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The Use of Artificial Intelligence by Students in the Learning Process in the Context of Uzbekistan: Opportunity or Risk?

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Abstract: ***University students in Uzbekistan have begun to frequently utilise artificial intelligence (AI) tools for their academic assignments as these technologies become more prevalent and user-friendly. This study examines the integration of these technologies into students' learning practices, their primary objectives, and the potential benefits and drawbacks associated with their use. The research aims to understand whether AI tools are helping students develop academically or leading to new challenges, such as overreliance and a decline in critical thinking. To examine this, a survey was conducted involving 200 undergraduate students from three universities in Uzbekistan. The survey focused on how often students use AI tools, such as ChatGPT, Grammarly, and AI-based search engines, and for which academic tasks they are used. The results showed that over 60% of students use these tools frequently, mainly for checking grammar, summarizing information, and generating ideas. Many students believe that AI helps them save time and increase productivity. However, the study also highlighted some concerning trends. A large number of students admitted to using AI outputs without verifying their accuracy or considering ethical issues, such as originality and academic honesty. These findings suggest that while AI can support learning, it may also weaken essential academic skills if used passively or without reflection. Therefore, the study recommends that AI literacy be incorporated into university education, focusing not only on how to use the tools effectively but also on the ethical and critical aspects of their use. These insights provide a clearer understanding of how students interact with AI and what support they may need.***

Keywords: AI Ethics, Artificial Intelligence, Critical Thinking, Educational Technology, Higher Education

Abbreviations:
AI: Artificial Intelligence
UNESCO: United Nations Educational, Scientific and Cultural Organization

I. INTRODUCTION

According to a global survey published by Statista in July 2024, over 80% of higher education students have used artificial intelligence (AI) tools at least once in their academic work [1].

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In other words, nearly 9 out of every 10 students turn to technological assistants such as ChatGPT, Grammarly, and Quillbot during their learning process. This indicates that AI is no longer a mere supplementary tool in education but is increasingly becoming a central participant in students' academic activities.

AI refers to systems based on algorithms that simulate human cognitive processes and are capable of performing tasks such as text analysis, translation, image processing, and other similar functions [2]. Today, AI is being actively integrated not only into technical disciplines but also into the teaching methods of the humanities and social sciences.

This trend is also evident in higher education institutions across Uzbekistan. Students are increasingly using AI tools to prepare coursework, reports, translations, essays, and independent assignments. While on the one hand, this practice enhances educational efficiency, on the other hand, it raises concerns about diminishing critical thinking and potential violations of academic integrity.

This very contradiction—how the use of AI affects the quality of education and the student's learning process—remains insufficiently studied from a scientific perspective. In the context of Uzbekistan, this issue is particularly relevant and calls for an evidence-based analysis of students' attitudes toward AI tools, their purposes for using them, and the outcomes of such use.

This article aims to examine the extent to which AI is used among university students in Uzbekistan, evaluate its impact on the learning process, and address the critical question: Should these technologies be viewed as opportunities or as risks?

II. THEORETICAL FRAMEWORK

A. The Concept and Historical Development of Artificial Intelligence

Artificial Intelligence (AI) refers to a set of computer systems designed to mimic human intelligence, including the ability to learn and solve problems. AI systems operate based on algorithms capable of processing data, analysing information, drawing conclusions, engaging in communication, and improving themselves [2]. Many researchers view AI not merely as a technical tool, but as a transformative force that is increasingly penetrating nearly all areas of human activity.

Historically, the concept of artificial intelligence was formally introduced at the Dartmouth Conference in 1956. Since then, AI systems have evolved significantly, particularly in areas such as mathematical modelling,

natural language processing, machine learning, expert systems, and neural networks [3]. Initially, AI was limited to executing basic mathematical functions, but today it is capable of understanding voice and text, recognizing images, generating recommendations, and engaging in meaningful interaction.

Modern classifications divide AI into three significant categories: Narrow AI, General AI, and Superintelligence. At present, humanity remains at the first stage—narrow AI—where systems are designed to perform specific tasks. Examples of such systems include Google Translate, Siri, ChatGPT, and other multifunctional applications [4].

The rapid advancement of AI is driving profound changes not only in manufacturing and healthcare but also in education. AI applications are transforming the way students learn, educators teach, and the overall structure and content of the learning process.

