USE OF ADVANCED PEDAGOGICAL TECHNOLOGIES IN TEACHING BIOLOGY AND DEVELOPMENT OF PROFESSIONAL COMPETENCE OF TEACHERS

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ANNOTATION
This article discusses the pedagogical technologies used in the teaching of biology in secondary schools and the formation and development of students' core competencies in biology lessons.

KEYWORDS: *Cluster, skill, topic, case, Venn diagram, brainstorming, small group work, term chain, term sheet.*

In order to activate the cognitive activity of students in the study of biology, to determine the knowledge, skills and abilities of students on the previous topic, to systematize them, to monitor the knowledge, skills and abilities acquired on a new topic and evaluation, as well as the use of local technologies in the process of learning a new topic.

In the teaching of biology at the local level of pedagogical technologies "Keys", "Insert", "Cluster", "Venn diagram", "Brainstorming", "Working in small groups", "Chain of terms", "Terms sheet", It is recommended to use different forms of games and game exercises.

The use of Keys in the teaching of problem-solving in biology is highly effective.

"Cases" is derived from English and means a process or situation.

Initially, this technology was used in the training of businessmen and entrepreneurs. discussions are organized.

Biology teaching has been led by evolutionary concepts in the curriculum, and can also be used to teach controversial topics such as "the origin and development of plants" and "the emergence and development of the animal kingdom".

To use the case in the educational process, the teacher:

1. Identify problematic topics in science, create problem-solving tasks to teach these topics;

2. The problem question during the lesson is to determine whether the tasks are organized individually or in small groups of students according to the level of difficulty;

3. To plan ways for students to engage in learning activities to address these issues and participate in discussions through academic discussions;

4. Problem-based question-and-answer sessions can lead to a final conclusion.

It is recommended that you use an insert in a course that covers only factual material.

Insert is a local pedagogical technology used to help students understand the main idea and factual material in a textbook.

Students will be given a syllabus and a spreadsheet to help them develop their insert skills. Students are encouraged to study each sentence and mark it in a special table based on specific symbols.

If the information in the sentence corresponds to the knowledge acquired so far, "I know" - V, if the information is clear and new, then "I agree" +, if the information corresponds to the knowledge acquired by students If not, then "I need to learn" - if students find it difficult to master the learning materials, then "I do not understand"? puts a sign.

The following requirements must be met when using an insert in the educational process:

1. Divide students into small groups, but using the insert, each student first works individually and fills in the table, then compares the ideas after the group members have completed the work on time;

2. Ensuring that the members of the small group have the same symbols in the table through the reading competition, that is, achieve the same in the next two columns of the table;

3. The teacher should organize a reading discussion based on the question-assignments based on the teaching material and the symbols of the small group members in the table.

The use of clusters is important in teaching biology to systematize and consolidate students' knowledge.

Cluster is derived from the English word cluster, which means tree. This local technology paves the way for the development of analytical and critical thinking skills by

enabling students to understand the interrelationships between the ideas, theories, laws, and concepts they have mastered and are learning.

Creating a cluster is done in the following order:

1. A specific idea about biology is written on a board or piece of paper;

2. The laws and concepts associated with this idea are defined by an indicator of their interconnectedness, then the actual data of these laws and concepts are recorded graphically and a network is formed;

3. A conclusion is drawn about the connections between the previously studied topic and the studied topic.

In cluster-based lessons, students are divided into equal subgroups to explain the didactic purpose and order of the assignment. a well-founded and well-structured cluster is identified, and winners are encouraged. Creating a cluster as a whole on a single topic or chapter allows students to think systematically.

The video puzzle method is a method in which students are shown several videos without descriptive explanations of the topic being studied. Students interpret each sheet, record the process in a notebook, and answer questions posed by the teacher.

The local-level pedagogical technologies discussed above serve to increase the effectiveness of teaching by activating students' learning activities in a particular part of the lesson.

A person is required not so much to possess special information as to be able to navigate information flows, be mobile, self-learn, master new technologies, search for and use the missing knowledge. In the context of the formation of the information society for further progress in the face of increasing global competition, the most important factors for competitiveness are qualified human resources and a scientific base. The set of key competencies can be represented by four components: 1. Informational (methods of receiving, storing, processing and transmitting information).2. Design (methods for determining goals, resources for achieving them, actions).3. Estimated (methods of comparing results with goals) .4. Communicative (ways of transferring information and attracting the resources of other people to achieve the goal). Formation of key competencies of students, i.e. the ability to apply knowledge in real life is an urgent problem of modern education.

The process of activation of educational activities, based on practical experience, is the key to the formation and development of key competencies of schoolchildren.

The purpose of my methodological work is the formation and development of key competencies in students: value-semantic, educational, educational-cognitive, information-communicative, social-labor.

In my lessons, I try to organize the work of students in such a way that they receive their knowledge not in finished form, but mostly create it independently as a result of cognitive activity.

- Value-semantic competence Formation and development of this competence occurs through constant reference to real life, to the surrounding reality. In the lessons I use living objects, I consider phenomena that the student often encounters in life, not knowing the causes and mechanisms of their occurrence. This forms a new look at already familiar things. Within the framework of this competence, I develop the ability to:

- To see and understand the world around;

- navigate in it (ask yourself and others the questions "why?", "why?", "how it works?", "what is the reason?");

- Be aware of their role and purpose in it - ("can I do this?", "How can I do this?");

- The ability to see, understand and distinguish biological phenomena in nature;

- predict the direction of the scientific use of biological knowledge in practical human activities.

This also includes the formation of an individual educational trajectory, a life program and the choice of professions related to biology.

