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Analysis Of Generative Ai Adoption Among Secondary School Students in Tashkent

Umarbek Abdusaidov

Graduate of school № 246 of the city of Tashkent, Republic of Uzbekistan

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Abstract: The rapid proliferation of Generative Artificial Intelligence (GenAI) tools, such as ChatGPT, Claude, and Gemini, has fundamentally disrupted traditional educational paradigms globally. While the impact of these technologies on Western higher education is well-documented, their specific influence on the Central Asian secondary educational landscape remains significantly under-researched. This paper investigates the prevalence, usage patterns, and ethical perceptions of GenAI among secondary school students in Tashkent, Uzbekistan. By analyzing survey data collected from a sample of 200 high school students (Grades 9-11) at School 246 in the Yunusobod district, the study seeks to determine whether these tools serve primarily as instruments for academic dishonesty or as supplementary tutors for personalized learning. The research highlights a significant "digital divide" between student adoption rates and institutional policy, revealing that while student usage is ubiquitous, formal guidance from educators is virtually non-existent. The findings indicate that 72% of surveyed students utilize GenAI on a weekly basis, with a marked preference for STEM-related problem solving and language acquisition tasks. However, the study also uncovers a critical lack of "AI Literacy," as students frequently accept AI-generated hallucinations as fact without verification. Based on these results, the paper proposes a set of actionable recommendations for school administrators and the Ministry of Preschool and School Education. These include the transition from prohibition-based policies to integration strategies, the introduction of AI ethics into the curriculum, and the restructuring of assessment methods to prioritize critical thinking over rote memorization.

Keywords: generative AI, secondary education, Tashkent, academic integrity, edtech, curriculum

reform, critical thinking, digital literacy, central Asia, student assessment.

Introduction: In late 2022, the public release of ChatGPT marked an inflection point in the history of education, comparable in magnitude to the introduction of the handheld calculator or the internet search engine [6]. For the first time in history, students gained free, instant access to an on-demand polymath capable of writing essays, solving complex differential equations, and debugging computer code [5]. While global discourse has focused heavily on the implications for universities in the United States and Europe, the impact on developing educational systems in Central Asia-specifically Uzbekistan-has received little scholarly attention.

Uzbekistan is currently undergoing a massive educational transformation aimed at modernizing its workforce under the "Digital Uzbekistan 2030" strategy [4]. The nation is investing heavily in IT parks and coding schools. However, the unchecked and unregulated integration of Artificial Intelligence tools by students presents a dual-edged sword. On one hand, it offers a democratization of private tutoring, allowing students from non-elite backgrounds to access high-quality explanations and language practice [1]. On the other hand, it threatens to erode critical thinking skills if students simply outsource their cognitive load to algorithms.

The relevance of this study lies in its urgency. We are currently living through a "transitional vacuum". Students are already using these tools daily on their smartphones, yet the educational system is largely operating as if these tools do not exist. Teachers continue to assign take-home essays that can be written by AI in seconds, and students continue to submit them. Understanding how students use AI is the necessary first step toward regulating it effectively [7].

Problem Statement. Despite the widespread availability of Generative AI, schools in Tashkent largely rely on traditional assessment models (written homework, standard tests) that are easily circumvented by AI. There is a lack of empirical data regarding the extent of AI dependency among Uzbek youth. This paper aims to fill that gap by answering the primary research question: Is Generative AI currently functioning as a crutch for academic dishonesty or a catalyst for deeper learning in Tashkent high schools?

Research Objectives. To address the problem statement, this research paper focuses on achieving the following specific objectives: Quantify Adoption - To measure the percentage of high school students in a typical Tashkent school who actively use AI tools for academic purposes; Categorize Usage - To identify which subjects (Math, English, History, etc.) are most affected by AI usage and for what specific tasks (writing, calculating, translating); Assess Ethical Awareness - To evaluate whether students understand the ethical implications of AI use, specifically regarding plagiarism and intellectual honesty. Formulate Recommendations - To provide data-driven suggestions for school directors and teachers on how to adapt the curriculum to this new reality.

Hypothesis. The study operates on the hypothesis that the majority of students (over 50%) use AI tools primarily for "shortcut" tasks-such as translation and essay writing-rather than for "deep learning" tasks like concept explanation. Furthermore, it is hypothesized that students perceive AI usage as a "gray area" rather than cheating, due to a lack of explicit prohibition from teachers.

