

PROBLEMS OF IMPROVING TEACHING IN THE PROCESS OF BIOLOGICAL EDUCATION

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ABSTRACT

This paper involves the information on the specific aspects of the formation of creative thinking between students and schoolchildren, one of the most important tasks, facing the system of continuous education. It also outlines the problems of improving the teaching of biology and ways to solve them.

KEYWORDS

Continuous education, creative thinking, reflexive, synergistic and systematic approach, professional competence, biology, biological assignments and tasks, diet ration, proteins, fats, carbohydrates.

INTRODUCTION

One of the most important tasks facing the system of continuing education is to form the creative thinking of students. Creative thinking is the search for innovative (new, innovative, original, non-standard, unusual, etc.) and effective (practical, effective, cost-effective, optimal, etc.) solutions, the acquisition of new

knowledge, the development of ideas for effective expression of imagination, the ability to actively participate in the evaluation and improvement process.



Creative thinking helps to find unusual solutions to problems. All discoveries in human civilization (from the simplest to the most complex) are the result of creative thinking. The main task of education in creative thinking is to develop the skills that students will need today and in the future to succeed in society [5].

Education is a systematic process aimed at imparting deep theoretical knowledge, skills and practical skills to students, as well as the formation of their general and professional knowledge, skills and abilities. The main purpose of the organization of education: to have a competitive level and specialization in the labor market, to be responsible, a master of his profession, to freely perform related professions, to be able to work effectively at the level of world standards in their specialty, is to train qualified professionals who are constantly working on themselves. The qualifications of the trainees directly depend on the level of professional competence of the teacher who teaches them [1].

THE MAIN RESULTS AND FINDINGS

In the current era of information globalization, changes in the field of education require direct educators to actively change their activities and constantly work on themselves, adapting to this process of globalization. The main task of the teacher is to develop the student's personality through quality education and to form competencies that he can apply in his future life [4].

There are a number of factors that contribute to the problems in the professional competence of biology teachers in secondary schools. Here are some of them:

- Lack of consistent enrichment of knowledge and slow learning of new information;

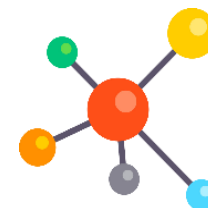
- Insufficient use of the Internet;
- Be limited to the knowledge in the textbook for students;
- Inability to search for new information in science, process it and use it effectively in their work;
- Masligi Lack of systematic organization of laboratory and practical training;
- Inappropriate use of pedagogical and information technologies in the teaching process;
- Lack of integrative knowledge between the exact and natural sciences;
- Incomplete genetic literacy;
- It should be noted that the solution of biological problems is not sufficiently developed competencies [1].

Among the reasons listed above, solving biological problems is important in the process of improving professional competencies.

A prerequisite for the use of biology issues in improving the professional competence of biology teachers in general secondary schools is:

- First, the volume, breadth, and rapid development of information in science;
- Secondly, the speed of technical development, the rapid development of modern laboratory equipment;
- Third, various teaching aids are evolving;
- Fourth, there are external influences, interesting telephone, Internet, social networks, etc. for students from the frozen knowledge of the teacher [2].

Research has shown that solving problems from different areas of biology allows for an in-depth study of biological laws, the proper use of natural gifts, the biology of individual animals and plants, and specific aspects of ecology. Problem solving in biology is



important in the process of summarizing, analyzing, summarizing students' scientific outlook, creative thinking, and knowledge gained from all biology courses.

Problem solving in biology is one of the most important competencies of secondary school teachers in practice. Solving biological problems is of great practical importance in the process of fully understanding the essence of biological concepts, theories, laws, and rules. These topics will help teachers to better understand the level of theoretical training of students, deepen their understanding of flora and fauna, apply theoretical knowledge in practice, expand students' scientific outlook, and form biological thinking in students [3].

By solving a certain type of problem and repeating it several times, the student develops skills and competencies, as well as biological knowledge. Teachers gain comprehensive biology problem-solving competencies only if they work in a clear order throughout the entire biology course on a consistent basis, rather than in individual lessons.

As a result of the use of biological issues in the classroom, the professional competence of biology teachers in secondary schools is improved, and students are involved in a comprehensive education.