B. The Application of Artificial Intelligence in Education

In recent years, artificial intelligence technologies have been actively entering the field of education. Today, the use of AI tools by students during the learning process has become a routine part of academic life. The primary objectives behind this trend are to enhance the efficiency of teaching and learning, offer individualised approaches, and reduce time spent on administrative tasks [3].

In education, artificial intelligence is mainly applied in the following areas:

i. Text analysis and editing (e.g., Grammarly);
ii. Generating or assisting in the writing of academic texts (e.g., ChatGPT, Quillbot);
iii. Automated exercises for language learning (e.g., Duolingo AI);
iv. Personalized adaptation of learning plans (e.g., Khan Academy, Squirrel AI);
v. Automated evaluation and analysis in quizzes and test systems (e.g., EDX, Coursera AI).

[Fig.1: Key Areas of Artificial Intelligence Application in Education]

The infographic highlights key areas where artificial intelligence is applied in education, including text analysis, academic content generation, language learning, personalised instruction, and automated test evaluation. In particular, AI tools in the fields of language and the humanities have begun to play a significant role by automatically identifying writing errors, suggesting corrections, and enhancing students' writing — all without direct teacher involvement. This shift is redefining the roles of both students and educators, reshaping their interactions, and transforming the overall nature of the educational process [4].

Additionally, AI presents promising opportunities to address issues of equity in education. It can help support learners with disabilities, bridge learning gaps, and expand access to quality education in developing countries [5].

C. Students' Use of Artificial Intelligence Tools

The use of AI tools now plays a significant role in students' learning habits and strategies. Especially during the years 2023–2024, with the widespread adoption of AI-based tools, many students have actively begun to use these technologies in academic research, essay writing, language learning, and independent study.

According to a global survey published by Statista in July 2024, over 80% of higher education students reported having used an AI tool at least once for school-related tasks [1]. The most commonly used tools include Grammarly, ChatGPT, Quillbot, Duolingo, and Khan Academy AI. Their primary purposes are:

– correcting grammatical errors;
– rewriting or simplifying texts;
– asking questions and receiving explanations;
– completing automated exercises to reinforce knowledge.

Some students have begun to rely on AI tools not just for support, but as a substitute for engaging directly with academic tasks — such as allowing AI to generate entire responses or complete assignments on their behalf. Such practices can lead to negative consequences, including breaches of academic integrity, increased risk of plagiarism, and the weakening of independent thinking skills.

Students' perceptions of AI tools vary widely. While some view these technologies as beneficial for learning and personal development, others worry they may discourage critical thinking and promote overreliance on automated solutions. This contrast highlights a growing need for thoughtful discussions in education about the responsible use of AI.

D. Opportunities and Risks of Artificial Intelligence Tools

The integration of artificial intelligence tools into the field of education is opening up vast opportunities. These technologies enable the personalisation of the learning process, the development of individualised approaches tailored to students' needs, and the reduction of teachers' workloads [3]. For example, AI systems can analyse a student's level of knowledge and recommend appropriate exercises, or automatically assess written work, thereby saving time for both teachers and students.

Moreover, AI tools play an essential role in creating inclusive education for students with disabilities. Through specialised programs, automatic translation systems, and text-to-speech technologies, students with visual or hearing impairments gain improved access to learning resources [5].

However, there are also risks and potential negative consequences associated with the use of AI tools. The most pressing concern is academic dishonesty, where students rely entirely on AI to complete their assignments

rather than engaging in the work themselves. This can lead to a decline in independent thinking, reduced creativity, and an increase in plagiarism.

Another serious risk is overreliance on AI, which may lead students to neglect critical thinking. AI tools are not infallible; they may generate incorrect, vague, or misleading information, and inexperienced students are more likely to accept such content as accurate [4].

Therefore, to ensure the effective use of AI tools in education, it is essential to implement ethical standards, clearly define usage boundaries, and establish proper academic oversight systems. AI should not replace the learning process but rather enrich and support it.

E. The Use of Artificial Intelligence in the Context of Uzbekistan

In Uzbekistan, the development of artificial intelligence and digital technologies is recognised as a key priority of state policy. In particular, the Presidential Decree of the Republic of Uzbekistan No. PQ–4996, dated February 17, 2021, titled *"On Measures to Create the Necessary Conditions for the Accelerated Implementation of Artificial Intelligence Technologies,"* outlines tasks related to the development of this field, its integration into various sectors of the economy, the training of qualified specialists, and the strengthening of scientific research [6].

