-коммуникационных технологий (ИКТ) и инструментов искусственного интеллекта (ИИ) на освоение языка и расширение словарного запаса у студентов.

Ключевые слова: ИКТ, искусственный интеллект, освоение словарного запаса, интерактивное обучение, Quizlet, Memrise, ИИ-чатботы, цифровые навыки, изучение языка.

Introduction

Language proficiency depends on vocabulary as its fundamental element because vocabulary serves as the foundation for both language understanding and effective communication. Learning a language, whether it is primary or secondary one, starts with acquiring vocabulary [19]. Students who have a broad vocabulary knowledge can better understand written and spoken language, which helps them identify both direct and indirect meanings in texts. People who have a broad vocabulary possess the necessary words to communicate their thoughts and ideas with precision, creativity, and clarity. The ability to express thoughts clearly stands as a basic necessity for effective communication in social situations, professional settings, and personal self-expression. Acquiring new vocabulary enables people to improve their memory function and critical thinking abilities, which leads to better language proficiency [14]. A person with a large vocabulary will perform better in reading, writing, and speaking in both academic and professional settings. The ability to understand vocabulary enables people to create significant relationships through various situations by allowing them to grasp idioms, cultural references, and context-dependent language [17]. Vocabulary stands as a fundamental element that enables people to succeed in their social



lives, professional careers, and academic pursuits, and maintain effective communication with others. A person needs a strong vocabulary base to achieve good listening skills, reading fluency, speaking ability, and grammatical development. Students who do not have enough vocabulary face challenges in reading comprehension, expressing their ideas, and taking part in productive dialogues. The traditional method of rote memorization leads to a dull learning experience for vocabulary, producing inadequate language understanding and application abilities [13].

Teachers need to create new teaching methods for vocabulary instruction that deliver successful results in their educational environments. Learners must gain a thorough understanding of vocabulary when learning a new language. Effective communication in a foreign language requires a large enough vocabulary as this component connects the four language skill domains of speaking, listening, reading, and writing. Students, as a result, must learn a large vocabulary and master its precise usage in the real world. Fauziningrum et al. asserted that language learners need to learn and comprehend a large number of vocabulary words in order to communicate and express themselves effectively [6].

The Role of ICT and AI-Powered Tools in Language Learning

Recent research indicates that Information and Communication Technology (ICT) and Artificial Intelligence (AI) platforms have a significant impact on enhancing how learners acquire new languages [1]. Many studies show that ICT tools such as mobile applications and online platforms help learners improve their language skills [11]. Some researchers even argue that technology-based language learning can be nearly as effective as classroom instruction when teachers receive sufficient training [23]. AI-driven tools, in particular, make language learning more interactive and engaging. Research into voice-driven conversational agents in English education revealed that students had more opportunities to practice speaking, improve pronunciation, and develop natural speech patterns [10]. Similarly, studies found that AI tools using voice recognition improved word clarity, speaking fluency, and reduced anxiety among learners [23].

AI-powered platforms also include advanced chatbots, natural language models, and adaptive tutoring systems that personalize learning experiences [8]. A mixed-method study with 120 English learners using AI-powered writing assistants and adaptive learning platforms showed significant improvements in vocabulary and writing accuracy, along with increased learner autonomy and motivation [16]. However, excessive dependence on AI can reduce real-life conversational practice, which remains essential for linguistic competence. AI systems also support metacognitive awareness by helping students identify their strengths and weaknesses and self-regulate their learning strategies [12].

ICT and AI enable flexible, anytime-anywhere learning and immediate feedback, improving students' engagement and retention. However, their success relies on three main factors: readiness of teachers and learners, quality internet access, and effective integration into pedagogy [18]. Within a credit-modular system, these technologies support quality assurance and continuous monitoring of student progress [6]. Yet, challenges such as digital inequality, ethical concerns, and data privacy remain crucial considerations [3].

