



№5

MOLIYAVIY TEXNOLOGIYALAR

ILMIY ELEKTRON JURNALI



**ISSN: 2181-3965
VOLUME 5
TOSHKENT 2026**

“MOLIYAVIY TEXNOLOGIYALAR” ILMIY ELEKTRON JURNALI TAHRIRIYAT KENGASHI RAISI

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“Moliyaviy texnologiyalar” ilmiy elektron jurnali
23.11.2022-yildan

O'zbekiston Respublikasi Prezidenti Administratsiyasi huzuridagi Axborot va ommaviy kommunikatsiyalar agentligi tomonidan №R-566966 reyestr raqami tartibi bo'yicha ro'yxatdan o'tkazilgan.
Litsenziya raqami: №049864





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BEHAVIORAL AND PSYCHOLOGICAL FACTORS IN AI USE AMONG 15-YEAR-OLD STUDENTS: LEARNING AND ACADEMIC PERFORMANCE

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Abstract. This article presents a theoretical analysis of the impact of generative artificial intelligence (AI) on the learning activities, cognitive effort, and independent thinking of 15-year-old students in the context of Uzbekistan. The study draws on OECD PISA 2025 data and scholarly literature in behavioral sciences. According to the OECD (2026), 48.6% of students in Uzbekistan use AI chatbots for learning purposes at least once a week, while 80.6% report being taught at school how to evaluate AI-generated information. The article examines the educational implications of AI through the perspectives of cognitive offloading, self-directed learning, and critical evaluation of information. Drawing on secondary sources, the theoretical analysis suggests that AI can support learning processes, while its inappropriate use may potentially undermine independent thinking. The study emphasizes the importance of developing students' skills in responsible AI use, information verification, and independent learning.

Keywords: generative artificial intelligence; PISA 2025; cognitive effort; cognitive load; behavioral sciences; self-directed learning; critical thinking; Uzbekistan.

ПОВЕДЕНЧЕСКИЕ И ПСИХОЛОГИЧЕСКИЕ ФАКТОРЫ ИСПОЛЬЗОВАНИЯ ИИ УЧАЩИМИСЯ 15 ЛЕТ: ОБУЧЕНИЕ И АКАДЕМИЧЕСКАЯ УСПЕВАЕМОСТЬ

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Аннотация. В статье представлен теоретический анализ влияния генеративного искусственного интеллекта (ИИ) на учебную деятельность, когнитивные усилия и самостоятельное мышление 15-летних учащихся на примере Узбекистана. Исследование основано на данных PISA 2025 ОЭСР и научной литературе в области поведенческих наук. Согласно данным ОЭСР (2026), 48,6 % учащихся Узбекистана используют чат-боты с искусственным интеллектом в учебных целях не реже одного раза в неделю, а 80,6 % отмечают, что в школе их обучают оценивать информацию, созданную ИИ. В статье рассматривается влияние ИИ на эффективность обучения с позиций когнитивной разгрузки, самостоятельного обучения и критической оценки информации. Теоретический анализ вторичных источников показывает, что ИИ может способствовать образовательному процессу, однако его ненадлежащее использование потенциально ограничивает развитие самостоятельного мышления. Обосновывается необходимость формирования у учащихся навыков осознанного использования ИИ, проверки информации и самостоятельного обучения.

Ключевые слова: генеративный искусственный интеллект; PISA 2025; когнитивные усилия; когнитивная нагрузка; поведенческие науки; самостоятельное обучение; критическое мышление; Узбекистан.

15 YOSHLI O‘QUVCHILARDA SUN’IY INTELLEKTDAN FOYDALANISHNING XULQ-ATVOR VA PSIXOLOGIK OMILLARI: TA’LIM VA AKADEMIK O‘ZLASHTIRISH



