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Using of Innovative Educational Technologies in the Improvement of Ecological Thinking by Pupils in the Field of Biology Sciences

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Abstract: This article focuses on pupils' ecological thinking in the interdisciplinary teaching of biology in the educational process, analyzes specific facts, explains the nature of cause and effect in the study of events and processes, helps pupils to understand the material in nature , integrates environmental perspectives into the development of pupils' independent and creative thinking skills, competencies and abilities through monitoring of ongoing processes, study of knowledge in terms of interdisciplinary relevance, understanding of their essence, relying on knowledge and skills in new situations , however, is a pressing problem in the development of environmental thinking.

Keywords: interdisciplinary communication, natural objects, biology, weapons, ecological thinking, study, environment, integration, object, school, hunters, lesson, form, method, methodology, means, nature, social environment .

The main goal of educational integration is to arouse in pupils a good understanding of nature and society in general secondary school, to form their attitude to the laws of development , establishing interdisciplinary connections in the study of basic sciences and understanding the laws of existence in the universe is the methodological basis of the approach to the integration of education. It can be achieved by going back many times to the concepts of different lessons, deepening and enriching them, identifying important signs that are understandable for that age. Hence, any course with a well-formed structure and teaching sequence, including a group of concepts related to the same disciplines, should be the basis for integration . [1]

The integration of disciplines in the educational process is divided into the following components:

- object combination - the features of one object in different disciplines are included in one subject, department or course;
- theoretical integration - the general study of the theories of biology, chemistry and physics;
- methodological integration - the implementation of the integration of specific methods of scientific knowledge;
- problem-based integration - interdisciplinary problems are covered and solutions are developed;
- -integration of activities - discussion of problem solving, work in small groups, development of interdisciplinary action plans, project preparation and so on;
- creation of technical products based on the processes that are important in practical integration .

Educational integration is a high level of interdisciplinary communication, a tool that allows you to create a whole integrated knowledge. Definitions of the concept of integration are differently . The common denominator of these definitions is that integration is about achievement a holistic view of the being around us [3].

The main part of integration is interdisciplinary connection and finds its development in the idea of integration. The study of disciplines with integrated content is considered as a factor that ensures the integrity of the knowledge, work methods, personal qualities of future professionals [4].

The concept of education-related integration has two meanings:

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1) to give pupils a good idea of the world around them (here the integration of knowledge is seen as an educational aim).

2) find a sample platform for converging subject knowledge (here, the integration of knowledge is a learning tool).

Integration is a means of accepting new ideas within the boundaries of subject knowledge. Firstly , it is necessary to complete in the gaps between the differentiated knowledge, to establish connections between them. In education , the integration can be expressed as follows:

- to form a holistic view of the whole being;
- to create a sample platform for the convergence of different scientific knowledge.

It serves as a basis for this or that science from time to time in establishing links between two academic disciplines and in their integration. The integral connection and logical interdependence of topics in different academic disciplines should be the basis of integrated lessons.

In education, sharing a certain system of knowledge to pupils and just remembering them is no longer enough. One of the main tasks is to motivate in modern education, to create the desire for independent learning, to teach on the basis of integration. Innovative pedagogical technology is an education system aimed at fulfilling such a requirement. The main requirement of technology is that pupils acquire thorough knowledge, be active in the acquisition of knowledge, think independently, achieve a clear and effective result in education.

The main aim of integration education is not to impart knowledge that shows that the individual parts of the universe are interconnected, but to teach the pupil in the first steps to imagine a whole universe in which all the elements are interconnected. This goal should be achieved by the general secondary school [6]. Obviously, increasing the number of subjects is not always positive. For some reason, today's modern technology requires not only the pursuit of numbers, but also the acquisition of quality. It is necessary to rely on the experience of developed countries. Seventy percent of them use integrated curricula and textbooks in the education system. It is known that in the UK education system, mainly integrated subjects are taught in block, integrated subjects in Korea and Switzerland, cultural sciences in Hungary, and all subjects in Ireland.

