METHODS FOR DEVELOPING A SYSTEM OF SKILLS AND KNOWLEDGE TO SOLVE BIOLOGY OLYMPIAD PROBLEMS

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ANNOTATION: This article covers information about the state and analysis of the organization of the Biology Olympiad. The purpose and objectives of the Olympiad and the methodology for solving some written work questions at stage III were also shown.

KEYWORDS: Olympiad, food chain, population, homozygote, heterozygote, crossover, frequency, chromosome.

The Biology Olympiad is an excellent opportunity to increase students' interest in biology, develop scientific analysis skills, and test their knowledge at a high level. These Olympiads in biotechnology, ecology, genetics, physiology, and other biological fields, held in many countries around the world, encourage young people to acquire in-depth knowledge in natural sciences. The Biology Olympiad tests not only students' theoretical knowledge, but also their practical skills, which opens the way for them to further success in the scientific field.

The process of solving Olympic problems in biology requires deep theoretical knowledge, practical experience, and analytical thinking skills. Olympic questions typically test students' knowledge of interdisciplinary concepts in biology and their ability to apply them to solving complex problems. Therefore, the formation of a system of knowledge and skills in biology among students is an important factor in their success. This article examines important aspects and effective methods of preparing for the Olympiad [1].

Participation in biology Olympiads gives students the opportunity to test their knowledge in practice and learn more deeply. Olympic questions and exercises develop students' scientific approach, methodological thinking, and the ability to find innovative solutions.

The primary goal of biology Olympiads is to develop students' in-depth knowledge in biotechnology, ecology, genetics, and other biological fields. Olympic questions increase students' interest in natural sciences, develop skills in scientific analysis and observation, teach experimentation and the application of scientific experimental methods, and encourage effective and creative problem-solving. In biological Olympiads, mathematical and physical processes are often linked to biological systems, which allows students to apply knowledge comprehensively [2].

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Biology consists of many areas: cell biology, genetics, biochemistry, ecology, zoology, botany, and others. Students should have solid knowledge of these areas. The following aspects will be taken into account in each direction:

Cell biology: cell structure, organelle function, cell division processes (mitosis, meiosis).

Genetics: Mendel's Laws, Fundamentals of Heredity and Variability, Genetic Calculations.

Ecology: energy flow in the biosphere, food chains, population dynamics.

Biochemistry: Functions of enzymes, proteins, carbohydrates, and lipids [3].

To develop theoretical knowledge, it is necessary to organize classes with students based on the systematic study and in-depth analysis of information. The use of specialized textbooks, online platforms, and scientific literature enriches this process.

Olympic issues are distinguished by their complexity and practical orientation. Therefore, it is necessary to develop skills in the following areas:

Analytical thinking: understanding the condition of the problem correctly and analyzing the problem in parts.

Mathematical foundations: Mathematical knowledge is important in solving problems related to genetics, ecology, and statistics.

Experimental-based tasks: Teaching students to analyze situations that occur in laboratory experiments. For example, drawing conclusions based on the data obtained from microscopic observations [4; 5].

In the process of solving problems, it is possible to increase the effectiveness of learning by identifying students' mistakes and analyzing them in detail.

In essence, biology is an experimental science, and most of the Olympic problems are focused on laboratory work. It is important to develop practical skills in students, such as using microscopes and conducting observations, analyzing the structure of biological samples, collecting and processing statistical data.

Through practical exercises, students gain the opportunity to see biological processes with their own eyes and apply theoretical knowledge in real life.

It is often necessary to apply knowledge acquired in other disciplines when solving biological Olympiad questions. Example: Chemistry: Understanding the catalytic properties of enzymes. Physics: Knowledge of the operating principles of microscopes or laboratory equipment. Mathematics: Calculations and analysis of statistical data [6].

An interdisciplinary approach allows for a broader and deeper understanding of biology. To this end, it is necessary to pay attention to the practice of solving complex and multifaceted problems.

Complex problems in biological science require a creative and original approach. For example, students may be asked to create an organism with new genetic characteristics or to develop projects to solve an environmental problem. This type of problem develops students' ability to think creatively.

It is important to encourage students to participate successfully. Stories about the results of the International Olympiad, the lives of leading researchers, and scientific discoveries can inspire readers [7; 8].

Science Olympiads serve as a positive motivation for students to study and interest in biology textbooks. In many cases, a research approach creates an opportunity to more effectively solve educational, upbringing, and developmental tasks in teaching biology and chemistry.

Typically, the teacher manages students' knowledge, skills, abilities, and competencies to obtain final conclusions on solving Olympic tasks.

The following main criteria for determining the level of development of research skills are presented in scientific sources:

a high level of student independence in conducting research;

the ability to draw conclusions, solve complex Olympic problems, express opinions that support one's views, and find optimal ways to solve the problem;

the difficulty and expediency of students' use of scientific terms and concepts [9].

To successfully participate in biology Olympiads, students need to learn the following exercises:

1. Observation and experimentation: By conducting biological experiments and analyzing the results, students learn scientific methods.

2. Genetic research: analysis of genetic characteristics, genetic manipulations, and mutation modeling.

3. Ecological research: conducting ecosystem analysis, studying interactions between different environments.

4. Creating anatomical models: creating models for studying the anatomy and physiology of the body.

5. Biotechnological solutions: studying biotechnology and genetic modifications and developing a practical approach to them [10; 11; 12].

Conclusion. To successfully solve Olympic problems in biology, it is necessary to develop students' theoretical knowledge, practical skills, and the ability to think analytically. Theoretical training programs, practical classes, and trainings play an important role in this process. A well-organized system of training creates a solid foundation for identifying talented youth and their future scientific achievements.

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