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THE PSYCHOLOGICAL IMPACT OF USING ARTIFICIAL INTELLIGENCE TECHNOLOGIES ON STUDENTS' ACADEMIC MOTIVATION AND INDEPENDENT EDUCATION

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Abstract: This article examines the psychological impact of artificial intelligence (AI) technologies on students' learning motivation and independent learning activities within the higher education system. The study was conducted using an empirical questionnaire and psychological tests involving 42 students from the "Pedagogical and Psychological" department of the Andijan State Pedagogical Institute. The results showed that AI tools (ChatGPT, Gamma, Notion AI, etc.) have a positive impact on increasing students' internal motivation and forming cognitive independence, but at the same time, they also pose a risk of dependence on external motivation and cognitive procrastination. The obtained data were analyzed within the framework of the laws of modern digital psychology, and practical recommendations were developed.

Keywords: Artificial intelligence, academic motivation, independent learning, intrinsic motivation, cognitive autonomy, digital psychology, students.

Introduction: The modern higher education system is undergoing a period of rapid transformation. At the heart of these changes are not only methodological approaches but also the integration of generative artificial intelligence (AI) technologies into the educational environment [9]. Today's student is becoming not just a passive subject who receives information, but an active person who searches for, processes, and creates independent knowledge. For students majoring in pedagogy and psychology, this process is doubly important: they are both students and specialists who will manage these processes in the future.

From a psychological perspective, learning motivation and self-education are considered interconnected determinants. According to modern interpretations of self-determination theory, an individual's successful functioning in the digital environment depends on the satisfaction of their three primary psychological needs: autonomy, competence, and connectivity [6]. It has been proven that AI technologies (e.g., ChatGPT, personalized learning platforms) stimulate a sense of cognitive autonomy and competence by allowing students to learn based on an individual trajectory [2].

However, it is emphasized that any technological progress in science also has a backward side. Modern research indicates that excessive reliance on AI tools can lead to "digital gluttony" and intellectual passivity in students, weakening their independent thinking and problem-solving abilities [1]. The widespread use of generative models in higher education is reducing students' intrinsic interests and strengthening external motivation focused solely on the finished result [7].

The objective of this study is to determine and scientifically evaluate the real impact of AI technologies on the structure of educational motivation for students in the field of pedagogy and

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psychology at Andijan State Pedagogical Institute, as well as their psychological preparation for organizing independent learning.

Methods: The study was conducted with students from the "Pedagogy and Psychology" program at the Andijan State Pedagogical Institute.

A total of 42 students (2nd and 3rd-year undergraduates) participated in the study, selected through random sampling. Of the participants, 28 were female and 14 were male. The average age of the participants was 20.4 years. The homogeneity of the sample was ensured by the fact that all participants were enrolled in the same program and had an equal share of independent study hours in their curriculum.

The following set of methods was used to study students' academic motivation and their psychological attitude toward independent learning:

1. Academic Motivation Scale: An adapted version of a modern international questionnaire developed by Vallerand et al., designed to measure intrinsic and extrinsic motivation in an educational setting [2].
2. Questionnaire "Psychological readiness of students for independent educational activities in a digital environment" (modified to account for the influence of modern AI tools). This questionnaire evaluates the cognitive, emotional-volitional, and critical thinking components (from 1 to 5 on the Likert scale).
3. Questioning. A short survey was conducted to determine how often students use which AI tools in their daily academic activities.

The obtained quantitative data were subjected to statistical processing. The Pearson correlation coefficient (r) was calculated to determine the relationship between the average value (M), the standard deviation, and the variables.

Results: The empirical findings of the study revealed that 88% of the respondents (37 students out of 42) utilize artificial intelligence (AI) technologies in their academic activities at least 3–4 times a week. The most frequently utilized tools include ChatGPT for text generation (74%), Gamma AI for creating presentations (62%), and Perplexity AI for information retrieval (41%).

To conduct a more nuanced analysis, the students' academic motivation and self-directed learning indicators were analyzed by dividing the sample into two distinct groups based on the frequency of AI tool usage: Group A (active daily AI users, n = 25) and Group B (occasional or need-based AI users, n = 17).