Interactive ICT and AI-Powered Tools that Enhance Vocabulary Learning

There are many interactive ICT and AI-powered tools that enhance vocabulary learning, and their effectiveness depends on context and design. Tools such as Quizlet and Memrise use flashcards, gamified exercises, and spaced repetition to improve vocabulary recall and motivation [9]. Studies show that students using Quizlet under teacher supervision improved vocabulary retention and metacognitive skills [4]. Memrise helps learners remember new words through gamification and multimedia support, though overuse may limit authentic communication [2].

AI-driven chatbots and adaptive platforms such as Duolingo and ChatGPT-based tutors provide real-time feedback, simulate dialogue, and adjust to learner proficiency [11]. Research confirms these systems outperform traditional methods in pronunciation accuracy and vocabulary retention [8]. Newer innovations like VocabulARy (AR-based) and Brainscape enhance contextual learning and long-term retention using spaced repetition [22]. Mobile vocabulary games also increase engagement, though their academic value depends on guided use and teacher interaction [15].

When strategically integrated, these technologies enable adaptive learning and analytics that track student progress. However, success depends on teacher readiness, technological infrastructure, and maintaining authentic human communication [21].

Benefits of Using ICT Tools for Vocabulary Acquisition



ICT tools offer measurable and practical benefits for vocabulary learning. A meta-analysis of 36 studies found that technology-assisted vocabulary instruction produced a mean effect size of $d = 0.64$, with mobile-assisted approaches showing even higher gains ($d \approx 0.85$) compared to traditional instruction [3]. ICT enables multiple word exposures, immediate feedback, and enhanced word recognition and production [5]. A quasi-experimental study using wiki-based learning environments with junior high students found significantly improved vocabulary mastery and motivation [20].

Learners gain better control of their pace and show increased motivation to study independently using tools such as Quizlet and Memrise [7]. Adaptive repetition and gamified designs make learning more enjoyable and less stressful. However, effectiveness depends on thoughtful implementation, software design, and equitable access [18].

Challenges and Considerations

While ICT and AI tools enhance vocabulary learning, students still face key challenges. Limited internet access and device availability hinder regular use of platforms [18]. Lack of digital literacy and inadequate training can lead to superficial use of tools [7]. Over-reliance on AI reduces authentic communication, and improper classroom integration can make learning unfocused [3]. Privacy and ethical concerns about AI data collection also remain pressing issues. To ensure effective use, these technologies must be combined with strategic planning, teacher supervision, and human interaction [20].

Conclusion

Interactive ICT and AI-powered tools create dynamic and enjoyable environments for vocabulary learning. They help students move beyond rote memorization to active exploration through chatbots, games, and digital platforms. When properly integrated into lessons, these tools strengthen retention, fluency, and confidence. However, equal access, teacher guidance, and balanced human contact remain vital for their long-term success [12].

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TA’LIM JARAYONIDA O’QITUVCHI VA TALABALARNING O’ZARO MULOQOT VA MUNOSABATLAR HAMKORLIGI

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Annotatsiya. Mazkur maqolada o’qituvchi kasbiy faoliyatida muloqot madaniyati va psixologiyasining ahamiyati yoritilgan. Unda pedagogik muloqotning mazmuni, uslublari, shuningdek, psixologik yondashuvlarning ta’lim jarayonidagi o’rni tahlil qilinadi. Shuningdek, o’qituvchining nutq madaniyati, emotsional barqarorligi va shaxslararo munosabatlarda qanday kompetensiyalarga ega bo’lishi lozimligi haqida fikr yuritiladi. Maktab, oila va mahalla o’rtasidagi muloqotning ta’lim sifati uchun tutgan o’rni ham alohida ko’rib chiqilgan. Maqolada amaldagi qonunchilik hujjatlari va Prezident asarlariga tayanilgan.

Kalit so’zlar: o’qituvchi, muloqot madaniyati, psixologik yondashuv, pedagogik muloqot, kasbiy kompetensiya, kommunikatsiya, nutq madaniyati, ta’lim sifati, oila-maktabmahalla, empatiya.

ВЗАИМОДЕЙСТВИЕ И СОТРУДНИЧЕСТВО ПРЕПОДАВАТЕЛЯ И СТУДЕНТА В ОБРАЗОВАТЕЛЬНОМ ПРОЦЕССЕ

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