Scholars say that students' learning should not be limited to the theoretical knowledge in the textbook. It is well-known that in addition to theoretical knowledge, it is effective to solve biological problems and exercises in a balanced way. By solving problems directly in the learning process, one can understand the essence of the knowledge being studied.

Improving professional competence in biology teachers requires a creative, reflexive, synergetic and

systematic approach. A creative approach requires an increase in knowledge, the ability to analyze and study the latest science news, to understand the current requirements, to be able to search for science news, analyze it and apply it effectively in their pedagogical work.

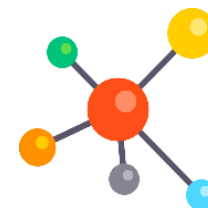
The results of the study showed that it is necessary to create a system for improving the professional competence of biology teachers - a modern approach to their conditions and the need to rely on specific principles. The system of biology teacher training should reflect educational, pedagogical and developmental goals. At the same time, biology teachers today need to develop an important professional quality - innovative thinking and mathematical literacy [3].

Based on the above considerations, the methodology for solving several biological problems is a practical expression of the ideas expressed.

Issue 1. The total amount of protein, fat and carbohydrates in the student's diet is 700 g, and the energy released from the protein is 410 kcal. If the amount of fat in a meal is 520 kcal more than the energy, how much of the total energy (kcal) is produced in a day and night from dinner? (Followed by a high percentage of rational nutrition)

Solution:

Solving this type of problem requires the teacher or student to think creatively based on integrated knowledge. It is known in the textbooks that 4.1 kg of energy is released from the breakdown of 1 g of protein and carbohydrates, and 9.3 kg from the breakdown of 1 g of fat. Given the problem, the energy released from the protein is 410 kcal. The following steps are performed accordingly.



1) First, the total mass of the protein is determined by:

410: 4.1 = 100 g of protein means that 100 g of protein.

2) Now, taking into account that the energy released from fat is 520 kcal more than the energy released from protein, the total value of energy released from fat is determined:

$410 + 520 = 930$ kcal of energy separated from fat.

3) Based on this information, the amount of fat is found:

930: 9.3 = 100 g of oil

4) Dividing the mass of fat and protein by the total mass, we get the mass of carbohydrates:

$700 - 200 = 500$ g carbohydrate. This means that the mass of the carbohydrate is 500 g.

5) Based on this information, the value of the energy produced by the decomposition of carbohydrates is found:

$500 \cdot 4.1 = 2050$ kcal

6) The total energy from the decomposition of organic matter was then determined by adding the energy produced by each of the proteins, fats, and carbohydrates:

$410 + 930 + 2050 = 3390$ kcal total energy.

7) Dinner is one night - 15-20% of the calories in the lunch and a high percentage of a rational diet, the ratio is as follows:

If 100% is 3390 kcal,

$20\% i = X = 678$ kcal.

Answer: The student received 678 kcal of energy from dinner.

Issue 2. The athlete weighs 70 kg and has a total energy of 2050 kcal per day of carbohydrates consumed. The daily amount of protein and fat in the diet is the same, and the amount of carbohydrates is 2.5 times higher.

Calculate the amount of energy spent on digestion and work done in a day in kcal?

Solution:

This issue is related to the topic of “Energy Exchange” in the 8th grade textbook on Human and Human Health, and in the process of working on it, the educator should perform the following steps in sequence [2].

1) First, the educator needs to determine how many g of 2050 kcal of carbohydrate. To do this, based on the fact that 4.1 kcal of energy is obtained from the oxidation of 1 g of carbohydrate from the data given in the textbook, we divide 2050 kcal of energy by 4.1 kcal of energy and determine how many g of carbohydrate.

$2050: 4.1 = 500$ g of carbohydrate content.

2) Now find the amount of protein and fat that is unknown in the content of the problem.

$500: 2.5 = 200$ g is the total amount of protein and fat.

3) The third step is to find the individual masses of protein and fat and calculate how many kcal of energy each produces.

a) $200: 2 = 100$ g of protein and fat is determined and how many kcal of energy they produce;

b) $100 \cdot 4.1 = 410$ kcal (protein)

v) $100 \cdot 9.3 = 930$ kcal (“fat”)

4) Calculate the sum of the total energy of a protein, fat, and carbohydrate.

$410 + 930 + 2050 = 3390$ kcal total energy.



