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THE IMPACT OF TECHNOLOGY ON SELF-STUDY: ENHANCING
INDEPENDENT LEARNING THROUGH AI

Karimova Ruhshona

Student of Fergana state university

Alieva Navruza

Associate professor of Fergana state university

Abstract: In today's rapidly developing digital world, technology plays a crucial role in shaping human life and education. This study explores the transformative impact of modern technologies, particularly artificial intelligence (AI), on the paradigm of independent learning. By analyzing existing literature and conducting a qualitative survey among university students, this paper examines how digital tools support personalized learning, efficiency, and student autonomy. The findings suggest that while technology significantly enhances independent study by providing limitless resources, its ultimate success depends on responsible application, ethical considerations, and proper pedagogical guidance.

Keywords: technology, self-study, artificial intelligence (AI), online learning, educational tools, digital transformation, student autonomy.

Introduction. In recent years, technology has evolved from a supplementary tool to an essential part of everyday life, fundamentally influencing various aspects of human activity, including the educational sector. The rapid development of digital platforms, the Internet of Things (IoT), and artificial intelligence has changed the way people learn, communicate, and access information.

Traditional methods of learning, often confined to physical classrooms and printed textbooks, are gradually being supported—and in some cases replaced—by modern technological solutions. This shift makes education more flexible, inclusive, and accessible to a global audience. One of the most significant contributions of technology is its ability to support independent learning (self-study), allowing students to explore diverse resources beyond the rigid boundaries of a classroom curriculum.

Objectives. The primary objectives of this research are structured as follows:

To analyze the role of modern technology, especially AI-driven systems, in enhancing students' independent learning experiences.

To evaluate student perceptions regarding the effectiveness, ethical implications, and potential risks of using AI in higher education.

To synthesize existing research on how digital platforms impact student motivation, self-regulation, and cognitive development.

Literature Review. Many researchers have extensively studied the intersection of technology and education. Digital tools are recognized for providing easier access to information and fostering a more engaging, interactive learning environment.

According to Carstens et al. (2021), technology enhances many learning opportunities and allows for increased student comfort; however, they warn of risks if students rely on it too heavily, which could potentially stifle critical problem-solving skills. Their research emphasizes that while engagement increases, both teachers and students require specialized training to navigate these tools effectively.

Furthermore, Gil (2010) argues that the Internet serves as an optimal environment for self-study, providing fast and inexpensive access to the latest global knowledge. This form of

informal education is essential in today's knowledge-based economy, allowing learners to update their qualifications independently to adapt to a constantly changing professional world.

Recent studies also highlight the specific impact on university settings. Akhmetzhanova et al. (2025) found that digital technologies significantly influence learning independence, particularly through the development of self-regulation and problem-solving. Their findings indicate a "perception gap," where students often view the benefits of digital tools more positively than educators, especially regarding the promotion of learner autonomy.

Methodology. This research employed a qualitative approach, utilizing an online survey conducted among 20 university students. The survey aimed to capture diverse perspectives and "real-world" insights into how AI tools influence daily learning habits and academic performance.

The participants were asked to reflect on the importance of AI in language learning, the advantages of AI in terms of convenience and results, and the overall magnitude of change AI has brought to independent education.

Results and Analysis. The survey yielded three distinct categories of feedback:

Positive Feedback (17 students / 85%): The vast majority of participants rated the role of AI highly positively. They stated that AI is essential in the modern era, offering a highly convenient and personalized path for learning that saves time and clarifies complex topics.

Mixed Feedback (1 student / 5%): One student provided a balanced 50/50 evaluation. While acknowledging that AI is extremely useful for data retrieval, they noted a high risk of creating "intellectual dependency," where the student stops thinking for themselves.

Negative Feedback (2 students / 10%): These participants viewed AI as a threat to traditional education, arguing that it weakens critical thinking, reduces essential interpersonal communication, and disrupts long-standing academic values.

Discussion. The integration of technology into education has brought about a paradigm shift. AI-based tools can adapt to individual learning styles (visual, auditory, kinesthetic), helping learners focus specifically on their weaknesses.

However, as noted in both the literature and our survey, these advancements present challenges. The "addictive" nature of digital platforms and the potential decline in original thinking are valid concerns. While AI provides efficiency, it cannot replace the human element of mentorship and the rigor of deep, critical analysis.

Conclusion. In conclusion, technology and AI have become integral to modern education, fostering an environment where independent study is more accessible and personalized than ever before. This research indicates that 85% of students view AI as a vital tool for their success. To maximize these benefits, it is necessary to find a strategic balance between traditional pedagogical methods and modern technological tools. Responsible use, combined with human guidance, remains the most effective way to ensure that technology serves as an empowerment tool rather than a cognitive crutch.

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