Motivation and Self-Directed Learning Indicators	**Group A (Active AI Users) (M±SD)**	**Group B (Low AI Users) (M±SD)**	**p-value**
Intrinsic motivation (Academic interest)	4.2 \pm 0.4	3.7 \pm 0.5	< 0.05
Extrinsic motivation (Result-orientation)	4.6 \pm 0.3	3.9 \pm 0.6	< 0.01
Cognitive autonomy (Independence)	3.8 \pm 0.6	4.1 \pm 0.4	< 0.05
Critical evaluation of information	2.8 \pm 0.7	3.9 \pm 0.5	< 0.01

Statistical analyses demonstrated that students who actively use AI tools (Group A) exhibit a remarkably high level of extrinsic motivation (4.6), which is characterized by a strong drive to obtain grades quickly and with minimal effort. These students tend to perceive AI as a "personal assistant" in mastering learning materials. Conversely, the capacity for critical evaluation of information in Group A (2.8) was found to be significantly lower compared to Group B (3.9).

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Furthermore, the correlation analysis revealed a strong positive correlation between the frequency of AI utilization and the speed of academic task completion ($r = 0.72$, $p < 0.01$). However, an inverse (negative) correlation was confirmed between the unregulated use of AI tools and deep information processing skills ($r = -0.48$, $p < 0.05$), indicating a potential decline in cognitive engagement.

Discussion: The empirical findings obtained demonstrate that the impact of AI technologies on students' psyche and academic activities is ambivalent (two-fold) in nature. Within the framework of contemporary digital psychology principles, this phenomenon can be substantiated as follows:

Positive Shifts in the Motivational Sphere and the "Instant Success" Effect

The high level of initial interest in learning activities observed among Group A students is directly associated with the sense of "instant success" facilitated by AI tools. Recent studies confirm that when neural networks explain complex or ambiguous terms in a simplified and interactive manner, students experience a heightened sense of cognitive competence [3]. For instance, when a student interacts with ChatGPT to design a psychological experiment plan, they perceive themselves as the director of the process, which inherently reinforces their motivation to engage in the learning activity.

Negative Trends: Avoidance of Cognitive Load and the Risk of "Intellectual Atrophy"

The most alarming trend revealed in the results is the low level of critical evaluation of information among active AI users (2.8). Students majoring in Pedagogy and Psychology exhibit a pronounced tendency to accept information provided by AI without verification, overlooked even inherent scientific inaccuracies. In digital pedagogy, this phenomenon is conceptualized as the "cognitive offloading" effect [5]. When a ready-made intellectual product is available, the human brain tends to bypass complex cognitive operations, such as independent literature analysis and synthesis. Consequently, self-directed learning skills among these students develop in an "illusory" rather than a substantive form.

Conclusion: The empirical study conducted among Pedagogy and Psychology students (n=42) at a state pedagogical higher education institution scientifically substantiates that the integration of generative artificial intelligence (AI) technologies into higher education exerts an ambivalent (two-fold) impact on students' motivational spheres and self-directed learning activities. Based on quantitative and qualitative analyses, the following comprehensive conclusions were derived:

Motivational Transformation and Cognitive Competence: The systematic utilization of AI tools (e.g., ChatGPT, Gamma, Perplexity) substantially stimulates students' intrinsic motivation and subjective sense of competence during the initial stages of academic engagement by fostering an "instant success" effect. By explaining complex scientific paradigms in an interactive and personalized manner, neural networks effectively support students' perceived academic autonomy.

Cognitive Offloading and Vulnerabilities in Self-Directed Learning: Unregulated and uncritical reliance on AI applications triggers adverse cognitive trends. Quantitative data reveal that active AI users exhibit a significantly lower level of critical information evaluation ($2.8 \pm m\ 0.7$), indicating an escalating "cognitive offloading" effect within digital learning environments. By depending heavily on ready-made intellectual outputs, students tend to bypass high-level cognitive operations such as rigorous literature synthesis and independent analysis, thereby rendering the development of authentic self-directed learning skills largely illusory.

Strategic Implications for Higher Education: In training future educational psychologists, traditional prohibitive approaches toward emerging technologies are obsolete. The contemporary educational paradigm necessitates cultivating student capacity for constructive AI collaboration (co-creation) while simultaneously instilling robust digital literacy and information verification skills. Transitioning self-directed academic tasks toward problem-based case studies, oral defense, and

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reflexive assignments constitutes an optimal psycho-pedagogical intervention to mitigate intellectual passivity.

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