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Annotatsiya. Ushbu maqolada generativ sun'iy intellektning (SI) 15 yoshli o'quvchilarning o'quv faoliyati, kognitiv sa'y-harakatlari va mustaqil fikrlashiga ta'siri O'zbekiston misolida nazariy jihatdan tahlil qilinadi. Tadqiqot OECDning PISA 2025 ma'lumotlari va xulq-atvor fanlariga oid ilmiy adabiyotlarga asoslanadi. OECD (2026) ma'lumotlariga ko'ra, O'zbekistonda o'quvchilarning 48,6 foizi haftasiga kamida bir marta o'rganish maqsadida SI chatbotlaridan foydalanadi, 80,6 foizi esa SI yaratgan axborotni baholashni maktabda o'rganayotganini bildirgan. Maqolada SIning ta'lim samaradorligiga ta'siri kognitiv yuklamani tashqi vositalarga o'tkazish, mustaqil o'rganish va axborotni tanqidiy baholash nuqtayi nazaridan yoritiladi. Ikkilamchi manbalarga asoslangan tahlil SI ta'lim jarayonini qo'llab-quvvatlashi bilan birga, undan noto'g'ri foydalanish mustaqil fikrlashni cheklashi mumkinligini nazariy jihatdan ko'rsatadi. O'quvchilarda SI dan ongli foydalanish, axborotni tekshirish va mustaqil o'rganish ko'nikmalarini rivojlantirish zarurligi asoslanadi.

Kalit so'zlar: generativ sun'iy intellekt; PISA 2025; kognitiv sa'y-harakat; kognitiv yuklama; xulq-atvor fanlari; mustaqil o'rganish; tanqidiy fikrlash; O'zbekiston.

Introduction

A student who encounters a difficult article has several options. They can reread a confusing paragraph, look up unfamiliar terms, ask a teacher for help, or use an AI chatbot to explain the passage. They can also ask the chatbot to summarize the entire article and rely on that summary instead of reading the original. These options may lead to different learning experiences even when they help the student finish the same assignment.

The distinction matters because access to information is not identical to understanding it. A summary may communicate a text's main points quickly, but it can leave out qualifications, evidence, or tensions that matter to the author's argument. By contrast, an AI explanation can help a student who is stuck on a concept return to the original text with a clearer understanding. AI therefore cannot be classified as inherently helpful or harmful without considering what it is being asked to do and what the student does with its response.

The scale of adoption makes this question relevant. In PISA 2025, 48.6% of students in Uzbekistan reported using AI chatbots at least weekly to help them learn. The OECD average was 45.5%. In Uzbekistan, 80.6% reported that school lessons had taught them to assess AI-generated information, compared with 62.6% across OECD countries (OECD, 2026). These indicators describe general learning-related AI use and exposure to AI-evaluation instruction. They should not be interpreted as direct measures of students' preference for AI over reading.

This paper asks: How can behavioral-science research and published PISA findings help explain the relationship between 15-year-old students' use of AI for schoolwork, their engagement with reading, and their learning outcomes? It addresses three related questions: (1) What do published PISA findings establish about students' AI use, particularly in Uzbekistan? (2) How might cognitive-demand avoidance and cognitive offloading help interpret students' choices between AI assistance and independent reading? (3) What can schools reasonably do to encourage AI use that supports rather than replaces learning?

The paper makes a limited claim. It does not identify the motives of individual students, establish that AI causes lower or higher achievement, or estimate a new statistical relationship. Instead, it connects published findings to behavioral theory and identifies where the existing evidence is insufficient. This boundary is important: a plausible explanation is not the same as an empirically demonstrated mechanism.





Literature Review

Cognitive demand and the appeal of low-effort options

Kool et al. (2010) examined how people make decisions when options differ in cognitive demand. Their research provides a basis for considering whether people sometimes avoid tasks that require greater mental effort. Applied cautiously to schoolwork, this framework suggests that students may prefer an AI-generated explanation when a reading assignment feels difficult, time-consuming, or uncertain. The framework does not establish that every student who uses AI is avoiding effort; it identifies one possible mechanism worth investigating.

Consider a student assigned a dense science article shortly before a deadline. Reading the article requires identifying the central claim, interpreting unfamiliar terms, and deciding which evidence supports the conclusion. Asking AI for a summary may reduce the immediate time needed to obtain the main points. If the student's immediate objective is to submit something before the deadline, the summary may seem more attractive. If the assignment is intended to develop close reading or evidence evaluation, however, skipping the original text may undermine the learning objective. The same shortcut can therefore be efficient for one immediate goal and costly for another.

This example is an illustration of the theory, not an observed case from the PISA data. PISA's published indicators do not directly measure the mental effort a student believes they save by using AI. Consequently, perceived efficiency should be treated as a proposed explanation, not as a measured result of this study.

