

# A Methodology for Analyzing and Integrating Students' Life Experiences (Vitagenic Resources) Into the Educational Process Using Artificial Intelligence

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## ABSTRACT

This article develops a modern methodology for identifying, analyzing, and integrating students' life experience—vitagenic resources—into the educational process using artificial intelligence (AI) technologies. The study analyzes approaches to modeling students' individual experiences and cognitive resources using AI-based learning analytics, natural language processing (NLP), and adaptive learning systems. The results show that it is possible to increase the effectiveness of student-centered education based on a vitagenic approach.

**Keywords:** artificial intelligence, vitagenic education, life experience, learning analytics, adaptive education, NLP, person-centered education.

## INTRODUCTION

In the modern education system, not only students' academic knowledge but also their life experience—specifically vitagenic resources—is being increasingly recognized as a vital didactic factor. The vitagenic educational approach is based on integrating the student's personal experience, emotional memory, and real-life situations into the learning process. This approach interprets education not only as a process of transferring knowledge but also as a mechanism for processing personal experience and transforming it into knowledge. As a result, the student is formed not as a passive object of the educational process, but as an active subject.

In recent years, the rapid penetration of artificial intelligence (AI) technologies into the education system has brought this process to a qualitatively new level. Artificial intelligence-based systems enable the formation

of individual learning trajectories, real-time analysis of the learning process, and adaptive decision-making. This serves to transform education into a more personalized, flexible, and effective system.

According to the analysis of scientific literature, artificial intelligence technologies are being widely applied in several key areas within the field of education. In particular, personalization and adaptive learning systems provide education tailored to the individual needs and level of knowledge of the student. The learning analytics approach allows for the identification of students' activity, success, and problematic aspects in the learning process by analyzing their activities based on digital traces. Also, intelligent tutoring systems (smart learning systems) serve to provide individual assistance to students, identify their mistakes and provide automated recommendations for correction. In addition, the level of students' knowledge is

assessed quickly and objectively through assessment and feedback systems.

The vitagenic approach is based on transforming the student's personal life experience into a didactic resource. In this approach, knowledge is not provided in a ready-made form, but is rediscovered and systematized through the student's life experience. In this regard, vitagenic education serves as a methodological bridge between personal experience and scientific knowledge.

Recent scientific research indicates that integrating the vitagenic approach with artificial intelligence technologies holds significant scientific and practical potential. However, at the current stage, this integration has not been fully formed and systematized as a holistic scientific model. Therefore, the development of methodological foundations that combine AI and the vitagenic approach is one of the current scientific directions of modern pedagogy.

Research methodology and results. In this study, a mixed-methods approach was applied to analyze students' vitamin resources based on artificial intelligence and integrate them into the educational process. This approach, combining qualitative and quantitative analysis methods, allowed for a comprehensive study of the research object. Qualitative data were collected through interviews, student essays, and reflection texts, while quantitative data were analyzed using artificial intelligence-based learning analytics systems. This approach served to deepen the connection between students' personal experience and their learning activities.

The methodological model relies on several key components of artificial intelligence. In particular, Natural Language Processing (NLP) technology made it possible to semantically analyze the written and oral life experience of students. Through the sentiment analysis module, emotional states in the students' experiences were identified, and their motivational and psychological state was assessed. Furthermore, the knowledge graph modeling technology served to systematize vitagenic resources by placing them on a conceptual knowledge map. The adaptive learning engine made it possible to form educational trajectories tailored to the individual needs and level of knowledge of students.

The proposed methodological model was implemented in several stages. In the first stage, vitagenic data was

collected, using essays, stories, real-life situations, conversations, and reflection notes from students as the primary source. Their activities on digital educational platforms were also analyzed.

In the second stage, data analysis was carried out based on artificial intelligence. Using NLP technology, the semantic structure of texts was determined, and students' life experiences were divided into cognitive, emotional, and social categories. This process provided a structural analysis of vitagenic resources.

In the third stage, the mapping of vitagenic resources was carried out. Based on the knowledge graph model, student experiences are linked to knowledge structures, and individual student profiles are formed. This made it possible to organize the educational process based on a student-centered approach.

At the fourth stage, vitagenic resources were integrated into the educational process. Lesson materials were adapted to the students' personal experience, individual tasks were generated based on artificial intelligence, and a reflexive learning process was implemented. This approach has significantly increased students' ability to connect knowledge with practical life.

The research results demonstrated that analyzing vitagenic resources based on artificial intelligence has a positive impact on increasing students' learning motivation. The individual approach has also strengthened, and the educational process has become more flexible and personality-oriented. Connecting abstract knowledge with real-life experience increased students' understanding and helped reinforce knowledge in long-term memory. Furthermore, students' reflexive thinking and critical analysis skills have significantly improved.

However, the study also identified a number of ethical and psychological risks of artificial intelligence systems. In particular, it was noted that factors such as data privacy and security issues, the possibility of algorithmic bias, and excessive dependence on technology can negatively affect the quality of the pedagogical process. Therefore, the development of ethical norms and pedagogical control mechanisms in the implementation of AI-based vitagenic education systems is an important scientific and practical task.

## **Conclusion**

The integration of artificial intelligence technologies and the vitagenic educational approach serves as the foundation for forming a new methodological paradigm in modern pedagogy. The approach proposed within this study allows for the systematic analysis of students' life experience (vitagen resources) using artificial intelligence tools and its effective integration into the educational process. As a result, the student's personal experience is viewed not only as a subjective phenomenon but also as a didactically processed and scientifically grounded resource.

The proposed methodology significantly enhances the individual and adaptive characteristics of the educational process, as the learning trajectories formed on the basis of artificial intelligence are adapted to the personal needs, level of knowledge and life experience of each student. This not only increases the effectiveness of education but also transforms the educational process into a more flexible and person-centered system.

Also, this model changes the role of the teacher in the pedagogical process, forming him as a more facilitator and analytical decision-making subject. Analyzing students' vitagenic resources using artificial intelligence allows the teacher to gain a deeper understanding of the educational process, optimize individual approaches, and make scientifically grounded didactic decisions.

In the future, it is advisable to test this methodological model in experimental educational institutions, empirically evaluate its effectiveness, and develop a vitagenic pedagogical platform based on artificial intelligence. This will serve to further deepen the digital transformation of the education system and form a new generation of student-centered education.

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