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ETHICAL CHALLENGES AND OPPORTUNITIES OF GENERATIVE ARTIFICIAL INTELLIGENCE ADOPTION FOR SELF-DIRECTED LEARNING AMONG UNIVERSITY STUDENTS IN UZBEKISTAN

ЭТИЧЕСКИЕ ПРОБЛЕМЫ И ВОЗМОЖНОСТИ ВНЕДРЕНИЯ ГЕНЕРАТИВНОГО ИСКУССТВЕННОГО ИНТЕЛЛЕКТА ДЛЯ САМОСТОЯТЕЛЬНОГО ОБУЧЕНИЯ СТУДЕНТОВ УНИВЕРСИТЕТОВ УЗБЕКИСТАНА

O'ZBEKISTONDA UNIVERSITET TALABALARI O'RTASIDA MUSTAQIL TA'LIM OLISH UCHUN GENERATIV SUN'IY INTELLEKTNI QABUL QILISHNING ETIK MUAMMOLARI VA IMKONIYATLARI

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Abstract: The adoption of generative artificial intelligence (GenAI) tools, such as ChatGPT, in higher education offers substantial opportunities for enhancing self-directed learning (SDL) through personalized, on-demand support and interactive engagement. In Uzbekistan, national initiatives including the "Digital Uzbekistan-2030" strategy, the National Strategy for the Development of Artificial Intelligence Technologies until 2030 (adopted October 2024), and the "Five Million Artificial Intelligence Leaders" project (launched November 2025 in partnership with the UAE) are accelerating GenAI integration. However, this rapid uptake introduces significant ethical challenges, encompassing academic integrity, overreliance, algorithmic bias, data privacy, and digital equity. This conceptual article synthesizes recent empirical studies from Uzbekistan and global literature to examine these dual dimensions in the context of SDL among university students. Findings reveal widespread student optimism toward GenAI's potential for autonomy and creativity, tempered by concerns over plagiarism, critical thinking erosion, and infrastructural disparities.

Keywords: generative artificial intelligence, self-directed learning, ethics, higher education, Uzbekistan, academic integrity, digital equity

Аннотация: Внедрение инструментов генеративного искусственного интеллекта (GenAI), таких как ChatGPT, в систему высшего образования открывает широкие возможности для улучшения самонаправленного обучения (SDL) за счет персонализированной поддержки по требованию и интерактивного взаимодействия. В Узбекистане национальные инициативы, включая стратегию "Цифровой Узбекистан-2030", Национальную стратегию развития технологий искусственного интеллекта до 2030 года (принята в октябре 2024 года) и проект "Пять миллионов лидеров в области искусственного интеллекта" (запущен в ноябре 2025 года в партнерстве с ОАЭ), ускоряют интеграцию GenAI. Однако такое

быстрое внедрение приводит к возникновению серьезных этических проблем, включая академическую честность, чрезмерное доверие, предвзятость алгоритмов, конфиденциальность данных и цифровую справедливость. В этой концептуальной статье обобщены последние эмпирические исследования, проведенные в Узбекистане, и мировая литература для изучения этих двух аспектов в контексте SDL среди студентов университетов. Полученные результаты свидетельствуют о широко распространенном среди студентов оптимизме в отношении потенциала GenAI в области автономии и творчества, который сдерживается опасениями по поводу плагиата, размывания критического мышления и различий в инфраструктуре.

Ключевые слова: генеративный искусственный интеллект, самостоятельное обучение, этика, высшее образование, Узбекистан, академическая честность, цифровое равенство.

Annotatsiya: Chatgpt kabi generativ sun'iy intellekt (GenAI) vositalarini oliy ta'limda qabul qilish shaxsiylashtirilgan, talab bo'yicha qo'llab-quvvatlash va interaktiv jalb qilish orqali mustaqil o'rganish ko'nikmalari (SDL) kuchaytirish uchun katta imkoniyatlarni taqdim etadi. O'zbekistonda Milliy tashabbuslar, jumladan "raqamli O'zbekiston-2030" strategiyasi, 2030 yilgacha sun'iy intellekt texnologiyalarini rivojlantirish Milliy strategiyasi (2024 yil oktyabrda qabul qilingan) va "besh Million sun'iy intellekt yetakchilari" loyihasi (BAA bilan hamkorlikda 2025 yil noyabrda boshlangan) GenAI integratsiyasini tezlashtirmoqda. Biroq, bu tez qabul qilish akademik yaxlitlik, haddan tashqari ishonchlilik, algoritmik tarafkashlik, ma'lumotlar maxfiyligi va raqamli tenglikni o'z ichiga olgan muhim axloqiy muammolarni keltirib chiqaradi. Ushbu kontseptual maqola universitet talabarlari o'rtasida SDL kontekstida ushbu ikki tomonlama o'lchovlarni o'rganish uchun O'zbekistondagi so'nggi empirik tadqiqotlar va global adabiyotlarni sintez qiladi. Tadqiqotlar gen AI ning avtonomiya va ijodkorlik salohiyatiga nisbatan keng tarqalgan talabalar optimizmini ochib beradi, bu plagiat, tanqidiy fikrlash pasayishi va infratuzilma nomutanosibliklari bilan bog'liq.

