

THE FORMATION OF ECOLOGICAL THOUGHT OF PUPILS IN TEACHING OF BIOLOGY IN CONNECTION WITH NATURAL SCIENCES IN THE PROCESS OF THE LESSON

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ABSTRACT

This article highlights the issues of assimilating biological knowledge in teaching biology in relation to natural objects, implementing interdisciplinary connections acquired by students with knowledge and skills in chemistry and physics, awareness of the essence of being in nature, processes and changes that take place, an explicit presentation of general and particular concepts in the content of educational subjects, as well as the formation of a scientific worldview among students through the introduction of practice. Also, through the use of modern teaching technologies, the development of environmental thinking of students in the study of natural subjects.

Keywords: Integration, natural sciences, lessons, biology, chemistry, physics, form, method, environmental thinking, extracurricular activities.

INTRODUCTION, LITERATURE REVIEW AND DISCUSSION

Biology is one of the leading disciplines of nature, it is responsible for shaping the students' scientific outlook. Therefore, the content of the school biology lesson has great potential in shaping the students' scientific worldview.

Teaching biology is primarily intended to introduce students to basic concepts of biology, ideas, theory, regularities, role in various sectors of the economy, and the importance of mastering biological knowledge in difficult situations. A system of education and training will be created for students in close connection with the formation of ecological thinking and the formation of conscious attitude of the person to nature and society.

This system, along with a solid understanding of the fundamentals of science by students, combines the formation of a scientific outlook and environmental thinking, the moral, patriotic, ecological, aesthetic, economic, physical, hygienic, labor and international education.

The study of the biology of chemistry and physics in students helps to understand the patterns of structure, development and activity of biological objects by means of the laws of physics. This knowledge forms the system of students' scientific worldview and beliefs. The students' scientific worldview is based on an understanding of biological patterns in terms of historical development of the relationship "Nature - Human - Society".

Therefore, various methods and directions of organizing the teaching of biology with the natural sciences are used in different ways, depending on the content, purpose, and objectives of the educational process.

In this process, it is important that the teacher selects the forms of teaching, that is, the content of the education, the purpose, objectives, role of these forms, their relevance to the educational process.

Lesson - is the main form of teaching biology, its structure, organization and management of students' cognitive activity is the main problem of the methodology of teaching biology.

For instance, if the subject being studied is related to laboratory equipment, as well as anatomical content, physiological processes, theory, ideas, concepts, laws, problem solving, then it is necessary to choose a course.

Teaching is based on a syllabus that is common to all students, and the teacher carries out pedagogical activities aimed at organizing, administering and activating students' cognitive activity in accordance with the content of the subject, educational and developmental objectives. Thus, the students' activities in the classroom are considered to be their pedagogical activities, and the teacher's activities are aimed at organizing, directing and activating these activities.

Each lesson promotes the formation of a conscious attitude to the environment through the acquisition of subject knowledge, skills and abilities by students, broadening their scientific outlook, mental development, personal development, and environmental awareness.

Educational content plays an important role in the formation of students' ecological thinking by teaching biology to chemistry and physics. The content of education provides the basis for the acquisition of new knowledge, skills and abilities by applying the previously acquired knowledge, skills and abilities of the students on the basis of the coherence and continuity of the two subjects [1].

When teaching biology on the bases of natural sciences the following requirements apply to the lesson :

- clearly define the educational objectives of each lesson and determine its role in the syllabus;
- optimum selection of eco-friendly teaching materials in accordance with the level of students' training, learning objectives, and curriculum requirements;
- to identify ways of developing ecological thinking on the basis of general biological concepts, skills and abilities , which will be developed in the lesson;
- activate student learning activities by identifying and integrating effective teaching methods, tools, control and stimulation knowledge and the implementation of each phase of the lesson;
- in the classroom, along with the general education of students, it is possible to meet the need for education, to increase their interest, to develop their independence and thinking by organizing their own work in individual and small groups;
- the purpose of the lesson is to provide students with the knowledge they have acquired, to broaden their scientific understanding of the topic, to provide spiritual, moral, mental, hygienic, physical, sexual, economic education, aesthetic feelings, diligence, and environmental culture;
- to provide students with the skills and abilities for independent learning, to develop their interest in biology, to stimulate their creativity and initiative in their activities;
- development of scientifically-methodical improvement of the lesson based on the thematic plan;
- development of handouts and didactic materials of ecological character, educational tasks for control and evaluation of knowledge of students, differential tasks;
- creation of technological map of the lesson for the efficient use of time.

The lessons are used systematically in teaching biology with natural sciences. Therefore, the teacher should know the types and kind of lessons and the specifics of the pedagogical technologies used in them [2].

By providing interdisciplinary links, a teacher who is able to organize the lesson will not only increase the interest of the students in the subject, but it will also help them to master the subject. As a result of the systematic implementation of interdisciplinary links, the relevance of the educational process is significantly increased.

The content of natural science education should reflect the interdependence and integration of various human disciplines into the interrelationships between humans and nature, which will lead to qualitatively new changes in the knowledge of natural sciences.