Factors that ensure active mental activity in the process of integrating academic subjects during the exam are the optimal combination of subjects for integration, the appropriateness of teacher and pupil actions, the choice of content and methods taking into account the age capabilities of children.

There are certain opportunities for integration in all subjects taught in general secondary school, and its organization in an integrated manner depends on a number of conditions. Therefore, educators and methodologists need to consider all of these factors before creating a new program. One of the reasons for the difficulties in learning activities is the lack of comprehensive use of integration. The reason why pupils successfully master one subject may also be related to the fact that they have a good knowledge of another subject. For example, competently copying large volumes of text requires the ability to read it quickly and accurately. Without talking about such an opportunity, the teacher must feel that it can be much more difficult and harmful to teach each subject he teaches without comparing it with another without using his information [10].

Therefore, it is theoretically and practically important to focus on the innovative teaching and learning skills of primary school teachers, and the challenges of selecting and applying the most appropriate teaching technologies. Innovative educational technologies are a systematic way of creating, applying and identifying technical and human resources and their interrelationships aimed at increasing the effectiveness of forms of education in the whole teaching and learning process. Extensive use of modern knowledge is one of the most important requirements of today.

- to provide pupils with knowledge and skills in accordance with the requirements of the State Education Standard to form a sense of love for the motherland, the Uzbek people through the materials provided in the primary school textbook;
- to provide pupils with the knowledge required by the program during the master training ;

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- improving reading and speaking skills;
- the artistic work that is given to visualize images [7].

The fact is that the end of the twentieth century was a century of scientific and technological progress. In addition to the use of modern science and technology, the unfavorable environmental situation has created a global environmental threat in terms of coverage. Causes of environmental hazards Coordinating the relationship between nature, society, people and technology and preventing environmental hazards has become a major challenge today. This unfavorable environmental situation is an important factor for a person, it has a negative impact on his health.

Indeed, the global and regional environmental threat, its causes, the coordination of the relationship between human and nature, society and nature, the prevention of environmental catastrophe is a topical issue today.

One of the controversial issues is the problem of methodological organization of environmental education. There are two main trends here. Some experts believe that it is necessary to develop a separate subject "ecology", which should be included in the content of education at different levels, because environmental education is not equal to biological education, although they are closely related to each other while others argue that “greening” all sciences is more effective because environmental problems have a global, interdisciplinary nature. At present, this approach is gaining more and more support, which is reflected in the materials of relevant international conferences. But the debate over the direction of environmental education is more important [8].

The materials studied in the ecological education of schoolchildren play an important role in the process of direct acquaintance with nature. Nature is made up of the material world that surrounds man in various forms.

The purpose of interdisciplinary explanation of environmental education to schoolchildren is to teach them to know and care for nature, environmental education is to form interdisciplinary theoretical knowledge, practical skills and competencies in education. The analysis of the interdisciplinary formation of the concepts of environmental education in schoolchildren shows that .

Knowledge of the surrounding nature can be expressed as follows:

- Interdependence and difference between animate and inanimate nature;
- natural objects and their properties;
- components and interrelationships of nature;
- natural phenomena and their impact;
- Nature of Uzbekistan and its protection;
- formation of a rational attitude to the environment;
- -Solve exercises on animals and plants, work on pictures and sculptures, solve creative tasks and problems.

In the acquisition of ecological knowledge about the laws of nature and social development, it is expedient to carry out in the educational process the formation of primary, ecological concepts in students on the basis of the integration of sciences. The formation of ecological concepts based on the integration of disciplines in high school pupils of general secondary schools is based on the conscious relationship between nature and its predecessor. Ultimately, it provides an opportunity for pupils to develop environmental knowledge and understanding.

Purposeful analysis of the content of curricula in biology, to determine their interdependence in interdisciplinary environmental education, their application in the educational process plays an important role in activating the cognitive activity of pupils.

