International Journal of Pedagogics
(ISSN – 2771-2281)
VOLUME 03 ISSUE 04 Pages: 56-61
SJIF IMPACT FACTOR (2021: 5. 705) (2022: 5. 705) (2023: 6. 676)
OCLC – 1121105677
Crossref doi Google Scholar WorldCat MENDELEY

Publisher: Oscar Publishing Services

Journal Website: https://theusajournals.com/index.php/ijp

Research Article

PROSPECTS FOR THE USE OF MODERN EDUCATIONAL TECHNOLOGIES IN THE LESSONS "PHYSICS AND BIOLOGY"

Submission Date: April 12, 2023, Accepted Date: April 17, 2023,
Published Date: April 22, 2023
Crossref doi: https://doi.org/10.37547/ijp/Volume03Issue04-10

Barotov M.U.
Associate Professor Of The Department Of Methods Of Teaching Physics, Phd., Tashkent State Pedagogical University, Uzbekistan

Inogamova D.R.
Professor Of The Department Of Clinical Foundations Of Special Pedagogy, Phd., Tashkent State Pedagogical University, Uzbekistan

Razzakov Abdurahman
4th Year Student Of Tashkent State Pedagogical University, Physics And Astronomy Research Methodology, Uzbekistan

ABSTRACT

The article deals with the prospects for the use of modern educational technologies at various stages of the educational process in teaching students as one of the important ways to increase the level of knowledge, academic performance and interest in the subjects of "physics and biology", which are among general education subjects that play an important role in the preparation highly qualified, irradiated personnel that meet the requirements of world standards.

KEYWORDS

Computer, professional competence, cognitive interest, motivation, methodology, virtual program, innovation, modern technologies, website, multimedia, integration.

"The importance of personnel training is expressed in the growing demand for highly qualified, competitive specialists who quickly understand the essence of the problems that have arisen as specialists, who can eliminate lagging behind global social and economic trends, and who will effectively build a democratic legal state."

International Journal of Pedagogics
(ISSN – 2771-2281)
VOLUME 03 ISSUE 04 Pages: 56-61
SJIF IMPACT FACTOR (2021: 5. 705) (2022: 5. 705) (2023: 6. 676)
OCLC – 1121105677
Crossref doi Google Scholar WorldCat MENDELEY
Publisher: Oscar Publishing Services

INTRODUCTION

"Strategy of Actions" adopted in our country, President's order of April 20, 2017 "On measures to further develop the higher education system" No. PQ-2909, 2017. The decree PQ-3151 dated July 27 "On measures to further expand the participation of economic sectors and branches in improving the quality of training of highly educated specialists" and a number of other legal documents set such urgent demands on the education system.

The intended goal is to form an independent and free-thinking person (specialist) who can fulfill tasks, consciously participate in social and political life, actively influence social processes, be responsible for the fate of the country, feel responsible.

METHODOLOGY

At the current stage of economic development, in the transition from the industrial age to the information age, which is characterized by the use of software-controlled equipment, computers and other technical communications in most countries, high demands are placed on the training of workers and specialists. The main indicator of the skill level of a modern specialist is "professional competence", which includes substantive and procedural components that are a connecting chain of knowledge, skills and abilities.

In contrast to the generalized "social order of society" for the training of a specialist, professional competence represents the actual level of personnel training, suggests constant updating of knowledge, acquisition of new information to successfully solve professional problems in specific conditions.

"Professional competence" is the acquisition of knowledge, skills and abilities necessary for professional activity by a specialist and their practical application at a high level. Professional competence does not mean the acquisition of separate knowledge and skills by a specialist, but the acquisition of integrative knowledge and actions in each independent direction.

Approaches to the organization of the educational process are also changing and improving as a result of changes in the demands placed on the education system as a result of the development of society. Nowadays, new approaches to the organization of the educational process are emerging: new teaching methods, non-standard forms of classes, changing programs, textbooks and new modern educational technologies are being created.

So that teaching does not become a boring activity for students, the teacher should be able to arouse students' interest in science in every lesson.

Success in teaching depends in many ways on the teacher's skill (competence) in organizing each training session on the basis of didactic tools in accordance with the requirements of the current developing society, taking into account the individual psychological characteristics of students, using the methods and means of organizing the educational process.

"Physics" is the science of the most general laws of nature, matter, its structure, movement and rules of change. The term "physics" appears for the first time in the works of one of the greatest thinkers of antiquity - Aristotle (Aristotle IV century BC). The edge that separates modern society from the society of past centuries is the product of the practical application of physical discoveries by mankind. In the modern world, the importance of physics is great and extremely high.