Innovative pedagogical technologies used in the classroom for teaching biology in natural sciences are chosen according to the form of organization of students' cognitive activity, which is organized on the basis of environmental questions:

1. The use of didactic gaming technology conferencing, creative games, and game exercises in the case of reproductive and productive tasks of ecological content.
2. The use of problem-based learning technology, brainstorming, and conflict of ideas in cases where the environmental tasks are productive and creative.
3. Use of a modular program of modular educational technology when the tasks of ecological content are reproductive, productive and partly researched.
4. The use of collaborative learning technology is defined in cases where environmental tasks are reproductive, productive, partly exploratory and practical.

It is important to pay close attention to the practical creativity of teaching biology with the natural sciences and environmental education. Practical learning envisages the creation and solution of problematic situations based on the development of practical creativity, that is, the application of previously acquired knowledge in new situations. Practical creativity leads students to think independently, to make assumptions and probabilities, to see and understand problems [3].

Controlling of student's creative activity in accordance with the requirements of the State Educational Standards in the lesson of practical work related to biology and natural sciences is not allowed. As their opinions are evaluated, students will focus on defending their personal ideas, resulting in new ideas.

The problem of developing students' conscious attitude to nature will be solved only if they are positive about teaching general secondary education. It is advisable to use interactive methods in the interdisciplinary learning of biology to improve the intellectual, mental, physical and practical development of students. In this way, there is an opportunity to develop students' interest in the basics of science, to teach them to work hard, to prevent professionalism and stress.

In addition to the lesson, extra-curricular activities play an important role in shaping environmental concepts. If the educational content requires the study of the diversity of flora and fauna, adaptation to different environmental environments, it is advisable to organize a tour or to watch a video.

The lesson involves the achievement of learning objectives through a combination of learning content, teaching methods and tools that will lay the groundwork for the development of

students' ecological thinking. However, all issues can not be explored in the classroom, for instance, extracurricular activities have been used to conduct experiments that require long-term follow-up studies [5].

Homework is inextricably linked to the lesson, which is a logical continuation of the content learned and a contributing factor for students' independent learning. At the instruction and direction of the teacher, students undertake less complex experiments, observations in nature, study additional literature, prepare lectures or abstracts on specific topics, and collect complexes.

In particular, a meaningful analysis of the programs in the biology, chemistry and physics disciplines, the identification of the interconnectedness of interdisciplinary environmental education, and their application in the educational process are important for enhancing students' cognitive activity.

Biology, chemistry and physics are a system of concepts of living and inanimate nature, energy exchange, and internal energy. Matter, its forms of action, organization level, and cellular structure are important concepts that combine the disciplines of biology, chemistry and physics. On this basis, the features of interdisciplinary communication in modern science in the educational process are as follows: provides the basis for understanding the essence of integration, socialization, and humanization

Interdisciplinary links in the learning process enhance student learning activities. In this case, the learner engages his or her active scientific knowledge to search for unknown relationships or to develop new concepts based on well-established interdisciplinary links. There is an active interest in the acquired knowledge gained through experience in interdisciplinary communication.

Effective implementation of interdisciplinary environmental education in biology classes requires preparation of students for new teaching materials, interdisciplinary communication, problem-solving, and planning and mastering of each lesson. This in turn contributes to the effectiveness of the lesson [6].

By studying this knowledge, youth will analyze the relationship between nature and human, their interrelationships and cohesion, their environment, and their efforts to protect the environment and to identify the factors that cause environmental problems.

The main purpose and task of environmental education in teaching biology in physics secondary school is theoretical environmental knowledge (natural, scientific, natural-mathematical, on the relationship between nature and society), which promotes environmental thinking, a sense of responsibility and attitude towards the younger generation, technical and socio-humanitarian knowledge), valuable goals material and spiritual value in meeting the needs of each person and society, the other through the establishment of the content, the interdisciplinary content of environmental knowledge, which regulates students' diverse activities in the natural environment, including their attitudes and beliefs (attentiveness and care for the environment, and the active struggle against any forms of non-profit).

The use of chemical and physical concepts in the classroom will encourage high school students to learn about biological knowledge, as well as the interdisciplinary link in their teaching, to understand the nature and environment of the processes and changes that occur in them, to have a holistic understanding of the content of these disciplines. it is important for the

formation of biological concepts in students through the application of practical skills, abilities and competencies. [7].

The process of formation and development of students' environmental thinking requires a systematic approach to this problem. Therefore, all forms of teaching biology: lessons, extracurricular activities, excursions, and extracurricular activities have made necessary to identify the possibilities for the formation and development of environmental thinking in students through environmental education in chemistry and physics. When this happens, it will provide the basis for students to apply the theoretical knowledge they acquire in teaching biology to chemistry and physics directly in technology management.

In particular, in improving environmental education it is important to pay attention to the issues of environment, nature, human protection, natural and rational use of natural resources, and cleanliness. These issues should be included in the curriculum, education programs, faculty activities, and curriculum content.

During environmental education is a comprehensive problem for students, it is not possible to do this in the teaching of one subject. For this, it is necessary to provide interdisciplinary links, to equip students with an ecological knowledge system, and to integrate it with environmental education, while giving each subject a specific understanding of the subject [8].

Based on the foregoing, a comprehensive secondary school curriculum, including biology and chemistry education, provides a meaningful analysis of both syllabus, and the relationship between them, that is, the horizontal and vertical links, and the age and psychosocial characteristics of students. The development of students' environmental thinking through the creation of problematic environmental issues and tasks, the application of environmental issues and tasks in the educational process. There was a need to develop a methodology for the formation and development of methodological recommendations for biology teachers.

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