[1] *Resolution of the President of the Republic of Uzbekistan №RP-4996 "On measures for creating conditions for the accelerated introduction of artificial intelligence technologies" from 17.02.2021.* https://lex.uz/uz/docs/7573787

In the higher education system, the use of artificial intelligence tools has not yet become widespread. Many students primarily use AI tools to complete homework assignments, translate texts, or check and improve written content. However, there is currently no specific national strategy or internal university regulations for the official use of AI tools in the educational process.

According to the UNESCO report, artificial intelligence is gradually being integrated into the education systems of developing countries. To minimise the associated risks, it is necessary to produce specific regulatory documents [5]. In Uzbekistan, several seminars and training sessions have been held on the use of AI tools; however, a comprehensive regulatory framework has yet to be established.

Therefore, conducting scientific research, developing methodological guidelines, and formulating legal norms are pressing tasks for the effective and safe implementation of AI tools in Uzbekistan's education system.

III. METHODOLOGY

A. Research Design

In this study, a descriptive survey design was employed. According to Creswell [7], descriptive research aims to describe and explain the specific characteristics of a particular phenomenon or group, helping to examine the current state of that phenomenon. The primary purpose of this research was to identify the extent to which students in Uzbekistan utilise artificial intelligence (AI) tools in their learning processes, their attitudes toward these tools, their perceived opportunities and risks, and to offer suggestions for the practical and responsible use of AI.

B. Participants

Bachelor's students from various universities in Uzbekistan participated in the study. In particular, around 200 students from Nukus State Technical University and Karakalpak State University took part. The participants were aged between 18 and 23, with approximately 55–60% male and 40–45% female. Their fields of study included digital economy, English language, information security, mathematics, and sports (e.g., volleyball), covering a diverse range of academic disciplines.

C. Data Collection Instruments

The data were collected through an online questionnaire created using the Google Forms platform. The structure of the questionnaire was designed based on Creswell's [7] Survey research methodology to ensure student engagement and ease of response. The questionnaire consisted of a total of 14 questions: the first four questions (in short answer format) were aimed at collecting personal information (such as year of study, field of study, gender, and age), while the remaining 10 questions (in multiple-choice format) focused on the use of AI tools.

The questions were presented in two languages (first in English, followed by Uzbek) to make them easier for students to understand [5].

D. Data Collection Process

The survey was conducted on July 2, 2025. The link to the questionnaire was distributed via Telegram groups, official university channels, and personal contacts. The survey was conducted in a non-anonymous format, meaning that participants' personal information was also collected. Before the commencement of the study, informed consent was obtained from all respondents.

E. Method of Data Analysis

The collected data were analyzed using Google Forms statistics and Microsoft Excel software. As noted by [7], in survey-based research, fundamental statistical analyses—such as percentages, charts, and tables—are often sufficient to address the primary research objectives. Therefore, the results of this study were also summarized using percentages and visualized through diagrams, which are further interpreted and discussed in detail in the analysis section of the article.

IV. RESULTS

A. General Profile of the Participants

A total of 200 undergraduate students participated in the survey, comprising 112 males (56%) and 88 females (44%). The distribution by academic year was as follows:

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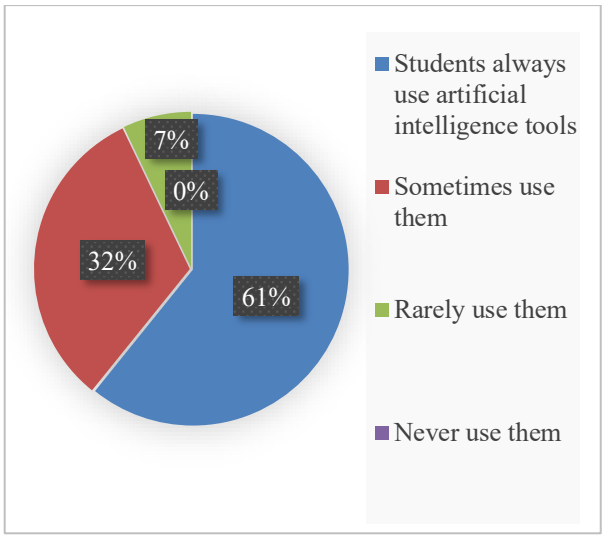
- 1st year: 27.6%
- 2nd year: 21.4%
- 3rd year: 33.9%
- 4th year: 17.1%

The participants were primarily undergraduate students from Nukus State Technical University and Karakalpak State University, representing various academic disciplines, including Digital Economy, English Language, Information Security, Mathematics, and Sports (specifically Volleyball).