Kalit so'zlar: generativ sun'iy intellekt, o'z-o'zini boshqarish, etika, oliy ta'lim, O'zbekiston, akademik yaxlitlik, raqamli tenglik

Introduction

Self-directed learning (SDL), characterized by learners' initiative in identifying needs, setting goals, selecting resources, and evaluating outcomes [3,15], is increasingly emphasized in higher education systems transitioning toward learner-centered paradigms. In Uzbekistan, educational reforms prioritize autonomy and digital competencies to prepare students for a knowledge-based economy.

Generative AI (GenAI) tools, capable of producing human-like text, code, and ideas, hold promise for SDL by enabling personalized tutoring, instant feedback, and resource generation. Uzbekistan's commitment to AI is evident in policies such as "Digital Uzbekistan-2030," the 2024 AI Development Strategy until 2030, and the ambitious "Five Million AI Leaders" initiative launched in November 2025, which targets training millions in AI skills, including ethics, alongside partnerships with NVIDIA for supercomputing infrastructure and OpenAI for educational applications like ChatGPT EDU.

Despite these advancements, GenAI adoption raises ethical dilemmas that could undermine SDL if unaddressed. This article explores opportunities for enhancing SDL alongside challenges such as plagiarism, dependency, bias, privacy risks, and inequity, drawing on recent Uzbek studies and international frameworks.

Literature Review

Theoretical Foundations of Self-Directed Learning and GenAI Integration

SDL is rooted in adult learning theories, emphasizing learner agency and intrinsic motivation [7;70]. In higher education, SDL fosters lifelong skills, particularly during transitions from structured secondary to autonomous university environments. GenAI complements this by acting as a virtual scaffold, supporting metacognitive processes like planning and reflection [1;15].

Globally, GenAI tools like ChatGPT have been shown to enhance SDL through adaptive interactions that promote self-efficacy and engagement. For instance, custom GPT models designed for educational purposes can facilitate personalized learning pathways, as demonstrated in medical education where they improved self-directed inquiry among students.

In emerging contexts like Central Asia, similar patterns emerge. A study on AI tools for SDL in Uzbekistan highlights how GenAI increases student autonomy and motivation by providing on-demand resources, though it calls for careful integration to avoid dependency.

Opportunities of GenAI for Self-Directed Learning

GenAI aligns with SDL by supporting autonomy, competence, and motivation through adaptive interactions [7;69]. Globally, GenAI facilitates reflective practices, idea generation, and personalized pathways, improving engagement and self-efficacy. For example, activity-based learning integrated with ChatGPT has been linked to better academic performance by encouraging interactive, self-paced exploration.

In Uzbekistan, surveys indicate high adoption rates: over 88% of students use GenAI for research, summarization, and brainstorming, perceiving benefits in creativity and efficiency [4;4]. Lecturers view it positively for feedback and personalization [8;570]. Another study of undergraduates highlights optimism for autonomous learning, with frequent use for academic tasks [6;16]. These findings align with national efforts to embed AI in curricula, supported by UNESCO collaborations and the Beruniy Prize for AI ethics research.

Regionally, in Central Asia, initiatives like Kazakhstan's partnership with OpenAI for ChatGPT Education across higher education systems underscore GenAI's role in fostering self-directed online learning. In Uzbekistan, EFL teachers report that GenAI tools aid self-directed language acquisition, enhancing motivation despite challenges.

Emerging research also points to GenAI's potential in humanities and professional training, where it supports customized content creation and skill development.

Ethical Challenges of GenAI Adoption

Prominent challenges include academic Integrity: Unattributed AI-generated content risks plagiarism and diminishes originality [6;16]. Global studies note increased ethical dilemmas around authorship and assignment reliance.

Overreliance - Passive use may erode critical thinking and metacognition essential to SDL [4;5]. In universities, this could lead to reduced deep learning, as students opt for AI outputs over independent effort.

Bias and Hallucinations - Inaccuracies and cultural biases in global models disadvantage diverse learners, particularly in multilingual settings like Uzbekistan.

Data Privacy Processing of queries raises security concerns amid emerging national protections.

Equity - Regional infrastructure gaps and varying literacy exacerbate divides [4;5]. In Central Asia, rural-urban disparities limit access, potentially widening educational inequalities.

International studies underscore needs for transparency and accountability [2;15]. In Uzbekistan, UNESCO's Readiness Assessment Methodology (initiated 2025) and ethical prize initiatives signal proactive governance. Additionally, teachers' perceptions in Uzbekistan reveal concerns over over-dependency and ethical implementation, despite positive views on AI agency.