Cognitive offloading: transferring part of the task to a tool

Risko and Gilbert (2016) define cognitive offloading as using physical actions or external tools to reduce the cognitive demands of a task. Notes, calculators, search engines, and reminders can all serve this function. Offloading is not automatically a problem: it can free attention for more complex work. The important question is which part of the task is transferred and whether the learner still performs the thinking required to understand or evaluate the result.

AI introduces a distinctive form of offloading because it can produce not only stored information but also explanations, summaries, outlines, and draft arguments. If a student uses AI to define an unfamiliar term and then rereads the relevant paragraph, the tool may help the student continue learning. If the student asks AI to summarize the text and never consults the source, the tool may replace the very activity the assignment was designed to practice. This is a conceptual distinction; the paper does not claim that PISA directly observes what students do after receiving an AI response.

The distinction also avoids a simplistic moral judgment. A student who asks for help may be motivated to learn but uncertain how to begin. Another student may be under severe time pressure. A third may be exploring a topic out of curiosity. The action—using AI—does not reveal the motive on its own. Research must examine purpose, context, and subsequent behavior rather than infer laziness from frequency of use.

Reading as more than information retrieval

Reading involves locating information, constructing meaning, evaluating claims, and reflecting on how a text supports its conclusions. The OECD's reading-literacy work emphasizes that digital environments require readers to evaluate information rather than merely find it (OECD, 2021). A summary can help a reader orient themselves, but it may not preserve every qualification, contradiction, or evidential detail in the original. If the assignment asks students to compare arguments or identify an author's assumptions, those details are central rather than optional.

This does not mean students must always read every source without assistance. An accessible explanation may make a demanding text more approachable, especially when vocabulary or background knowledge creates a barrier. The relevant distinction is between support that enables engagement with the source and substitution that removes the need to engage with it. This paper uses “AI as scaffold” for the first pattern and “AI as substitute” for the second. These are analytical categories proposed for discussion, not formal categories measured directly in the





PISA findings used here.

Research Methodology

Research design

This is a secondary-research paper based on a focused narrative synthesis of published sources. It combines (a) OECD reporting on PISA 2025, (b) established behavioral-science literature on cognitive demand and cognitive offloading, and (c) OECD work on reading literacy in digital environments. No new survey, experiment, interview, or analysis of student-level PISA records was conducted. The paper therefore reports published findings and develops a theory-informed interpretation; it does not present original statistical estimates.

Evidence used

The main descriptive evidence comes from OECD (2026), PISA 2025 Results (Volume I), including the Uzbekistan country note and the report's summary of digitalisation and AI. The paper uses the reported proportions of students who use AI chatbots weekly to help them learn and who report learning to assess AI-generated information at school. The theoretical discussion draws on Kool et al. (2010) and Risko and Gilbert (2016). OECD (2021) provides context for the skills involved in reading and evaluating information in digital environments.

Scope and analytical approach

The analysis distinguishes three types of statement. First, descriptive claims report what the cited source measures, such as the share of students who say they use AI weekly. Second, theoretical interpretations explain how concepts such as cognitive demand or offloading might help make sense of a behavior. Third, hypotheses identify relationships that future research could test. Keeping these categories separate prevents a theoretical explanation from being presented as if it were directly observed in the data.

The analysis is deliberately limited to published results. Although the PISA 2025 public-use database is available, this paper does not independently calculate estimates from student records. It also does not claim to measure students' preference for AI over reading directly. The available indicators support a discussion of AI use and AI-literacy opportunities, but they do not by themselves establish the motives behind each student's decision.

Results and Analysis

AI-supported learning is common in Uzbekistan

According to the OECD's PISA 2025 results, 48.6% of students in Uzbekistan reported using AI chatbots at least weekly to help them learn. The corresponding OECD average was 45.5% (OECD, 2026). The difference is modest: the figures suggest that weekly AI-supported learning is common in both settings, rather than showing Uzbekistan as an extreme outlier. These percentages concern AI use to help with learning in general. They do not mean that 48.6% of students use AI instead of reading, and they should not be described as a rate of reading avoidance.

This measurement distinction is central to the research question. “Using AI to help me learn” could include asking for an explanation, requesting feedback, brainstorming questions, or seeking a simpler account of an unfamiliar idea. Those behaviors do not necessarily displace reading. A student could use an AI explanation before reading, while reading, or after reading. Without task-specific evidence about what students do with the output, the overall frequency measure cannot distinguish these possibilities.

