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Research Article

USE OF DIFFERENTIAL TASKS IN ORGANIZING THE PREPARATION OF BIOLOGY STUDENTS FOR THE SCIENCE OLYMPIADS

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ABSTRACT

Preparation for all Science Olympiads requires responsibility, hard work and patience from the student. Also, preparation for Olympiad questions and assignments with solid knowledge requires strict responsibility not only from the participant of the Olympiad, but also from his teacher. In this process, it is necessary to use differential tasks and organize its introduction step by step in preparing Olympiads for the technique of performing complex tasks. This article pays special attention to such issues.

KEYWORDS

Science olympiads from biology, educational process, preparation for the olympiad, gifted student, differential tasks, preparation for olympic exercises by means of differential tasks, teacher-student tradition, natural-scientific literacy, science integration, exercises, assignments.

INTRODUCTION

In the implementation of priority tasks defined in the "Strategy of Actions" for the further development of the Republic of Uzbekistan, "in-depth study of other important and high-demand subjects such as mathematics, chemistry, biology and informatics" is defined as an urgent task [1].

It is known that students have a high interest in one or another subject. Evaluating their interests correctly, taking into account the physiological and hygienic characteristics of students, and educating them step by step will be highly effective.

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Science olympiads are the most complex and difficult part of the system of working with gifted students. In order to further develop the talent of students, it is necessary to form critical thinking skills in them[2]. The main reasons for this are:

- Tasks in science olympiads are mainly based on testing students' thinking ability, not memorizing ability.
- The stronger the ability of critical thinking is developed in students, the higher the ability to summarize and conclude information based on the knowledge they have acquired.
- Reduces the time spent on understanding the question and solving the problem.

The system of working with gifted students in the educational system is characterized by its own complexity. Talented students have the ability to quickly absorb large amounts of information, a creative approach to problem analysis, and the ability to integrate the acquired knowledge at a high level. Taking into account that gifted students are distinguished from their peers by many abilities and they are few in number, it is an urgent issue to apply a system of special work with them and effective ways to the pedagogical process.

It is known that how to remember information from the biology Olympiad is one of the biggest problems of teachers and students. This may be due to the size of the topics. Biology Olympiad is designed to test the ability of students to apply knowledge in different unfamiliar situations, to understand the data, to interpret the results of scientific experiments and to draw rational conclusions from the given data, not the level of how much information the students have mastered.

In fact, most of the exam questions in the IBO (International Biolay Olympiad - translated from English as the International Biology Olympiad. But since the term IBO is accepted as the system units, it is preferred to use this abbreviation in the article) mainly focus on thinking, problem solving and understanding directed. Therefore, prior knowledge is not required and IBO exams encourage participants to learn new knowledge during the competition. Pupils are given the opportunity to participate in the IBO only once, sometimes twice (if accepted into the national team).

Everyone knows that it is impossible to become a ballet dancer by studying theoretical information about dancing, reading books. Students need to be able to think critically and solve problems on their own, rather than trying to find a list of strategies that are ultimately available by studying scientific information about critical thinking. In the process of preparing for the Olympiad, if students are engaged in a special test with a medium level of complexity in the field of science and a set of complex questions, their critical thinking ability will gradually develop [4].

In the Olympiad, students are tested on their ability to understand and apply biological concepts. Thus, it is necessary to practice and learn to draw and analyze graphs, diagrams, pictures and tables. Here are the most important aspects for developing critical thinking:

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Read and understand the question. It is necessary to collect all the information in the question and think openly. Highlight, circle, or underline important parts of the question. The worst thing to do when solving problems is to read the question passively and miss the key details. Thus, it is necessary for the student to develop the skills of working with a felt-tip pen or pencil.

It is important to understand all terms and words. For this, the student must have a solid foundation of biology knowledge. If the student does not understand the general and more specific terms and phrases, it will be difficult for the student to choose the correct answer. In fact, wrong conclusions in solving problems usually arise from insufficient knowledge of biology. Therefore, it is necessary to review biology textbooks and strengthen knowledge on all subjects. As a good example, question 12 of the IBO 2012 Theory Test Part 2 tests knowledge of the acid growth hypothesis in plants.

It is necessary to analyze the collected data and create a question. It is necessary to analyze the set of facts, to find out whether it is necessary to include or exclude data, to check the methods by which the facts were obtained. Depending on the question, one has to check whether the facts are the result of a well-controlled experiment or just random observations. It is also necessary to verify that the experiments are performed correctly and that the experimental method can lead to valid results. In biology, different environmental conditions (e.g., temperature, salinity, sunlight), habitat, or species sample can alter experimental results.

Graphs and tables should be analyzed. In fact, tables and graphs can give readers a lot of information, so it's important to pay attention to different trends (increase/decrease/unchanged numbers). For example, a bell-shaped curve usually indicates a random sample and a normal distribution. The sigmoidal curve determines the change of the environment, and the logistic curve determines the degree of dissociation of oxygen. A hyperbolic curve indicates that the ferbs are saturated or that some environmental limiting factor is required to maintain the constancy limit. As occurs in the log phase of bacterial growth, concave curves with continuously increasing functions are used. Sine wave-like curves are usually associated with negative feedback mechanisms. The reader needs to guess why such lines appear and what they might mean in the question paper. It is not appropriate to use personal feelings when analyzing graphs and tables with specific data. It is necessary to draw conclusions only from the given information. To find out where to apply this recommendation, you can analyze question 12 in part A of the IBO 2014 theory test[5].