B. Frequency of Artificial Intelligence Usage



The frequency of using artificial intelligence (AI) tools to solve academic tasks was analysed. The results of this analysis are illustrated in the following chart (Figure 2).

[Fig.2: Results on the Frequency of Students' Use of Artificial Intelligence Tools]

Source: Author's calculations

As illustrated in the diagram:

- 60.8% of students reported using artificial intelligence tools regularly,
- 32.1% use them occasionally,
- 7.1% use them rarely,
- and none reported never using them.

In simple terms, nearly all students make use of AI tools at least occasionally.

C. Purposes of Using AI Tools

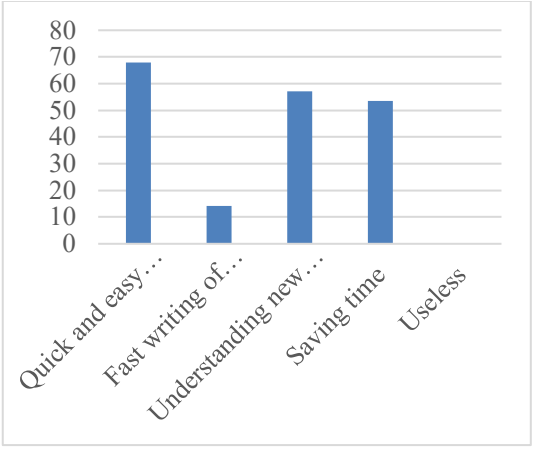
Students reported using AI tools for various purposes:

- For university coursework: 14.3%
- For personal development: 25%
- For both purposes: 60.7%

These results suggest that AI tools not only assist students with academic assignments but also make a significant contribution to their personal development.

D. Benefits of Artificial Intelligence

When analyzing the positive outcomes of using AI tools, a significant number of responses were linked to time efficiency and the need for access to new information (Figure 3).



[Fig.3: Students' Perceptions of the Main Benefits of Using Artificial Intelligence Tools]

Source: Author's calculations

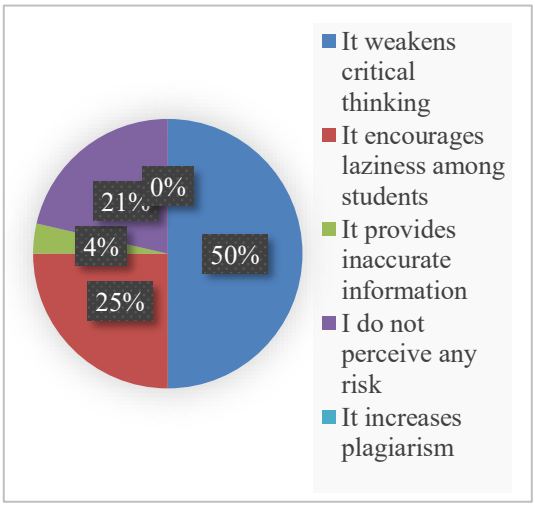
As illustrated in the graph, the most significant perceived benefit of AI among students is its ability to help them find information quickly and easily (67.9%). Additionally:

- 57.1% believe that AI supports their understanding of new concepts,
- 53.6% consider it time-saving,
- and 14.3% find it helpful for completing written assignments more efficiently.

In short, students view AI as a tool that accelerates and facilitates their learning process.

E. Risks Associated with Artificial Intelligence

When examining the actual and potential risks associated with the use of AI, several adverse outcomes were identified. These include a decline in independent thinking skills, an increase in laziness and irresponsibility, and a rise in plagiarism (see Figure 4).



[Fig.4: Students' Perceptions of Risks Associated with the Use of Artificial Intelligence Tools]

Source: Author's calculations

As illustrated in the diagram, students identified the following as the principal risks of using AI tools:

- Reduces critical thinking – 50%
- Encourages laziness among students – 25%

- Provides inaccurate information – 3.6%
- Perceived as not risky – 21.4%
- Increases plagiarism – 0%

In other words, although the majority of students actively use AI tools, they remain concerned about their potential negative impact on their critical thinking abilities.

Overall, these findings indicate that the use of artificial intelligence tools is widespread among students. However, alongside the recognised benefits, students are also aware of its possible drawbacks, particularly regarding the development of independent thinking. Therefore, universities need to foster a culture of responsible and informed use of AI technologies.

