WAYS OF PROVIDING ECOLOGICAL EDUCATION AND ECOLOGICAL EDUCATION BY IMPLEMENTING INTERDISCIPLINARY COMMUNICATION IN TEACHING CHEMISTRY

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The formation of competences in the lessons of chemistry and other subjects at school shows the connection between academic subjects.

Since chemistry is included in the list of natural sciences, it is important to rely on the knowledge acquired by students from other natural sciences before starting to study it and directly in the process of studying chemistry.

The formation of competences in the lessons of connecting chemistry with other subjects shows the connection between school subjects. Students develop interdisciplinary competence, logical thinking occurs.

Physical science occupies a worthy place in the development of sciences and technical progress in modern natural sciences. In recent years, on the basis of the achievements in physics, including nuclear energy, rocket engineering, semiconductor technology and other sciences, it had a significant impact on the development and creation of new discoveries in them. For example, the development of biological science was greatly influenced by physical science with the discovery of optical and electron microscopes.

Through these microscopes, it was possible to study the cellular structure of living organisms, the complex processes occurring in the cell. As a result of microscopy, it was possible to determine the nature of the heredity of living organisms, the role of DNA and RNA, which are the material basis of heredity, in the emergence of specific characteristics, tasks, and signs.

In the development of biology, in particular, in the study of bioelectric phenomena in living cells, determination of biocurrents, the study of energetic processes occurring in living organisms, the methodology of the study of absorption, diffusion, osmosis processes of physical science played an important role. With the help of these methods, the synthesis of insulin hormone, which controls carbohydrate metabolism in the body, the structural and enzymatic functions of

hemoglobin and myoglobin, which are respiratory pigments of muscle and blood, were determined.

Chemistry has made a significant contribution to the development of biology, including the determination of the chemical composition of the cell, i.e. inorganic and organic substances, the specific properties, composition, molecular structure of proteins, carbohydrates, lipids, their functions in the cell, the determination of matter and energy. and the law of conservation laid the groundwork for studying the exchange of matter and energy in the cell.

The emergence of cross-border sciences played an important role in the rise of natural sciences. They include biological chemistry, biological physics, radiobiology, cosmobiology, physical chemistry, chemical physics. Below is a table showing the connection between the concepts on the topic "Elementary structure of the cell".

Chemical knowledge Biological knowledge Physical knowledge

Chemical elements, inorganic, organic substances, their chemical properties. Biogenic elements. Atomic, molecular structure of substances, physical properties of substances.

Chemical properties of elements Macroelements Physical properties of elements

Anion, cation, concentration Conductivity functions of sodium, potassium and chlorine Osmosis, diffusion, Pascal's law

Types of organic compounds, chemical properties, biological polymers, atomic and molecular structure of substances, energy types and species change

Chemical properties of iodine, zinc, cobalt. Microelements. Physical properties of microelements

Chemical structure of substances, catalysts, chemical bonds. Functions of microelements. Atomic, molecular structure of substances

Chemical structure of cytoplasm. Organic and inorganic substances. Anions and cations. Biological properties of cytoplasm Colloidal structure of cytoplasm. Electrical phenomena in the cytoplasm. Kinetic energy.

The teacher uses the knowledge gained from the sciences of chemistry and biology to inculcate the concepts in the content of the subject studied during the training.

Implementation of interdisciplinarity in teaching biology is an important didactic condition of the educational process, it ensures the scientificity and consistency of educational materials, which are the main source of knowledge for students,

and students' ability to learn knowledge. the interest in mastering increases and mental development accelerates, it makes it possible to solve the expansion of students' scientific outlook through the gradual and consistent implementation of interdisciplinary connection in the teaching of natural sciences.

In order to create a whole knowledge about a single object of nature, it is appropriate to teach biology, chemistry, and physics.

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