ROLE OF NEW METHODS IN TEACHING PEDAGOGICAL SCIENCES

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Аннотация:
В статье рассматривается интеграция (биол.) в преподавании ботанических наук, процесс регуляции, координации и интеграции структур и функций в целостном организме, который свойственен живым системам на каждом уровне их организации. Анализируется актуальность междисциплинарной интеграции в образовании. Также будет подчеркнута важность методов преподавания ботанических наук, основанных на интеграции в школе.

Ключевые слова: интеграция, образование, обучение, общение, ботаника, природа, наука.

Abstract:
In the article, integration (biol.) in the teaching of botanical sciences is discussed, the process of regulation, coordination and integration of structures and functions in the whole organism, which is characteristic of living systems at each level of their organization, interdisciplinary integration in education relevance is analyzed. Also, the importance of the methods of teaching botanical sciences based on integration in the school will be highlighted.

Keywords: integration, education, learning, communication, botany, nature, science.

Biological sciences combined with the general subject of study are widely used information from a number of general biological sciences: morphology, anatomy, histology, physiology and biochemistry, embryology, genetics, ecology, population ecology and biocenology, ethology, which shows the trend of growth. shows. to integration in biology. Biological knowledge focuses on the basics
modern biological theories and generalizations (cell, evolutionary, study of metabolism and energy cycle, etc.) and their manifestation levels (molecular, cellular, organism, population, biosphere, etc.). As a basis for the construction of integrated systems, the identification of biological generalizations and the identification of the manifestation of theoretical processes at different levels of existence of living matter should be carried out not only on the basis of biological knowledge, but also with the introduction of scientific knowledge.

According to our research, regional (inter-industry) integration processes should include:

- methodical integration - using the methods of one discipline in the development of other disciplines;
- integration of metascience - development of some general methods, principles, standards of scientific knowledge that help the integration of various directions of modern science.

Global (comprehensive and general scientific) integration processes include:

- socio-cultural integration - the influence of factors on the way of thinking (for example, a change of paradigms);
- complex integration - using a complex of disciplines to solve any real technological, technical or social problems.

Integration processes at the interdisciplinary level are of particular interest, because at this level the logic of the content of the subject "Biology" is determined. At the same time, this integration allows to consider the research object as an integrated system. The main thing is to distinguish the necessary and sufficient elements that ensure the existence and development of integrity systems of knowledge about the studied object. It is very important that integrated knowledge makes it possible to reveal the causal relationships of the studied processes and phenomena.

A prerequisite for the integration of biological knowledge must be its careful selection.

Integration should be subordinated only to knowledge that can illustrate the integrity of the phenomenon being studied at an adapted level for students, can be proven, and can reflect the interdependence and interdependence of all elements of knowledge.

Such an approach limits the inclusion of secondary, isolated facts in the content and reduces the information load of the readers.

Modern biological knowledge faces the task of methodological and theoretical synthesis, that is, integration should be reduced to replacing the existing and established integrity of each discipline with a systematic unity.

At the local level, integration in biology corresponds to the regulation of concepts, principles, laws that make up the structure of multi-level biological knowledge.

It is important to identify connections that form a system that reflects the interdependence and interdependence of the studied life processes.

Integration processes in biology teaching methodology are carried out in different directions.

Development of interdisciplinary relations in the process of teaching the basics of science in general education schools is one of the directions of integration.

The problem of interdisciplinarity is considered from different aspects: methodological and theoretical.

Another important direction of integration is the creation of integrated courses. The basis of integration here is the universal connection of educational sciences.

This direction of integration involves the creation of many program options that give students the opportunity to choose certain cycles of subjects, integrated courses as one of the stages of training with the next transition to the subject structure of the educational process.

Training specialists in integrated courses, creating an appropriate material base is a necessary condition for this direction.

This is very suitable for intra-subject (local) integration of the content of the educational subject, which allows to change the content of the curriculum in terms of quality.

information in the direction of ensuring the integrity of the content of the educational subject.

The basic rules of biology can serve as a basis for the integration of the biology course: the idea of evolution, the interaction of living systems with environmental factors, the concept of metabolism as the main sign of life.

Knowledge of metabolism can be an integrator of biological knowledge at the organismal and cellular level of the development of biological systems.

Metabolic processes not only help to understand the relationship of living organisms with their environment, but also help in plants, animals and humans.

Metabolic processes help not only to understand the relationship of living organisms with their environment, but also to determine the processes that occur inside cells in plants, animals, and humans.

For the optimal logic of the development of the concept of "metabolism", it is necessary to include the knowledge of how metabolic processes occur at the cellular level. This allows students to understand the biological essence of the metabolic process and helps to master this concept more fully.

Integrated teaching also includes conducting dual lessons and lessons with extensive use of interdisciplinary connections.

Integration is considered not only in terms of the interdependence of knowledge in subjects, but also as the integration of teaching technologies, methods and forms. Pedagogical activity is a combination of standards and creativity, science and art. Therefore, it is important to combine and properly combine the various methods of existing educational activities.

The process of integration is the integration of previously separate parts and elements of the system into a single integrated whole based on their interdependence and complementarity.

By integrating into the pedagogical process, researchers understand one of the aspects of the development process related to the integration of previously disparate parts into a whole. This process can take place both within an already established system and within a new system. The essence of the integration process is qualitative changes within each element included in the system. The principle of integration guides the interdependence of all the components of the educational process, all the elements of the system, the connection between the systems, the determination of the goal, the content of education, its forms and methods; Integral

approach means implementing the principle of integration in any component of the pedagogical process, ensuring the integrity and consistency of the pedagogical process.

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