- Educational competence In the classroom, I teach students to consider the same problem from different angles, defend any point of view, even different from their own and generally accepted one, in order to formulate the right decision on their own or in a group discussion. Currently, for the formation of educational competencies, I began to use information and communication pedagogical technologies.

1. Use of ready-made biology programs. In my lessons I actively use the material of the Virtual School of Cyril and Methodius "Biology Lessons", Electronic lessons and tests "Biology at School", series 1C: Tutor in Biology. As a result, due to the high degree of visibility and interest of students in this type of work, interest increases, a more meaningful understanding of life processes occurs, and abstract thinking develops.

2. Creation of own electronic educational resources. Presentations on the studied material are made by the students themselves. At the same time, they expand their knowledge on the subject, learn to choose the main thing, control their thoughts, master ways of working with information: information search; save and copy it.

- Educational and cognitive competence. To achieve high results and positive dynamics of students' educational achievements, I use different forms of work that contribute to the development of students' basic competencies. 1. In the classroom, I achieve students' understanding of the material being studied. All incomprehensible terms are deciphered and translated into Russian. For example, cytology: "cytos" - cell, "logos" - science. Cytology is the science of cellular development. I try to ensure that terms and concepts are not taught by heart, but explained in their own words. This is one of the working conditions during terminological dictations. Memorized information is stored for a short time, and understood and meaningful - forever. 2. I pay special attention to working with drawings, as they are found in many tasks. We create collections of drawings with students in different sections of biology. The work is carried out in pairs, then the collected drawings are grouped and copied to each student. This form of work contributes to the development of visual

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memory. In subsequent lessons, I use didactic cards where it is necessary to sign the structures, or perform other actions with the depicted drawings. 3. I prepare tests for each topic, the solution of which takes only 5-10 minutes. 4. In the process of work, individually or in pairs, students solve complex problems facing them, divide them into simpler ones. And, solving each of the tasks, they generalize and draw a conclusion about the observed phenomenon or process. On practical and laboratory work, excursions during classroom and home experiments, students develop the skill of determining the main stages of work, drawing up an algorithm for performing practical work, and the ability to adjust or change the algorithm depending on the conditions. In the lessons, after working out the algorithms in standard situations, students are offered, based on the given algorithms, to solve a creative problem or offer a new non-standard solution to the problem; 5. Pupils work a lot and actively with additional literature. The formation of skills to work with a large amount of information, represented by a huge number of types of educational materials, is formed gradually. At the lessons I always voice the list of additional literature available in the school library. I work with some sources (encyclopedias, multimedia products) in the classroom to consolidate the ability to see and highlight the main thing and the ability to convey information to other students. 6. In biology lessons, students continue to master such methods of studying the world around them as observation of seasonal changes in the life of plants, animals, the results of experiments on the study of the vital activity of living organisms; experiment - seed germination in various conditions, the effect of light on plants, etc.

7. Educational and business game will provide an opportunity to:

- Formation of cognitive and identification of professional motivation;

- Consolidation of knowledge by students, their application in a non-standard environment;

- Development of theoretical and practical thinking;

- Development of skills for self-acquisition of knowledge and skills for obtaining information.

I propose to use business games when studying large topics of the course, when it becomes necessary to work with popular science literature. For example, "Environmental Protection". The use of business games reduces fatigue during the same type of work, develops a sense of teamwork, and gives importance to the problem being studied.

8. Defense of the project at school, at the scientific-practical conference, turns out to be the most important, honest and fair evaluation of the student's work. The project research activity of schoolchildren reveals the potential of their creative abilities, expands the socio-cultural educational space, and contributes to the development of gifted children. Recently, more and more students are involved in project activities, and more and more practice-oriented projects are being carried out. Perhaps this is due to an attempt to compensate for the academic content of education, its

isolation from practice, to ensure the formation and development of key competencies.

- Information and communication competence

At the lessons I evaluate the student's ability to logically and competently formulate his thoughts using special terms, the ability to build coherent, coherent and logical statements with the competent use of biological terms.

I pay more attention to drawing up plans and supporting notes on the studied material - first on the model, then on my own, both on the worked out and on the new material, to consolidate and control knowledge. An important part of the formation and development of students' information competence is the ability to use Internet information resources. I tell the children about the rules for working with information on the Internet, which I use myself. Interactive methods allow you to use feelings, emotions, volitional qualities, that is, they include a "holistic person" in the learning process. This increases the percentage of assimilation of the material, which ensures the fundamental nature of education, the universality of the acquired knowledge, the possibility of their use in life situations.

Therefore, another of the competencies that is formed at the stages of education will be communicative with the possibility of including schoolchildren in active speech activity, developing the art of communication in the process of consciously mastering the basics of science, improving daily external and internal culture and competent communication. At the lesson, the atmosphere of trust and cooperation, students express not only their thoughts, but also learn to listen to others, share knowledge and skills. As part of communication, each student develops new skills and abilities.

- Social and labor competence

I form and develop social activity and functional literacy; mastering knowledge and experience in the social and labor sphere (to know the advantages and disadvantages of biological education), in the field of professional self-determination.

I form the ability to analyze the situation on the labor market, act in accordance with personal and social benefits, and master the ethics of labor and civil relations. The value of cognitive, and therefore developing interest, lies in the fact that it is a deep inner motive of the teaching, causing feelings of pleasure and joy of knowledge; it stimulates the attention and will of schoolchildren, facilitates the process of assimilation of the material, prevents the occurrence of stress in the learning process, and increases efficiency. The main principle that I use in my work is not just to give knowledge, but to teach them how to extract and use them. As the main result of my pedagogical activity, I consider the ability and readiness of graduates to bear personal responsibility for their own successful activities.

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