V. DISCUSSION

The findings of this study indicate that, in the context of Uzbekistan, university students predominantly perceive artificial intelligence (AI) as an opportunity rather than a threat. According to the survey responses, students consider AI tools effective primarily for quick access to information, facilitating the learning process, and saving time. In particular, 67.9% of respondents identified "quick access to information" as the most significant advantage of AI. This result aligns with the conclusions in [8], who found that AI tools contributed to self-directed learning and increased motivation among students in Uzbekistan.

However, alongside these opportunities, potential risks are also apparent. Notably, 50% of respondents in this study expressed concern that AI reduces critical thinking skills. This highlights a growing awareness that excessive reliance on AI tools may undermine students' ability to engage in more profound, independent thought. Similarly, it was noted in [9] that the inappropriate use of AI can negatively affect students' reflective and analytical capacities.

In this regard, how AI is used becomes critically important. AI is a powerful tool: when used correctly, it offers substantial benefits; however, overdependence on AI may lead to cognitive stagnation. As Huang aptly stated, *"AI will not replace you, but a person who knows how to use AI will"* [10]. Therefore, AI tools should serve as assistants rather than replacements, and users must be cautious not to rely on them without careful consideration [11].

Furthermore, it would be appropriate for universities to offer specialized courses not only on how to use AI tools effectively but also on developing critical thinking skills. No artificial intelligence system can fully replicate the nuance of human understanding, creativity, or intrinsic motivation [12].

Nonetheless, this study has certain limitations. The majority of respondents were third-year students, and the sample was restricted to students from Nukus State Technical University and Karakalpak State University. Consequently, future research should aim to include a broader and more diverse group of students across various regions and academic levels in Uzbekistan. Including instructors' perspectives would also enhance the comprehensiveness of the findings.

In general, the study demonstrates that artificial intelligence, when used appropriately in Uzbekistan's educational context, can serve as a powerful opportunity. However, if misused or overrelied upon, it may pose significant risks to students' intellectual development.

VI. CONCLUSION

This study has demonstrated that artificial intelligence (AI) significantly assists university students in their academic pursuits, particularly by enabling faster information retrieval, facilitating comprehension, and expediting task completion. However, concerns have been raised regarding its potential negative impact—specifically, the risk of diminishing students' critical thinking abilities. Therefore, it is essential to promote a balanced approach to AI integration in education, emphasising both practical tool usage and the development of independent, critical thinking.

Based on the findings, several practical recommendations can be made:

- Conduct specialized training sessions at universities on how to use AI tools effectively. These may include platforms such as ChatGPT, Grammarly, Quillbot, and Copilot.
- Make critical thinking courses mandatory, as students must continue to strengthen their reasoning skills alongside the use of AI tools.
- Encourage educators to integrate AI into the teaching process, ensuring that this is done using appropriate pedagogical strategies.
- Guide students to use AI as a supportive tool rather than relying on it entirely, while also engaging in daily activities that enhance their cognitive abilities.
- Gradually integrate AI technologies into the education system through a phased and methodical approach.
- For future research, the following directions are proposed:
- Expanding the survey beyond third-year students to include participants from all academic levels across Uzbekistan.
- Examining not only students' perceptions but also the perspectives of university instructors regarding the use of AI in education.
- Conducting experimental studies to measure the actual impact of AI usage on students' academic performance and learning outcomes.

In conclusion, artificial intelligence represents a powerful instrument—its effectiveness depends not on the technology itself, but on the knowledge, responsibility, and ethical stance of those who wield it.

DECLARATION STATEMENT

I must verify the accuracy of the following information as the article's author.

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- **Data Access Statement and Material Availability:** The adequate resources of this article are publicly accessible.
- **Author's Contributions:** The authorship of this article is contributed solely.

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Pirniyazov Azamat Axmetovich is an undergraduate student in Digital Economy at Nukus State Technical University, Uzbekistan. His academic focus spans artificial intelligence, digital transformation, education, social development, and media and communication. Passionate about innovation and analytical thinking, he explores how emerging technologies can be harnessed to address real-world problems and inform more effective policymaking. Azamat wrote this paper to contribute to the evolving global conversation on the ethical integration of AI. With a strong dedication to research, he plans to pursue a master's degree abroad to expand his expertise, gain international experience, and actively contribute to interdisciplinary solutions addressing contemporary societal challenges.