# Integration of Informatics with Other Academic Disciplines

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**Abstract.** This article discusses the integration of informatics with mathematics, chemistry, and physics, and how it contributes to the development of logical thinking, analytical abilities, and a more interactive and exciting educational process.

**Keywords:** informatics, integration, education, mathematics, chemistry, physics, interdisciplinary connections, modernization, cognitive activity, metasubject competencies.

The educational system is constantly undergoing changes and modernization in response to the social, economic, and technological challenges of modern times. One of the key aspects of these transformations is the integration of informatics with other academic disciplines, which, in our view, plays a fundamental role in shaping a holistic worldview among students. This opinion is inextricably linked with the understanding of informatics not just as a tool for working with computers, but as a catalyst for deepening and expanding knowledge in various subjects.

The integration of informatics and other disciplines is reflected in the works of many researchers. The ability of informatics to provide interdisciplinary connections contributes to the effective assimilation of material by students, believe Sokurskaya I. and Kuznetsova O. [5].

According to the article by Augaite I. A., informatics acts as a connecting link between various academic disciplines and enriches the unified educational environment. It offers methodological and technical tools for overcoming barriers between traditionally divided spheres of knowledge. Effective integration of informatics allows for a deeper understanding of mathematical models, economic theories, physical phenomena, and many other aspects, making learning more complex and interactive [2].

Informatics, along with mathematics, forms the basis for the development of logical thinking and analytical abilities. Considering the integration of informatics with mathematics shows a more practical and applied approach to studying mathematical concepts.

For example, Azovtseva N. I. and Afonina E. V. write that as part of an experiment based at their school, several extracurricular programs aimed at combining mathematics and informatics were developed and tested. The «LogoWorlds» course, built on the basis of the Logo programming language, allowed students to master basic concepts through the creation of graphic objects and the development of animations. This approach contributes to the formation of algorithmic thinking, engineering creativity, and skills for solving real mathematical problems in an interactive form. The effectiveness of such integration is confirmed by the rise in metasubject competencies and the growth of students' motivation for cognitive activity [1].

Vodalchuk S. A. and Nepomnyashchikh Yu. S. write that informatics makes a significant contribution to chemistry education, offering a variety of ICT tools for lessons and extracurricular activities, which helps to deepen and expand the subject knowledge of students. The use of such technologies, such as a computer workshop with molecular modeling programs, increases interest and motivation for the subject, develops scientific thinking, and contributes to a more effective assimilation of complex chemical concepts, thereby improving the quality of education and preparing students to solve real problems [3].

Informatics improves the process of teaching physics, providing unique opportunities for computer modeling for a vivid demonstration of physical phenomena, in particular gravitational interactions, believe Klykov D. Yu. and Kondakova E. V. The use of such tools, like the Orbit Xplorer simulator, allows students not only to understand complex concepts more deeply, but also to see the visualization of the motion of space objects, making the educational process more interactive and exciting [4].

In conclusion, it can be said that the integration of informatics with other academic disciplines is no longer just a didactic technique – it is a strategic step in educational practice, aimed at preparing students for a successful life and career in the 21st century. This integration is an organic part of the modernization of the educational process and ensuring its relevance and demand.

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