The integration of disciplines in the teaching of biology, the implementation of interdisciplinary links is an important didactic condition of the educational process, which performs the following tasks:

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1. The scientific and coherent nature of the learning material, which is the main source of knowledge for pupils, ensures the didactic connection of the concepts learned from other natural sciences.
2. Increased interest in the acquisition of knowledge by pupils and accelerated mental development.
3. The integration of the natural sciences, that is, the gradual implementation of interdisciplinary links in teaching, allows to expand the scientific outlook of pupils.
4. The interaction between sciences and the emergence of specific laws in the structure of sciences is a clear evidence of their integration.

The principle of interdisciplinary interdependence ensures the full mastery of complex aspects of interdisciplinary interdisciplinary relations, the penetration of knowledge into the internal essence, as a result of which the various systems are interconnected, integrative integrity. In particular, the connection between school subjects, ensuring interdependence, the provision of biological knowledge to pupils in accordance with a certain classification is seen as a factor in shaping their interest in learning about nature [2].

Therefore , the use of chemical and physical concepts in the classroom creates interest in the study of biological knowledge in high school pupils, as well as the implementation of interdisciplinary links in their teaching to understand the nature, processes and changes in them, play an important role in shaping the process of forming biological concepts in pupils through the application, practice, and composition of skills and competencies.

The concepts that form the basis of interdisciplinary communication in the teaching of biology to pupils of secondary schools are divided into the following groups:

1. The generality and continuity of events that occur on the basis of the interdependence of animate and inanimate nature.

2. Realization of interdisciplinary communication through the use of the laws of chemistry and physics, as well as biological laws in understanding the vital processes and variables that occur in living organisms, in solving problem-solving learning tasks.

3. The need to study the phenomena and events of material existence, the causes of environmental disasters and measures to eliminate them.

Interdisciplinary communication develops pupils' thinking skills, increases their independence. It also develops their interest in science, develops work skills and competencies, and contributes greatly to fostering an environmental culture [11].

Being in direct, active contact with nature accelerates the process of mental activity organized by schoolchildren. This situation affects the way pupils think, stimulates their interest in learning about nature and improves their mental abilities [5].

Moreover , today the problem of developing a humane attitude to nature is facing pupils , they will have to carefully plan and carry out educational work on environmental issues among pupils.

In particular, in the current context of escalating environmental problems, our priority will be to ensure environmental security, to pass on natural resources to future generations, their rational use and protection, to improve legislation for this purpose, to further strengthen environmental education in the family. This will serve to preserve the existing natural resources of our country for future generations, to preserve, respect and use and protect them wisely.

The didactic aspects of ensuring interdisciplinary communication in the learning process are not limited to the expression of different knowledge and concepts in the content of certain academic disciplines. In pedagogical research to ensure interdisciplinary connection in teaching, it is necessary to look at it as an independent field of research as an opportunity to exert a pedagogical influence on the developing individual.

Sophisticated worldviews are reflected in scientific, artistic ideas that are easy for the child to understand, in figurative themes that allow them to create the content of the year. A regulated system is a hallmark of this integrative learning [12].

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The methods, forms and tools used in the educational process are diverse. As a result of the ongoing educational reforms in our country, the transition to new curricula and programs will play an important role in harmonizing the relationship between society and the environment, establishing and developing a positive attitude to the environment. Therefore, the outcome of economic education depends on the first stage of school education. Psychological and pedagogical research allows us to consider the concept of limited learning activities of schoolchildren.

The creativity of the teacher is that they design the aspects that are known to the science but that the pupil does not know, first and foremost, and he encourages the pupils to do the same. Therefore, integration through the organization of modular lessons to develop thinking in pupils is an effective way.

Based on the above considerations, the curriculum of general secondary schools, the purposeful analysis of the content of the curricula of all three subjects, the definition of interdisciplinary links between them, taking into account the age and psychological characteristics of students, there was a need to develop lesson plans for the teaching of biology synchronously and asynchronously with chemistry and physics, and to create methodological recommendations for biology teachers.

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