5) We know from the textbook that energy metabolism takes place in three stages: the first stage: the energy used for basic metabolism;

Second stage: energy expended on digestion;

Third stage: energy expended on work done overnight.

Timur's body mass is 70 kg. Based on this information, the amount of energy required for basic metabolism is determined: (Note: 1 kg of body energy consumes 1 kcal per hour)

$70 \cdot 24 = 1680$ kcal Energy When the energy expended on basic metabolism is determined, subtracting the total energy, we get the amount of energy expended on digestion and the work done overnight.

$3390 - 1680 = 1710$ kcal

CONCLUSION

Answer: Timur spent 1710 kcal of energy per day to digest food and work done overnight.

Working on a given task requires the teacher or student to apply what they have already learned in new situations and to think creatively. This is because in the first case, the total amount of protein, fat and carbohydrate was 700 g, the energy released from the protein was 410 kcal, and in the second case, the athlete's body mass was 70 kg and the total energy from the carbohydrate consumed per day was 2050 kcal. equality was provided for information. It is necessary to draw an unusual and optimal solution from this information. As a result, knowledge and skills on diet and energy expenditure are formed.

Prepares the ground for the teacher or student to develop competencies to apply previous knowledge in new contingencies.

REFERENCES

1. Shakhmurova G, Azimov I, Rakhmatov U "Solving problems and exercises in biology." Textbook published by Sano-Standard. Toshkent-2017 y.
2. Aminov B, Tilavov T, Mavlonov O "Man and his health". Textbook for 8th grade of general secondary schools. Teacher Publishing House. Toshkent -2019 y.
3. Rakhmatov U "Problems and exercises in biology". (Fundamentals of Cytology and Genetics) Textbook Tafakkur Avlodi Publishing House. Toshkent-2020 y.
4. Berdikulov R. S. Developmental factor of chemical thinking of future chemistry teachers //European Journal of Research and Reflection in Educational Sciences Vol. – 2020. – T. 8. – №. 9.
5. Madatov R.M. Modern approaches in the educational process. Current issues and achievements of mathematics, physics and digital technologies in modern education. - 2021. № 3. b. 881-885.
6. Khojjeva Z. The humanization of didactic relations between teacher and student in modern education //European Journal of Research and Reflection in Educational Sciences Vol 8 (4). https://scholar.google.ru/citations?view_op=view_citation&hl=ru&user=iwLTjhkAAAAJ&citation_for_view=iwLTjhkAAAAJ:gyKS N-GCBoIC.
7. Khojjeva Z.U. THE ROLE OF REFLECTION IN THE PROCESS OF EDUCATION AND UPBRINGING // Eastern European Scientific Journal, 7-9 https://scholar.google.ru/citations?view_op=view_citation&hl=ru&user=iwLTjhkAAAAJ&citation_for_view=iwLTjhkAAAAJ:d1gkVwhDploC.



8. Umaraliyeva, M. A. (2017). Pedagogical Conditions of Forming Professional Competence of Teachers Based on Innovative Approach. Eastern European Scientific Journal, (4), 65-68.
9. Rasulov A. History and analysis of "Sustainable development" or "sustainable development" // TDPU scientific information. –T., 2018. – 4 (17). B. 20-26.
10. Rasulov A. Indicators of sustainable development and problems of their practical application // Information of the Geographical Society of Uzbekistan. Volume 49 - Tashkent, 2017. - p. 12-15.
11. Ziyamuhamedov, J. T. (2021). Reflection of real life through the bizarre and supernatural in the classic prose of the far east. ACADEMICIA: AN INTERNATIONAL MULTIDISCIPLINARY RESEARCH JOURNAL, 11(1), 1268-1273.
12. Omonov, Q., & Karimov, N. (2020). Importance Of Ancestral Heritage. The American Journal of Social Science and Education Innovations, 2(09), 196-202.
13. Rakhmatov, U. E. (2018). DEVELOPMENT OF CREATIVE ABILITIES OF PUPILS UNDER USING TASKS AND PROBLEMS IN BIOLOGY LESSONS. In XLIII INTERNATIONAL SCIENTIFIC AND PRACTICAL CONFERENCE" INTERNATIONAL SCIENTIFIC REVIEW OF THE PROBLEMS AND PROSPECTS OF MODERN SCIENCE AND EDUCATION" (pp. 112-113).