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CONDITIONS FOR ENHANCING STUDENTS' INFORMATION AND INTELLECTUAL ACTIVITY IN THE DIGITAL ENVIRONMENT

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Abstract: *This article investigates the conditions for enhancing the information and intellectual activity of students in a digital environment. It has been established that global changes in communication methods and the adoption of new information technologies significantly impact the educational paradigm, leading to a transformation in the student training process. The focus is on the necessity for a comprehensive transformation of the components within the "goal – means – result" triad to achieve a qualitatively new level of information and intellectual activity. The importance of adapting educational strategies to the digital environment is emphasized, as this adaptation is crucial for improving the efficiency of the educational process and fostering the development of students' information and intellectual activity.*

The global changes taking place in modern society, in the means of communication, which include the active use of new information technologies, contribute to a significant change in the educational paradigm in the modern educational process. At the same time, the process of training students is changing more and more, as modern technologies are transforming the concept of professional training, offering opportunities for integrating multimedia technologies into the educational process. In this regard, it becomes essential to create conditions that contribute to the enhancement of students' information and intellectual activity in the digital environment to increase the effectiveness of the educational process.

The intellectual activity of a person can be represented as a complex, multi-level system that is continually evolving. It integrates the internal mental processes of an individual with his/her interaction with the external world [1, p.120]. This integration is manifested in the active processing of information coming from the environment, including social interactions and information flows in digital networks. In the digital context, it is the information component of intellectual activity that is of particular importance [2, p.251]. Information circulating in the digital space both reflects objective reality and results from social interactions mediated by various information technologies.

When analyzing the evolution of information and intellectual activity, we use the concept of the triad “goal – means – result”. Achieving a qualitatively new level of activity necessitates a comprehensive transformation of all components of this triad. While modern educational practice actively incorporates digital technologies, it still often reproduces traditional pedagogical models, which can impede the development of information and intellectual activity. To overcome this limitation, it is essential to rethink the role of each component of the triad in the context of the digital learning environment.

The transition to a digital educational environment necessitates a radical transformation in the goals of information and intellectual activity [3, p.4]. If traditionally the teacher acted as an intermediary between scientific information and the student, structured knowledge and presented it in a ready-made form, in the digital environment the focus shifts to students actively constructing their own knowledge. The new objective is to create conditions that enable students to independently search for, analyze, and synthesize information, thereby developing their own models of understanding the educational material.

Traditional approaches to intellectual activity often focus on simple tasks with a single correct answer. However, real-world problems encountered in professional and everyday contexts are typically characterized by high complexity, ambiguity, and dynamism. Identification and formulation of such problems requires the ability to synthesize knowledge across disciplines, analyze large volumes of information, and consider contextual factors [4;5].

The digital educational environment, with its flexibility and information richness, offers unique opportunities for simulating real-life situations [6, p.30]. This allows for the formation of learning tasks that challenge students not only to recall knowledge but also to apply it creatively in solving complex problems.

The modern digital space features a vast array of information representation forms, including textual, audiovisual, graphic, and three-dimensional data, as well as interactive models and simulations [7, p.170]. The capacity to track the dynamics of data in time and space along with performing complex calculations and



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modeling, opens new avenues for research and education. These conditions foster the development of research competencies such as hypothesis formulation, experimentation, big data analysis, and result visualization. Engaging with diverse data types demands a high level of information literacy, analytical skills, and the ability to think abstractly.

When setting the goals of intellectual activity, it is crucial to encourage the manifestation of students' intellectual activity in setting and solving complex, problematic tasks with ambiguous solutions that require considering multiple factors and influences under conditions of uncertainty, particularly using artificial intelligence (AI) tools. Ensuring that this complex interdisciplinary task resonates personally with students is vital, as it helps them find significant meaning for their professional growth and development.

The modern digital environment promotes the dynamic expansion of tools for information and intellectual activity. Beyond traditional human cognitive capabilities, digital technologies and artificial intelligence are increasingly employed to manage information. The integration of natural and artificial intelligence opens new possibilities for analyzing big data, creating intelligent decision support systems, and developing innovative products.