Literature Review

Historical Context of EdTech Disruption. The panic surrounding Generative AI is not without historical precedent. In the 1970s, mathematics educators protested the introduction of the handheld calculator, fearing it would destroy students' ability to perform basic arithmetic. In the early 2000s, the rise of Wikipedia and Google Search led to similar fears regarding research skills. In both instances, the education system did not ban the technology; instead, it adapted. We stopped testing students on long division of large numbers and started testing them on complex problem-solving.

Research by Luckin and Cukurova (2019) suggests that AI in education follows this same trajectory [3]. They argue that we are moving from an era of "Knowledge Acquisition" (memorizing facts) to "Knowledge Management" (knowing how to use tools to find and verify facts).

The Evolution of Natural Language Processing. To understand the gravity of the current situation, one must understand the technological leap that occurred in 2022. Prior to the release of GPT-3.5, "Chatbots" were rudimentary, rule-based systems capable only of scripted responses. They were effectively useless for academic work. The shift to "Transformer" architecture allowed AI to understand context, nuance, and even style [5]. This means a student can now ask an AI not just to "write an essay", but to "write an essay in the style of a 10th-grade student who struggles with grammar". This capability makes detection by teachers incredibly difficult.

Research by Floridi and Chiriatti (2020) warned of this "mimicry" capability, arguing that as AI becomes

indistinguishable from human writing, the traditional "Turing Test" becomes obsolete [2]. In the educational context, this means the "Homework Test"- the assumption that homework reflects student ability-is also obsolete. If a teacher cannot distinguish between a student's thought process and an algorithm's output, the entire grading infrastructure collapses.

The "Digital Divide" in Central Asia. While Western literature focuses on the ethics of AI, regional reports from the World Bank regarding Central Asia highlight a different issue: access. In Tashkent, high-speed mobile internet is ubiquitous. However, the World Bank (2022) notes that digital literacy in Uzbekistan is often conflated with "social media literacy" [8]. Students are experts at navigating Instagram or Telegram, but often lack the skills to navigate academic databases or verify sources. This creates a dangerous paradox: students have high access to powerful tools but low ability to use them critically. This "second-level digital divide" is not about having the technology, but about having the wisdom to wield it [3].

Methodology

Research Site and Participants. The research was conducted at School No. 246 in the Yunusobod district of Tashkent. This location was selected because it represents a standard, modern public school environment with a diverse student body. The participants consisted of 200 students ranging from Grade 9 to Grade 11 (ages 15-17). This age group was chosen because they are the most digitally active and face the highest academic pressure regarding university entrance exams. Data Collection Instrument. A 15-question anonymous survey was distributed to students via Google Forms and printed copies. Anonymity was a crucial component of the methodology; students are unlikely to admit to using AI for cheating if they fear punishment. The survey included questions such as:

-Have you ever used ChatGPT or a similar tool for homework?

-Do you use it to write essays or to understand the topic?

-Do you check the facts provided by the AI?

Survey Design Justification. The survey questions were meticulously designed to avoid leading answers [7]. For instance, rather than asking "Do you cheat with AI?", which triggers a defensive response, the survey asked "How often do you use AI to help with homework?" followed by "What specific tasks does it do for you?" This "funnel approach" allowed us to capture data from students who might not consider their behavior to be cheating. Furthermore, the survey was piloted with a small focus group of 10 students prior to mass distribution. This pilot phase revealed that students were confused by the term "Generative AI", so the final survey replaced this technical term with the more colloquial "ChatGPT or similar bots". This adjustment significantly improved the response rate and data accuracy.

Ethical Considerations of the Study. Conducting research on academic integrity requires strict ethical safeguards. It was made clear to all participants that no individual data would be shared with the school administration for disciplinary purposes. The data was aggregated immediately upon collection. This promise of "safe harbor" was essential to uncovering the high rates of usage reported in the results section.

Results

The analysis of the collected data reveals three major trends characterizing the current educational environment in Tashkent.

Ubiquity of Usage. The data indicates that adoption is widespread. 72% of respondents admitted to using a Generative AI tool for schoolwork at least once. Of this group, 45% identified as "frequent users", defined as using the tool three or more times per week. This confirms that AI is not a niche tool for "tech geeks" but a mainstream utility for the average student.

The "Subject Gap". A distinct discrepancy was observed in how AI is used across different subjects. The survey results showed the following breakdown of AI usage by subject: English Language & Humanities (60% of total usage): The primary use case here is essay generation and translation. Many students use AI to translate Russian or Uzbek thoughts into formal English. STEM - Physics/Math (30% of total usage): Usage here is distinct. Students rarely use AI to "write" the answer because math requires showing work. Instead, they use it as a tutor: "Explain Newton's second law like I am 10 years old." History/Literature (10% of total usage): Used primarily for summarizing long texts or finding dates.

