ORGANIZING INDEPENDENT LEARNING USING ARTIFICIAL INTELLIGENCE IN THE CREDIT-MODULE SYSTEM

Kamola Khayrullayevna Khummamatova
Lecturer, Jizzakh State Pedagogical University

Abstract: This article explores the organization of independent learning using artificial intelligence (AI) within the credit-module system. AI technologies enable the analysis of a student's individual learning profile and facilitate the generation of differentiated, leveled, and adaptive tasks. The article highlights the alignment of AI with the principles of individualization, assessment transparency, and the requirements of the ECTS credit-module system in higher education.

Keywords: credit, module, artificial intelligence, independent learning, differentiated approach, adaptive learning

Introduction

Today, the primary goal of education has shifted from traditional knowledge delivery to the development of each student's individual potential. Students in higher education institutions differ in knowledge level, motivation, and learning style, making the implementation of personalized and adaptive learning models increasingly necessary.

AI technologies make it possible to implement a differentiated approach in higher education. AI systems analyze students' individual learning behaviors, adapt educational materials, and provide personalized feedback. As a result, learning transitions from passive knowledge acquisition to an active, self-directed process, offering guidance tailored to each student's pace and capabilities.

In Uzbekistan, the integration of AI technologies into higher education has been designated as a national priority. Presidential Decree PF–189 (October 22, 2025), Resolution PQ–320 (October 30, 2025), and the "Digital Education Development Concept" (PQ–312, February 28, 2022) support AI-based projects aimed at enhancing educational quality and inclusivity. AI technologies in higher education facilitate differentiated and personalized approaches, fostering independent learning, self-development, and active participation in the learning process [1,2,3].

Methods

Differentiated learning refers to organizing educational activities in accordance with the learners' preparation levels, including the content, complexity, and methods of tasks. According to X.I. Liymete [4], I.E. Unt [5], V.K. Shishmarenkov [6], differentiation in education manifests in two main forms: group-based and leveled.

Group differentiation, based on Liymete's research, involves planning, task completion, and discussion within groups. Its significance lies in developing students' communication skills, creativity, information exchange, and engagement with knowledge values [4].

Leveled differentiation, as described by Shishmarenkov, involves:

- organizing education considering students' interests and cognitive development;
- accounting for students' readiness for independent learning;

- directing education according to learners' inclinations and capabilities;
- structuring the educational profile of the learning process [6].

Thus, differentiation addresses students' abilities and knowledge levels. The complexity of learning materials is tailored to the learner's readiness.

Adaptive learning is a pedagogical approach aimed at adjusting the learning process to each student's needs, abilities, and knowledge level [7]. It enhances student engagement, independent study, and self-directed learning.

The key feature of adaptive learning is the customization of content, methods, and tasks to students' cognitive potential and pace of development. In this model, the educator's role is to identify individual needs, coordinate the learning process, and provide necessary support [8].

AI technologies enable effective implementation of adaptive learning. By analyzing knowledge level, response speed, errors, and learning trends, AI systems provide tailored content and individual feedback, optimizing the learning process in real-time and allowing each student to progress at their own pace.

The advantages of adaptive learning in higher education include:

- developing students' self-directed learning skills;
- increasing motivation and engagement through personalized learning;
- identifying knowledge gaps and addressing them individually;
- facilitating pedagogical analysis and decision-making.

Differentiated and adaptive approaches complement each other: differentiation adapts to students' abilities and preparation, while adaptive learning adjusts in real-time to their activity, guided by AI [7].

AI systems analyze students' performance, errors, and learning trends in real-time, providing customized tasks and feedback. Examples include Photomath in mathematics, and Duolingo or ChatGPT in language learning, which adapt exercises to individual student performance.

Results
The main advantages of AI in education are:

- individualization: tailoring learning to students' needs;
- planning and monitoring: analyzing learning effectiveness in real-time and recording results automatically;
- motivation and engagement: making learning interactive and stimulating;
- pedagogical support: assisting educators in identifying student abilities and selecting suitable approaches [9].

Differentiated approaches personalize learning based on students' abilities, while adaptive learning adjusts the process in real-time. AI automates these processes, enabling scalable, personalized education.

The personalization process using AI involves several stages, the first being initial diagnostics. AI analyzes prior results, test and quiz answers, and diagnostic interview outcomes to form a student's individual learning profile, identifying:

- strengths: pre-developed knowledge, skills, and abilities;
- weaknesses: gaps or challenging topics;
- learning pace: speed of acquiring and consolidating new information;
- interests and motivation: factors that engage the student in learning.

Based on diagnostics, AI generates differentiated tasks adapted to the student's profile, adjusting complexity, methods, and learning forms. The result is maximum efficiency, adaptability, and motivation.

Tasks generated by AI are categorized as:

1. Simplified content (beginner level): reinforces basic knowledge and skills.

2. Standard level tasks (intermediate complexity): consolidates core knowledge and develops practical application.

3. Advanced analytical tasks (high level): fosters critical thinking, analysis, and independent problem-solving.

AI provides automatic feedback, accelerating independent learning, reducing educator workload, and ensuring transparent, objective assessment.

Adaptive learning with AI continuously monitors student activity, adjusting the learning process in real-time and providing personalized support and independent learning pathways.

Discussion
Implementing AI-based differentiated, leveled, and adaptive tasks leads to:

1. Enhanced independent learning skills;

2. Individually optimized workload;

3. Reduced teacher monitoring time;

4. Increased student motivation and responsibility;

5. Improved assessment objectivity;

6. Effective fulfillment of ECTS credit requirements.

Conclusion
AI-driven differentiated, leveled, and adaptive tasks significantly improve the effectiveness of independent learning. This model allows educational processes to account for individual differences, fully aligns with the credit-module system, and transforms learning into a transparent, flexible, structured, and student-centered process, enhancing higher education quality and supporting digital education development.

References

1.	Presidential Decree PF–189 (October 22, 2025). Integration of Artificial Intelligence in Education in Uzbekistan.

2.	Resolution PQ–320 (October 30, 2025). Supporting AI-Based Projects.

3.	PQ–312 "Digital Education Development Concept" (February 28, 2022).

4.	X.I. Liymete. Group-Based Differentiated Approach in Education.

5.	I.E. Unt. Theoretical and Practical Aspects of Differentiation in Education.

6.	V.K. Shishmarenkov. Leveled Differentiated Education: Theory and Practice.

7.	Luckin, R. (2018). *Intelligent Learning: Adaptive Educational Technologies in Higher Education*. London: Routledge.

8.	Anderson, T., & Dron, J. (2019). *Teaching Crowds: Learning and Social Media*. Athabasca University Press.

9.	OECD. (2022). *The Impact of AI on Education: Promoting Student-Centered Learning*. Paris: OECD Publishing.

10.	Selwyn, N. (2022). *Education and Technology: Key Issues and Debates*. London: Bloomsbury Academic.