It should be noted that human natural intelligence is utilized at various stages of problem-solving in the digital environment, starting with its formulation, somewhat differently than in the traditional approach, as it introduces additional stages and alters the nature of mental operations.

In the digital environment, the process of intellectual activity is undergoing significant transformations. where the individual refines and reformulates the task based on general goals set by the teacher, considering the multidimensionality of digital data [8, p.19]. The next critical stage involves selecting relevant information from large datasets, which requires using various digital tools to convert data into an analyzable format. The conditions of increasing uncertainty, redundancy and contradictory nature of digital information of the digital information necessitate a high level of critical thinking and the ability to evaluate data reliability.

The generated dataset can be processed using intelligent algorithms. It is crucial to be able to select intelligent tools that are adequate to the task at hand; as technologies are rapidly evolving, it is necessary to monitor technological advancements and functionality, and select the relevant tools based on various characteristics.

With the help of intelligent algorithms (AI systems), it is possible to solve formalized tasks and obtain new results that are difficult or nearly impossible to achieve by the previous means, relying on natural intelligence alone. AI tools should be viewed as advanced automated intellectual resources for modern specialists

across various fields. They automate certain intellectual functions, thereby assisting, expanding, and enhancing the capabilities (actions) of natural intelligence.

The next important stage in problem-solving with the help of natural intelligence involves analyzing the results obtained through AI. This stage emphasizes the interpretation of AI-generated results, including explaining their values and meanings, analyzing dependencies, and identifying influencing factors. When addressing big data problems, it is necessary to define the boundaries of the problem, assess emerging risks, and consider related conditions. This requires the use of interdisciplinary approaches, the ability to view the problem from various perspectives, taking into account cultural, social, and other differences.

AI tools can be used to enhance statistical methods such as correlation, factor, cluster, variance, regression, and covariance analysis. Today, such approaches are used for statistical information processing. This allows to uncover hidden patterns and build correlations to reveal the role and significance of certain factors in the process under study. AI allows expanding the scope of these methods.

When obtaining such complex, multidimensional, and multivariate data, it is essential to shift from the linear, straightforward cause-and-effect logic taught in traditional education to analyzing complex, nonlinear, and multivariate dependencies that must be carefully examined and considered in the search for an optimal solution to an intricate problem [18].

This shift broadens the scope of mental actions associated with natural intelligence. Along with the methods of deduction and induction, which are commonly used in education, abduction plays an increasingly important role, which is a cognitive procedure for hypothesizing, a method of logical thinking that aims to provide the most plausible interpretation of what is considered true.

Conclusions: The shift to a digital educational environment necessitates a fundamental transformation in students' information and intellectual activity. Although digital technologies offer significant potential, current educational practices are often limited to the mere adaptation of traditional teaching methods to new tools. To achieve a qualitatively new level of information and intellectual activity, it is necessary to develop new pedagogical strategies aimed at enhancing students' abilities to manage large volumes of information, engage in critical thinking, foster creativity, and collaborate effectively.

To optimize information and intellectual activity in the digital environment, it is necessary to ensure the comprehensive use of information potential. This includes actively seeking new knowledge, critically evaluating information, and transforming it into the required formats. Educational tasks should be designed within the context of big data and high uncertainty, encouraging students to develop skills for navigating complex information environments. The active



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integration of artificial intelligence tools into the educational process allows automating routine tasks, analyzing large datasets, and supporting an personalized approach to learning. This facilitates the development in students of competencies crucial for successful professional engagement in the digital age.

New requirements are emerging for the mental work culture and the information and intellectual activities of modern professionals using rapidly evolving artificial intelligence tools. To achieve higher quality in these activities, comprehensive changes are needed across all aspects of students' tasks, including goal setting and the means of achieving them. In the digital realm, the new objective is to create conditions that enable students to intellectually design problem-solving environments in the context of the use of big data, high uncertainty, and the need to consider numerous interrelated factors. Addressing these challenges requires a broad array of tools such as digital technologies for information management, and both natural and artificial intelligence tools.

Thus, the digital environment transforms the individual, fostering to the development of professional competencies, enhancing cognitive abilities and nurturing innovative thinking.

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