



The Importance of using Pedagogical Information Technologies in Increasing the Efficiency of Biology Lessons

Ravshanova Muhabbat Khamrokulovna, Rakhmonova Rukhsora Bahriddinovna
Associate Professor, Department of Biology Educations, Faculty of Natural Sciences,
Navoi State Pedagogical Institute, Uzbekistan

Sadriddinova Mokhirabonu Akramovna
Student, Samarkand Institute of Economics and Service, Uzbekistan

Annotation: In this article, the importance of using information technologies in biology lessons and increasing students' interest in learning science information about the role of technologies is given.

Keywords: Information and communication technologies, biology, traditional method, education, training, skill, computer, Internet network, educational material.

In the future, students will learn natural sciences. Interest is fading. This is certainly a sad situation, and it can be explained by the use of old visual aids in the course of the lesson, relying on traditional methods, and the fact that the interests of current students are tied to technology.

Teaching using modern information technologies and computer tools is one of the effective ways to increase students' interest in learning natural sciences and to deepen their knowledge of biology. The reason is that information technologies create very favorable conditions for the meaningful organization of the educational process.

Information technology is the process of changing information from one form to another, qualitatively new form, using a set of methods and tools for collecting, processing and transmitting information.

The unique value of information and communication technologies is that they create a bright interactive learning environment at the disposal of teachers and students.

Unlike traditional teaching methods, one of the advantages of information and communication technologies is its versatility. In particular, it creates wide opportunities for effective checking of the acquired knowledge, detailed study of new material, self-control and evaluation, and simultaneous use of several different methods.

Every student has a favorite subject. The difference between liked and disliked science disappears with good computer performance. All ICT-based subjects are favorite for students who are interested in working with computers.

The interestingness of the lesson for students depends on how much information is delivered and what methods are used. In addition, it plays an important role in the proper organization of the lesson based on information technologies.

Several programs have been developed for biology teachers and students. Examples of these are teaching, training, monitoring, electronic literature, virtual laboratory for practical and laboratory



training, etc. Purposeful use of all of them in lessons according to the content of the subject increases the effectiveness of biology lessons.

Literary analysis and methods:

In general schools, students in the 7th grade get acquainted with the science of biology. [3].

In 2007, the manual "Modern information technologies" published by AI Usmanov in the publishing house of the Academy provides information about the specific features of information technologies. [2].

In 2015 Sh. Abdiyev's methodical guide entitled "The role of information technologies in improving the quality of education" provides information about the importance of information technologies in the educational process. [1].

In 2021, the article titled "Role of information technologies in improving the quality of education" published in the scientific journal "Scientific Progress" by MM Muhiddinova provides information about the content of information technologies, its capabilities and specific features. [4].

Methods such as observation, questionnaires and tests, and comparison were used to determine the effectiveness of lessons conducted using information technology in school biology classes.

Discussion: Information and communication technologies have a positive effect not only on students' deep learning, but also on their independent learning, finding and working with sources of knowledge, creative and intellectual thinking.

The following types of methods of using information technology in lessons are distinguished:

Lessons using a computer for demonstration: in this case, there is one computer and a demonstration screen at the teacher's desk.

Lessons using a computer for individual work with students: in this case, the lesson is conducted in a computer room, but not connected to the Internet.

Distance lessons using a computer for individual work with students: the lesson is conducted in a computer room and connected to the Internet.

Biology classes are distinguished from other science laboratories by the complexity of using laboratory equipment.

There are such biological processes and phenomena that it is possible to imagine or observe them, they are extremely difficult to understand, and there is no possibility to see them in the biology room. From this point of view, the use of computer educational materials in biology classes is relevant.

It is important for students to see educational materials and images in order to have a complete idea of biological phenomena and processes. Of course, computer technologies are very useful in this.

It is somewhat difficult for students with visual thinking to master the science of biology. Because they are not able to study the biological phenomenon and understand the process. The development of their abstract and logical thinking goes through images.

Students who think theoretically understand the processes and events that occur in many cases based on their thinking. For them, moving scheme, graphics, video materials, controllable processes on the computer have a positive effect on visual thinking.

Both types of thinking are necessary in the study of biology.



A lesson consisting of a science textbook, a blackboard and a teacher cannot be called a modern lesson. A lesson in the traditional way cannot provide the information that is increasing in the current information age like lessons based on information technologies.

Results:

In order to determine the effectiveness of the use of information and communication technologies in biology classes, trainings were conducted in two different ways in experimental and control classes separated from 7 classes of the school. Biology lessons in experimental classes were conducted on the basis of information technologies (in a room equipped with modern computer equipment). In the control classes, the lessons were conducted in the usual traditional way (oral, question-and-answer, visual pictures, educational tools, using a chalk board).

(Table1)

Selected classes	Experience classes (7”A” 7”V”)	Control classes (7”B”, 7”G”)
Number of students	26 people	26people
Transferred training topics (chapter)	Variety of alive organism	Variety of alive organism
Technologies used in the lesson:	Pedagogical information technologies	Traditional education technology
Equipments used in the class	Computer, internet network-connected electronic touch board (monitor), sound amplifier, etc	Showy pictures, school supplies, chalk blackboard etc.
Type of control	Test	Test

After the experimental classes, the control and experimental classes are tested. The comparable classes were given test questions with the same content on the chapter on the diversity of living organisms. The number of questions given to students was 20, and 40 minutes were allotted for work.

The results obtained in the two selected experimental and control classes were as follows:

(Table2)

T/r	experience	control	experience	control
Separate classes	Class 7-A	Class 7-B	Class 7-V	Class 7-G
Number of students	26	26	26	26
5grades	15	10	13	10
4 grades	8	9	10	8
3 grades	3	7	3	8
2grades	-	-	-	-
Overall result	4.5	4.1	4.4	4.1

Conclusion: Conducting biology lessons using information and communication technologies increases students' attention and interest in science. It is of special importance in the deep understanding of physiological processes in living organisms, in keeping information in memory for a long time, in forming high moral qualities, and in increasing interest in independent learning.

Based on the results of the experiment, it can be said that the exercises conducted in experimental classes using information and communication technologies increased students' attention to the lesson and allowed them to learn the subject more deeply. Despite the fact that the questions



received for control were within the scope of several topics, they had a positive effect on the memory of the topic.

In conclusion, it can be said that the lessons conducted through the use of information and communication technologies in biology classes have a positive effect on students' in-depth knowledge of the subject.

Thus, the use of information technologies in biology classes:

- they study the events that occur in the micro and macro world of the biological system with the help of computer graphics and models;
- they have the opportunity to study physical, chemical and biological processes that occur very slowly or quickly in nature at any time;
- encourages students to work independently, to increase their interest in learning and to read additional literature related to science.
- they will have the opportunity to study biological processes on the basis of computer programs;
- they strengthen their theoretical knowledge of biology through a virtual laboratory;
- students' interest in learning information technologies (informatics science) also increases; - students develop self-control skills;

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