It is necessary to think about causes and consequences. It's easy to do, but the most obvious answer is usually not the right one. When submitting an Olympiad paper, one should stop being simplistic and consider all possible factors and their contribution to the conclusion. One should avoid looking at the questions from two perspectives like good or bad. Biology is a vast and very diverse field, so you should always look for a third or fourth opinion or opportunity.

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Beware of misleading information! The structure of the questions asked in the Olympiad, using excessively luxurious, voluminous and misleading information, in many cases confuses the student. That is, during the reading of the sentence from the beginning to the end, very long sentences, numbers or formulas also cause loss of time in some cases. (some scientific information and evidence can also be asked as a misleading question in an illogical situation).

When analyzing some data in the tasks, it is necessary to pay attention to distinguishing the correlation relationship. It is known that Correlation represents the interdependence of signs in the whole organism. But in many cases there is a private separation at the root of this unity. The reader can easily be distracted by some obvious correlations, but it is worth remembering how changes can occur in biology as a result of the influence of several factors. At one time, the idea that HRT could reduce the risk of coronary heart disease (CHD) was praised. However, subsequent randomized trials have not found an association between cardiovascular disease and HRT. So why did people think differently before? It found that HRT was generally prescribed to women of higher socioeconomic status, who had better diet and exercise, which helped reduce their risk of cardiovascular disease.

Learning to critically analyze some of the information given during assignments. In order to critically analyze the student, it is first necessary to master critical thinking. Critical thinking is a special type of thinking that creates conclusions by analyzing facts. The concept is complex and has various definitions, including rationality, skepticism, objective analysis, and fact-checking. Critical thinking is a form of thinking that is self-directed, self-disciplined, self-monitored, and self-correcting. Its prerequisite is to agree to strict standards of consciousness improvement and to apply them with vigilance. It requires the acquisition of effective communication and problem-solving skills through critical thinking and critical analysis[3].

Using the information in the question, the reader can often rule out certain statements or narrow down the answer options. Be careful with the following statements in options:

- It is required not to be distracted by additional information that contradicts the basic concept or the information in the graphs and tables, is disproportionate, that is, beyond the question, does not show reality.
- Simple, i.e., illogical concepts whose answers seem too obvious or too simple, contradict vague or general biological truths.

In the Olympiad, in some cases, options for problematic questions with a high level of complexity for the student are given. The student should think, analyze and guess when solving the information presented in the question using his knowledge and skills. In the next step, they are asked to sort out the wrong answers and think about the options that are supposed to be correct. Only then, there may be opportunities to find solutions to new, not yet encountered, problematic questions. To implement all these recommendations, it is necessary to take

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previously used Olympiad questions and analyze each question step by step. The next skill, Problem Solving Skills, is closely related to the recommendations on critical thinking. In fact, these two skills are inseparable and complement each other in the biology science Olympiad, and at the same time, they serve to effectively solve the problems given to the student to develop critical thinking.

REFERENCES

1. Decree No. PK-4199 dated February 20, 2019 "On measures for the establishment of presidential schools".
2. Decree No. PQ-4910 of 03.12.2020 "On measures to improve the system of selecting talented young people and the activities of academic lyceums".
3. Bogoyavlenskaya D.B. Labor concept odarennosti: discussionnye voprosy / D.B. Bogoyavlenskaya // Odar. child – 2010. – No. 4. - S. 6-13.
4. Bogdanova N.A. Exam trainer (Biology). 2018. Bibliogr.: p. 78. – ISBN 5-7744-0159-6.
5. L.M. Karakhonova. Organization of research activity of schoolchildren at the lessons of biology// SCIENCE AND INNOVATION INTERNATIONAL SCIENTIFIC JOURNAL VOLUME 2 ISSUE 2 FEBRUARY 2023 UIF-2022: 8.2. -R. 430-438
6. L.M. Karakhonova. Formation of research competence in teaching biology at a comprehensive school// Eurasian Journal of Learning and Academic Teaching// ISSN (E): 2795-739X. Journal Impact Factor: 8.115. Volume 20| May 2023. -R.154-158.
7. L.M. Karakhonova, Z.Sh. Uchkurova. Independent educational activity and mechanisms of effective organization in the continuous education process// American Journal Of Applied Science And Technology// VOLUME 03 ISSUE 06 Pages: 15-21 SJIF IMPACT FACTOR (2021: 5. 705) (2022: 5. 705) (2023: 7,063)
8. L.M. Karakhonova Pisa – of students as an International science literacy Assessment program// Neo Science Peer Reviewed Journal Volume 10, June. 2023 ISSN (E): 2949-7701 –P.15-26 www.neojournals.com
9. L.M. Karakhonova ISSUES OF DEVELOPING RESEARCH COMPETENCE IN STUDENTS BASED ON THE PROJECT METHOD// NOVATEUR PUBLICATIONS JournalNX- A Multidisciplinary Peer Reviewed Journal ISSN No: 2581 - 4230 VOLUME 9, ISSUE 9, Sep. - 2023.