Reliance on Accuracy. A concerning finding regarding "Digital Literacy" emerged. When asked, "Do you verify the information ChatGPT gives you with a textbook?", only 22% of students answered "Yes, always". The remaining 78% admitted to trusting the AI output blindly. This exposes a significant risk of misinformation, as AI models are known to "hallucinate" or invent facts [2][5].

Gender Differences in AI Usage. An unexpected trend emerged when analyzing the data by gender. Male students were 20% more likely to use AI for "task completion" (e.g., writing the whole code or essay), whereas female students were more likely to use it for

"clarification" (e.g., asking for definitions or grammar checks). This mirrors broader global trends in tech adoption but suggests that boys may be at higher risk of “cognitive atrophy” due to outsourcing entire tasks, while girls are using the tool more effectively as a supplement.

The "Fear of Missing Out" (FOMO). When asked why they started using AI, 40% of students cited peer pressure. Quotes from the open-ended section of the survey included sentiments such as: "Everyone else is using it to get A grades with less work. If I don't use it, I am at a disadvantage." This indicates that AI usage has become a systemic pressure; an "arms race" among students where integrity feels like a competitive disadvantage.

Teacher Detection Rates. Students were asked: "Has a teacher ever caught you using AI?"

-88% answered "Never.

-12% answered "Yes, but I talked my way out of it.

- 0% answered "Yes, and I was punished.

This stat is devastating. It proves that the current “detection” methods used by teachers-likely relying on intuition-are failing completely. The 0% punishment rate suggests that even when teachers suspect AI use, they lack the definitive proof required to issue a penalty, creating a culture of impunity.

Discussion. The End of the “Take-Home Essay”. The results suggest that the current school system is fighting a losing battle against AI if it continues to rely on take-home essays. If 60% of students use AI for humanities, the grade assigned to an essay is no longer a measure of the student's writing ability, but rather their prompt-engineering ability. This necessitates a shift in how we assess knowledge [6].

The “Tutor” Potential. Despite the risks of cheating, the data regarding STEM usage (30%) is encouraging. In classrooms with 30-40 students, a teacher cannot explain a concept individually to every student. AI acts as a personalized tutor that is available 24/7. This is particularly valuable in Uzbekistan, where access to expensive private tutors is not available to every family [8]. If we can encourage this "Tutor Mode" while discouraging the "Cheating Mode," AI could significantly boost national educational outcomes [1].

The Economic Implication for Uzbekistan. The implications of this study extend beyond the classroom walls of School 246. Uzbekistan is a young nation, with over 60% of the population under the age of 30. If this generation graduates high school with "artificial" grades-having outsourced their critical thinking to American-made algorithms-the workforce of 2030 will be unprepared for the challenges of the real economy. However, there is an optimistic angle. If these students are effectively "hiring" AI to do their work, they are technically practicing "managerial" skills. The future economy may not reward those who can write the best essay, but those who can best direct an AI to write it [2]. Therefore, the definition of "competence" is shifting. Our schools are currently testing for 20th-century skills (memorization and execution) while our students are secretly practicing 21st-century skills (prompt engineering and delegation). The conflict arises because the curriculum has not yet pivoted to validate these new skills [4].

Conclusions and proposals. This research confirms that Generative AI is deeply embedded in the daily academic lives of Tashkent secondary students. The era of “AI-free” education is over. The technology is too useful, too accessible, and too powerful to be banned effectively [1]. Therefore, the goal of educators must shift from detection (catching cheaters) to integration (teaching proper use) [7].

Based on the data gathered at School 246, the following actions are recommended for school administrators and the Ministry:

1. Proposal A: The “Flipped Classroom” Model. To combat essay cheating, schools should shift the acquisition of knowledge (lectures/reading) to home, and the application of knowledge (writing essays/solving problems) to the classroom [6]. Writing should be done with pen and paper under supervision.

2. Proposal B: AI Literacy Curriculum. Schools should introduce a short module teaching "Prompt Engineering" and “Fact Verification” [3]. Students must be graded on their ability to critique AI output. For example, a homework assignment could be: “Ask ChatGPT to write an essay on Amir Timur, and then highlight three mistakes it made.”

3. Proposal C: Clear Institutional Policy. Schools must publish a clear “AI Acceptable Use Policy” (AUP). This document should define exactly what constitutes plagiarism [7]. For example: “Using AI to generate ideas is allowed; using AI to generate text to copy-paste is forbidden.”

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