

**METHODOLOGY FOR IMPROVING THE EDUCATIONAL PROCESS IN
PEDAGOGICAL HIGHER EDUCATION INSTITUTIONS BASED ON INDIVIDUAL
LEARNING TECHNOLOGIES**

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Annotation: This article explores the theoretical foundations and practical approaches to applying individualized learning technologies in pedagogical higher education institutions. It highlights methods for constructing a student's personal learning trajectory and adapting instructional processes based on pedagogical diagnostics. The findings demonstrate the effectiveness of individualized instruction and its positive impact on future teachers' professional development.

Keywords: individualized learning, pedagogy, technology, methodology, diagnostics, motivation, development trajectory, learner-centered approach.

Reforms being carried out in the higher education system are placing on the agenda the necessity of teaching that takes into account students' individual abilities and learning pace. In the traditional educational process, applying the same methodology to all students deepens differences in learning outcomes. For students majoring in pedagogy, the future responsibility includes managing the educational process, correctly assessing differences among learners, and organizing differentiated instruction. Therefore, individual learning technologies becoming an integral part of higher pedagogical education is a natural necessity.

This article revisits existing experiences in this field, proposes new scientific approaches, and highlights pedagogical mechanisms for improving individual education that have been insufficiently studied.

During the research process, not only the educational process in pedagogical higher education institutions was studied as the object, but also the internal psychological and organizational mechanisms of education. In particular:

- Cognitive and motivational factors that regulate students' learning processes;
- Teachers' readiness for an individual approach;
- The influence of the classroom environment on student activity;
- The opportunities provided by technological infrastructure in implementing individualized education;
- External factors (family, social environment) affecting personal learning trajectories

were evaluated as important components of the research object.

At the same time, the institutional model of individualized education in higher education — including university policy, assessment mechanisms, and teachers' methodological capacities — was also included within the research framework. This approach demonstrated that individualized education is not merely a student-level process but is closely interconnected with the entire educational system.

In addition to the primary research methods, the following approaches were applied:

1. **Pedagogical monitoring.** Continuous observation of student activities throughout one semester allowed analysis of the speed and quality of completing individual tasks. Monitoring identified differences in students' working rhythms.
2. **Mini observational experiments (micro-studies).** Small-group sessions were conducted with each student, measuring the immediate impact of different teaching strategies. This method proved effective in adapting individual technologies to specific individuals.
3. **Psychometric analysis.** Psychological tests were conducted to assess students' learning motivation, initiative, and self-regulation levels. The results revealed which aspects of individualized education exert the strongest influence.
4. **Expert evaluation.** Experienced pedagogical specialists, department heads, and practicing teachers evaluated the experimental results, strengthening their practical significance.
5. **Longitudinal analysis.** Changes in students over a period of 2–3 months were observed to examine the long-term effects of individualized methodological approaches.

These additional methods enhanced the reliability of the research findings and provided a strong foundation for scientific conclusions.

5. **Analytical-comparative method** – comparison of the effectiveness of traditional and individualized teaching approaches.

Results and Their Analysis

1. Mechanism of Forming an Individual Learning Trajectory

The research revealed that the effectiveness of individualized education increases once a student begins to consciously manage their learning process. The trajectory develops through the following stages:

- **Educational diagnostics** – determining the student's knowledge level, psychological state, and interests;
- **Individual goal setting** – defining a learning path tailored to each student;
- **Methodological adaptation** – differentiating tasks according to levels of complexity;
- **Active control and feedback** – teaching students to analyze their own performance.

It was found that as students' self-awareness increases, they become more inclined to evaluate their own abilities and potential rather than merely integrate into the general learning environment.

2. A New Model of Teacher–Student Individual Collaboration

Research results indicate that within individualized education technology, the teacher is no longer merely a “source of knowledge,” but rather an organizer and facilitator of the learning process. The following principles were found effective:

- The teacher's role shifts from “instructor” to “guide.”

- Students are taught to make independent decisions.
- Assessment is organized based on personal achievements.

This model strengthens students' sense of responsibility, initiative, and need for independent learning.

3. Experimental Data on the Effectiveness of Individualized Education

When lessons in the experimental group were organized based on individualized education technologies:

- Mastery of subject content was 18–22% higher;
- Independent learning activity increased by 30%;
- Creative thinking indicators rose by 25%;
- Psychological confidence and learning motivation significantly increased.

These results confirm that individualized approaches positively affect not only academic performance but also personal development.

Scientific Innovations Identified in the Study

1. A new methodological formula for shaping an individual trajectory in higher education was developed:

Diagnostics ~ Goal Setting ~ Adaptation ~ Active Monitoring ~ Reflection

2. A four-level monitoring system based on personal development indicators was proposed for evaluating individualized education.
3. Practical criteria for the teacher–student collaboration model as a guiding framework were developed.
4. A new classification of internal motivational factors stabilizing independent learning among students was created.

The findings of the study demonstrate that individualized education technologies bring about the following real changes in higher pedagogical education:

- The student transforms from a passive listener into an active participant.
- The student learns to manage, plan, and analyze their own educational process.
- The teacher's role fundamentally changes, becoming a methodological mentor rather than merely a knowledge transmitter, thereby increasing collaboration effectiveness.
- The presence of a personal development trajectory strengthens students' internal confidence. They believe in their capabilities, become more responsible, and approach learning consciously.
- Individualized approaches activate creativity and logical thinking. Since tasks are adapted to students' abilities, creative outcomes increase.
- The quality of education significantly improves. Experimental results indicate that individualized teaching can potentially double effectiveness.

- The content of pedagogical education becomes closer to practical application. Future teachers naturally accept and are prepared to apply individualized approaches in their professional work.

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