Recent global frameworks, such as UNESCO's AI ethics recommendations, emphasize equity and responsible use in education.

Discussion

GenAI enhances SDL in Uzbekistan by providing 24/7 tailored support, fostering goal-setting and reflection—particularly beneficial amid shifts from didactic teaching. National momentum, including NVIDIA-backed clusters (planned for 2026) and OpenAI partnerships, amplifies personalization potential. For instance, the "Five Million AI Leaders" initiative's ethics modules could integrate GenAI training to promote SDL in diverse disciplines, from EFL to humanities, as evidenced by regional successes in Kazakhstan where ChatGPT deployment has boosted self-directed performance.

However, challenges persist: frequent uncritical use elevates integrity risks, while rural-urban divides limit access. Limited Uzbek-language capabilities in dominant tools introduce biases, potentially marginalizing non-Russian speakers and hindering culturally relevant SDL. Overreliance, as noted in global and local studies, may transform SDL into AI-dependent learning, eroding skills like critical analysis—crucial in Uzbekistan's reform-driven economy.

Equity issues are pronounced in Central Asia's context, where infrastructural investments lag in remote areas, exacerbating divides and limiting GenAI's SDL benefits for underrepresented students. Privacy concerns, amplified by data-intensive tools, necessitate alignment with international standards, as Uzbekistan develops GDPR-like protections.

Mitigation strategies include institutional guidelines mandating critical engagement, integration of ethics in the "Five Million AI Leaders" training, and development of localized models. Drawing from UNESCO dialogues (2024 Tashkent forum), policies should prioritize human-centered AI, incorporating AI literacy to teach bias detection and prompt engineering. Empirical insights from Uzbekistan suggest that balanced approaches—combining GenAI with traditional methods—can maximize opportunities while addressing challenges. For example, hybrid models in activity-based learning could prevent overreliance by emphasizing verification and reflection.

Broader implications involve stakeholder collaboration: educators must adapt pedagogies, policymakers enforce equitable access, and researchers conduct longitudinal studies to assess SDL outcomes. As Uzbekistan positions itself as an AI hub, ethical integration could model responsible GenAI use in emerging economies.

Conclusion

The integration of generative artificial intelligence (GenAI) into Uzbekistan's higher education landscape represents a pivotal moment for advancing self-directed learning (SDL) among university students. As synthesized from recent empirical evidence, GenAI tools offer

profound opportunities to cultivate learner autonomy, intrinsic motivation, personalization, and engagement—aligning seamlessly with the nation's ongoing educational reforms and ambitious digital transformation agenda. Student and lecturer perceptions in Uzbekistan reflect widespread enthusiasm for these benefits, with high adoption rates underscoring GenAI's practical utility in supporting independent research, idea generation, and reflective practices [4;6]. This optimism is further amplified by robust national policies, including "Digital Uzbekistan-2030," the 2024 AI Development Strategy until 2030, and the "Five Million Artificial Intelligence Leaders" project, which provide a supportive ecosystem for ethical AI training, infrastructure development, and curriculum integration.

Nevertheless, the ethical challenges identified—academic integrity violations through plagiarism, erosion of critical thinking due to overreliance, propagation of algorithmic biases and inaccuracies, data privacy vulnerabilities, and exacerbation of digital inequities—pose substantial risks to the integrity and inclusivity of SDL. In a context marked by regional disparities and multilingual diversity, unmitigated adoption could inadvertently widen educational gaps and compromise the development of essential lifelong learning skills.

To navigate this duality effectively, a proactive, human-centered approach is imperative. Universities and policymakers should prioritize the establishment of comprehensive ethical frameworks that mandate transparent AI use, critical evaluation of outputs, and proper attribution. Concurrently, embedding AI literacy and ethics education within curricula—from freshman orientation onward—will equip students with skills in prompt engineering, bias detection, and reflective integration of GenAI. Investments in localized innovations, such as Uzbek-language models with offline capabilities, alongside equitable infrastructure expansion, will enhance accessibility and cultural relevance. Ongoing collaboration with international bodies like UNESCO, as seen in readiness assessments and regional dialogues, will further strengthen governance.

Ultimately, responsible stewardship of GenAI has the potential to position Uzbekistan as a model for ethical AI adoption in emerging economies, empowering a generation of ethically aware, self-directed learners capable of thriving in an AI-augmented future. By balancing innovation with vigilance, these efforts will not only safeguard educational equity and depth but also contribute to broader national goals of innovation, competitiveness, and sustainable development by 2030 and beyond.

Future research should employ rigorous mixed-methods designs, including longitudinal studies across diverse Uzbek institutions, to empirically evaluate GenAI's long-term impacts on SDL outcomes, ethical behaviors, and equity metrics. Such evidence will be crucial for refining policies and ensuring that GenAI serves as a true enabler rather than a disruptor of autonomous learning.

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