

**METHODOLOGY FOR STRENGTHENING INDEPENDENT EDUCATIONAL
ACTIVITIES OF STUDENTS USING INTERDISCIPLINARITY EDUCATION
STRATEGIES**

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ABSTRACT:

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The new requirements for teachers include developing students' information retrieval and analysis skills. Future professionals should be capable of non-standard approaches, non-linear logical conclusions, and critical understanding of information supported by evidence-based arguments from the arsenal of various sciences. The involvement of students in work with interdisciplinary content, including the inclusion of interdisciplinary cross-cutting topics in curricula, comprehensive research and projects, remains an indispensable pedagogical means of achieving these educational results. Approaches to cognition and the knowledge itself, extracted from various scientific disciplines, combine in the interdisciplinary content of education to create a more complete explanation of phenomena and phenomena. The use of

interdisciplinary general education content in the educational process is widely supported abroad due to its ability to develop critical thinking among schoolchildren. Using this approach allows students to compare data from different fields of knowledge.

The continuing complexity of social and technological processes in the world poses more and more complex and diverse problems that require their understanding and further solutions. However, traditional teaching methods based on the division of knowledge into separate disciplines are not always able to fully meet the needs of a member of society. There is a need to use interdisciplinary education technologies that would allow linking and combining knowledge and skills in different subjects. According to studies conducted by PISA in 2022, Asian countries (Singapore, Japan, Korea) occupy high positions in the education quality rating.

The relevance of the problem of interdisciplinary education is determined by several factors. First, the modern world requires universal knowledge and competencies that cannot be limited to a single discipline. Students need to be able to apply their knowledge and skills in various situations, solve complex problems, and adapt to new conditions. Interdisciplinary education contributes to the formation of such a universal knowledge base and allows students to develop as deeply thinking specialists in their fields and deeply educated people. Secondly, interdisciplinary approaches contribute to more effective learning of the material. Isolated study of various subjects can cause students to feel fragmented and misunderstand the interrelationships between them. The interdisciplinary learning task model allows combining several disciplines into one learning project, in which students must apply their knowledge and skills from various fields to solve a specific task. This approach stimulates interest in the educational material, develops analytical thinking and promotes a deep understanding of subjects. Thirdly, interdisciplinary learning tasks contribute to the development of key skills that students need in the modern world: teamwork, critical thinking, self-regulation, problem thinking - all these skills are developed in the process of solving interdisciplinary tasks. Students learn to cooperate, to argue their decisions, to make decisions based on logical reasoning. All this helps them not only in their studies, but also in their adult life, prepares them for successful adaptation and career growth.

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The difference between an educational task and an interdisciplinary educational task is that the latter includes elements from different subject areas, which allows students to see the connection between different disciplines and apply the acquired knowledge and skills in real life. An educational task is an assignment that requires a student to apply the knowledge and skills acquired in a particular subject. In a learning task, the student is provided with a limited amount of data on the basis of which he must come to a solution to the problem. The main purpose of the educational task is to consolidate and apply educational material, develop logical thinking, train the ability to analyze information and make informed decisions. On the other hand, an interdisciplinary learning task requires students not only to apply knowledge from one subject area, but also to integrate knowledge from various disciplines. In an interdisciplinary task, the student is faced with a real problem that requires the use of knowledge and skills from different subjects to solve it. Such tasks develop students' ability to transfer knowledge between different subjects and contribute to deep learning.

Here are some examples of interdisciplinary learning tasks that can be used in school education.:

1. The River Ecosystem task: To solve this problem, students must apply knowledge from various subjects, including biology, chemistry and geography. The task is to study the composition and quality of water in the river, study the diversity of flora and fauna around the river, and analyze the impact of human activity on the ecosystem.

2. The Dependency Graph task: As part of this task, students must apply knowledge from mathematics and physics. The task is to construct and describe a graph of the dependence of a physical quantity on time and analyze the data obtained. For example, students can explore the dependence of air temperature on the time of day or the dependence of body movement speed on time.

3. Historical Reconstruction task: in this task, students should apply knowledge from history and geography. The task is to study a historical event or epoch and reconstruct the geographical and socio-cultural conditions of that time. For example, students can study medieval trade and make a map of the trade routes of that time.

4. Architectural Project task: Students should apply knowledge from history, geography, and mathematics as part of this task. The task is to develop an architectural project for a specific city or district, taking into account historical, geographical and mathematical

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factors. For example, students can create a city building project in an architectural style appropriate to the historical era.

These examples of interdisciplinary learning tasks demonstrate how knowledge and skills from different subjects can be combined in school to solve a specific task. Thus, an interdisciplinary learning task has a number of differences from a regular learning task. It requires students to apply knowledge from different subjects, develops skills in analysis, decision-making, knowledge transfer and teamwork. The implementation of such tasks in the education of students allows them to see the connections between different subjects and apply the acquired knowledge in real life. Studying the differences between different types of learning tasks led us to the conclusion that it is necessary to combine all the features into one model of an interdisciplinary learning task.

The interdisciplinary learning task model is a structured task system that requires students to apply knowledge and skills not only within one specific subject, but also in the context of other disciplines. This approach allows you to stimulate integrative thinking, develop creative thinking and the ability to work independently. In addition, solving interdisciplinary problems helps to form connections between different fields of knowledge, which contributes to a deeper understanding of the material and its better memorization. The basis of this model is a classical educational task within the framework of school education. It allows students to get a knowledge-based solution only within a specific subject. Disciplinary learning tasks focus on solving problems only in a specific subject, for example, mathematical problems require the application of mathematical knowledge, while problems in physics require physical laws and formulas. This limitation, which consists in finding an unambiguous answer according to the algorithm, can lead to a formal approach and a lack of innovation among students. Independent thinking and the search for non-standard solutions should be encouraged so that students can successfully apply their knowledge in various situations. The educational tasks set for students often do not take into account the real challenges and problems faced by our society and the whole world. They are limited and do not allow them to apply their knowledge and skills to solve urgent and complex problems that they will face in the future. For example, standard educational tasks rarely include tasks related to ecology, sustainable development or social issues, although these issues are important for the modern world. The structure of the learning task includes several components. The first is the task condition. This can be a text description, a graphic diagram, a video, or any other way that allows the student to understand what is required of

him. It is important that the task condition is understandable and attractive to students, so that they are interested in solving the problem. The student also needs to know what he needs to achieve as a result of solving the problem. A goal can be formulated as a specific solution to a problem or obtaining a specific result. For example, the purpose of a task may be to create a project on a specific topic or to develop an algorithm for solving a mathematical problem. The second component of the learning task structure is the method (method) necessary to solve the problem. This can be a formula, text analysis, conducting an experiment or experiment, measurement, etc. The student must have access to sufficient information and tools to successfully solve the problem. The third component of the learning task structure is the result (answer) and its assessment. The teacher should set the evaluation criteria and give feedback to the students on their work.

Interdisciplinary learning tasks are becoming an important tool for achieving the goals of school education. They are situations that require combining knowledge and skills from different subject areas to find the optimal solution. Interdisciplinary tasks contribute to the formation of a coherent and deep understanding of the educational material among schoolchildren. They help to identify cause-and-effect relationships between different phenomena and processes, as well as learn how to analyze information and apply it to solve specific problems. This approach to learning allows you not only to memorize the facts, but also to learn how to apply the knowledge gained in practical situations. Interdisciplinary learning tasks develop students' cognitive skills and enhance interest in the subjects they study. Combining different disciplines in one task makes it more interesting and brings it closer to real life.

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