AI-literacy instruction is widely reported, but exposure is not proof of skill

In Uzbekistan, 80.6% of students reported learning in school lessons how to assess AI-generated information. The OECD average was 62.6% (OECD, 2026). This is a meaningful indicator of reported educational exposure. It suggests that many students say they have had an opportunity to learn about evaluating AI outputs.

However, the percentage does not establish that every student can reliably detect an inaccurate answer, verify a claim, or identify a misleading summary. Reporting that a skill has been taught is different from demonstrating mastery of that skill. The figure also does not show





whether AI-literacy instruction changes how students use AI or affects their reading outcomes. Those are empirical questions that require more direct measures.

The relationship between AI use and performance is not simple

The OECD's summary of PISA 2025 describes the relationship between AI use and performance as complex. It reports that students who do not use AI for certain specific schoolwork tasks tend to outperform those who do, while students who use AI weekly for general learning purposes perform similarly to non-users on average. It also reports that frequent AI use paired with opportunities to develop AI-literacy skills is associated with slightly better performance patterns (OECD, 2026). These findings should be interpreted as associations, not proof that AI use itself causes a change in achievement.

Several explanations remain possible. Students who find schoolwork difficult may be more likely to seek AI assistance, which could produce an association between AI use and lower scores even if the tool helps them relative to what they would otherwise achieve. Alternatively, some forms of AI use may replace productive practice. Students may also differ in prior knowledge, teaching environment, access to support, or how they verify generated information. Without a design that can distinguish these explanations, the direction of causation remains uncertain.

The evidence therefore does not support the blanket conclusion that AI harms learning, nor does it establish that AI improves learning. A more defensible conclusion is that purpose and context matter, and that frequency alone is an incomplete measure of educational behavior.

Discussion: Interpreting the Choice Between AI and Reading

Immediate convenience can conflict with a learning objective

The behavioral framework helps explain why AI summaries can be attractive. They reduce the immediate work required to obtain a condensed account of a text. When a student is tired, under time pressure, or uncertain about how to begin, this reduction may matter. The decision can be understandable from the student's short-term perspective even when it conflicts with a longer-term learning goal.

Suppose a history assignment asks students to explain how an author supports a claim and whether the evidence is convincing. A summary may reveal the author's main conclusion, but it may omit the structure of the argument or the limits of the evidence. If the student submits an answer based only on the summary, they may complete the visible task while missing the skill being assessed. In contrast, a student who asks AI to clarify a confusing term and then returns to the article may use the same technology to make close reading possible. The difference lies not in whether AI was used, but in which intellectual steps remain with the student.

This example illustrates a possible mechanism consistent with cognitive-demand avoidance and offloading research. It is not evidence that a particular proportion of students behave in either way. The paper cannot infer from PISA's overall AI-use percentage how many students use summaries as substitutes for reading.

The relevant question is what work is delegated

AI can perform different roles within a single assignment. It can explain unfamiliar vocabulary, generate questions for self-testing, suggest counterarguments, summarize a source, or draft a response. These uses differ in how much of the intended learning task they transfer to the tool. Asking for a definition may remove a small obstacle while preserving the need to interpret the text. Asking for a complete argument may transfer much more of the reasoning and composition to the system.

The scaffold/substitute distinction is useful because it focuses attention on the learning process. As a scaffold, AI provides temporary support while the student remains responsible for reading, checking, and forming a judgment. As a substitute, AI output may become the endpoint: the student accepts the answer without checking it against the source or reconstructing the reasoning. Real use is not always neatly divided into these categories. A student may use AI constructively for one task and rely on it excessively for another.

Self-regulation and verification are plausible moderators





Self-regulated learning involves planning, monitoring understanding, and choosing an appropriate response when a difficulty appears. In the context of AI, these processes may affect whether a student treats an answer as a starting point or as a final authority. A student who notices that an explanation is vague may return to the source, compare it with another explanation, or ask a teacher. A student who does not check the output may miss errors or oversimplifications. The PISA finding that AI use paired with opportunities to learn AI literacy is associated with somewhat better performance is consistent with the importance of evaluation, but it does not prove that evaluation skills cause the difference. Students who receive AI-literacy instruction may also attend schools with other advantages. The appropriate conclusion is therefore cautious: teaching evaluation skills is a reasonable educational response, while the size and causal effect of that response require further study.

What the Uzbekistan figures can and cannot tell us

Uzbekistan provides a relevant case because the reported level of weekly AI use is close to the OECD average, while the reported share of students exposed to AI-evaluation instruction is higher than that average (OECD, 2026). Together, these figures invite a useful question: when students have access to AI and report learning how to assess its output, do they actually verify generated explanations and continue to engage with original reading?

The published percentages alone cannot answer that question. They do not show whether students who report AI-literacy instruction are the same students who use AI weekly, how effectively they evaluate answers, or whether they read the original texts afterward. Nor do these two country-level percentages establish that AI-literacy instruction explains academic performance. A stronger follow-up study would need individual-level data linking AI-use purposes, evaluation practices, reading behavior, and achievement.

Implications for Teaching and Future Research

First, schools should distinguish among purposes of AI use rather than classify students simply as users or non-users. A policy that treats all AI use as equivalent may fail to distinguish an explanation that helps a student understand a passage from a generated answer that replaces the student's reasoning.

Second, AI-literacy instruction should emphasize verification. Students can be asked to compare an AI-generated summary with the source, identify a claim that needs evidence, and explain what the summary leaves out. Such activities make evaluation observable instead of assuming that students can assess AI output simply because they have heard about the skill.

Third, assignments should make the learning objective clear. If the goal is to practice close reading, students should be asked to refer to specific passages, explain how evidence supports a claim, or compare the source with a generated summary. If AI is permitted, the task can require students to document what they asked the tool, what they checked, and what they changed after consulting the original material. These practices make independent engagement part of the assignment rather than an unstated expectation.

Fourth, future research should measure behavior more directly. A study could compare students' performance on a reading task under clearly defined conditions: reading the source independently, using AI for clarification while reading, or relying on an AI summary. It should measure comprehension, delayed recall, and ability to evaluate evidence rather than completion time alone. If student-level survey data are used, researchers should distinguish AI use for explanation, summarization, drafting, and source evaluation, and account for prior achievement and relevant background factors. Any causal claim would require a design capable of supporting it.

Limitations

This paper has several limitations. First, it is a focused narrative synthesis rather than a systematic review with a preregistered search strategy and formal quality appraisal. It should not





be treated as an exhaustive account of all research on AI and adolescent reading. Second, it relies on published OECD findings and does not independently analyze PISA student-level data. Third, the PISA indicators used here measure reported general AI use and reported exposure to AI-literacy instruction; they do not directly measure students' reasons for using AI, the amount of original reading they complete, or the cognitive effort they save.

Fourth, PISA findings are observational. Associations between AI use and achievement cannot, on their own, establish causal effects. Student characteristics, prior achievement, school practices, and access to support may affect both AI use and performance. Fifth, cognitive-demand avoidance and cognitive offloading provide possible theoretical explanations, but the present paper does not test whether either mechanism explains the observed PISA patterns. Finally, the paper's focus on 15-year-olds and the Uzbekistan context limits how far its interpretation should be generalized to younger students, older students, or other educational systems.

Conclusion

The choice between AI assistance and independent reading is not simply a choice between new technology and an old habit. It can be a choice about which parts of a learning task a student performs personally and which parts are delegated to a tool. Behavioral research on cognitive demand and cognitive offloading helps explain why a quick answer may be attractive, particularly when a task feels difficult or time is limited. Yet these theories do not prove that students use AI to avoid effort, and convenience does not automatically mean that learning has been reduced.

Published PISA 2025 findings show that weekly AI-supported learning is common among 15-year-olds: 48.6% of students in Uzbekistan reported using AI chatbots weekly to help them learn, compared with 45.5% across OECD countries. The reported exposure to school instruction on assessing AI-generated information was also relatively high in Uzbekistan, at 80.6% compared with 62.6% across the OECD (OECD, 2026). The OECD also describes differing performance patterns across types of AI use, while emphasizing a complex relationship rather than a simple universal effect.

The evidence supports a cautious conclusion. AI's educational value depends on the purpose for which it is used, the task it performs, and whether the student continues to read, evaluate, and reason independently. The current paper cannot establish why individual students choose AI over reading, but it identifies a plausible behavioral framework and a clear direction for further research. The central question for educators is not how to maximize or eliminate AI use. It is how to help students use AI in ways that make difficult learning more accessible without removing the intellectual work that learning is meant to develop.

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