International Journal of Pedagogics
(ISSN – 2771-2281)
VOLUME 03 ISSUE 04 Pages: 56-61
SJIF IMPACT FACTOR (2021: 5. 705) (2022: 5. 705) (2023: 6. 676)
OCLC – 1121105677
Crossref doi Google Scholar WorldCat MENDELEY
Publisher: Oscar Publishing Services

Physics has long been classified as the most difficult subject by society. Therefore, the teacher's main task is to use life examples to arouse students' interest in the subject.

"Biology" is the science of living things and their interaction with the environment. It studies all aspects of life, particularly the structure, function, growth, origin, development and distribution of living organisms on Earth. The term "biology" was introduced to the science independently: in 1800 by Friedrich Burdach, Gottfried Reinhold Treviran and in 1802 by Jean-Baptiste Lamarck.

The subjects of "Physics and Biology" form students' abilities to correctly perceive the environment and the world and play an important role in their (person's) formation as a mature person.

Recently, students' interest in studying "physics and biology" is decreasing. And this is very sad. One of the main reasons for this is the use of visual materials that are quite old, monotonous use of textbooks, tables and diagrams.

The problem of developing students' creative abilities is one of the most urgent issues at the moment, its main task is to pay special attention to the education of a person based on a creative approach through each educational topic.

From this perspective, it is understandable why these problems are of concern to researchers of our time and of the past. It is known that the founders of scientific pedagogy, Ya.A.Komensky, I.F.Herbert believed that a schoolchild or a student cannot have full knowledge if he is not interested in the studied subject. The great pedagogue K.D.Ushinsky also emphasized the same approach as "interest is the main internal mechanism of successful education."

Thus, among all motivations of educational activity, the most effective is "cognitive" interest. The word "cognitive" is derived from the English (Latin) word "cognize", which means to know, understand, understand and think, or "cognition" - to know, to understand. On the other hand, cognitive activity is a phenomenon related to a person's direct perception and feeling of reality. Cognitive interests, as one of the types of interests, have a significant impact on the process and learning outcomes.

The main form of cognitive interest is curiosity, which develops interest in the subject. Cognitive interest activates the intellectual activity of students and directs them to solve various intellectual problems. One of the ways to increase students' interest in physics and biology and to deepen their knowledge is to organize lessons using modern educational technologies, especially "computer" technology, at various stages of the educational process.

Recently, a forum dedicated to "Virtual reality and digital technologies" was held in our capital, Tashkent. Leaders and experts of more than 150 educational countries from six countries participated in the "Russia-Uzbekistan" educational forum and discussed new innovations in the field of education. Experts shared their experience in introducing innovative technologies and methods in teaching seven main subjects: chemistry, physics, geography, computer science, biology, and the Russian language. "For example, today we are talking about immersive technologies. These are virtual reality technologies that are planned to be used in the educational process. "3D" glasses allow you to immerse yourself in any didactic environment. For example, when the subject of electricity is taught in physics class, a student can

International Journal of Pedagogics
(ISSN – 2771-2281)
VOLUME 03 ISSUE 04 Pages: 56-61
SJIF IMPACT FACTOR (2021: 5. 705) (2022: 5. 705) (2023: 6. 676)
OCLC – 1121105677
Publisher: Oscar Publishing Services

wear these glasses and observe and learn how electricity flows through wires. In the course of studying biology, a student can observe the movement of blood through blood vessels. This is the technology of the future defined today. Such perspectives unite us with our Uzbek colleagues," said Yulia Komarova, correspondent member of the Russian Academy of Education, professor of the Russian State Pedagogical University named after A.I. Hertsen, in an interview with the "Sputnik" reporter.

Today, modern educational technologies are developing rapidly. Success in education largely depends on the skills of the teacher and taking into account the individual abilities of students. It is necessary to study modern pedagogical technologies and choose technologies based on the activation of students' activities, it is necessary to take into account the principle of awareness and activity of the student in the educational process - that is, the conscious and active acquisition of knowledge, which is one of their main tasks and remains so.

The main importance of modern computer technologies is that they allow creating an incomparably bright multi-sensory interactive learning environment with almost unlimited potential for the teacher and student. Modern educational technologies have many advantages over traditional educational technologies. It makes it possible to present the material in a more illustrative, visual way, to effectively check knowledge and, in addition to all other possibilities, to include various organizational forms in the work of students, and opportunities to perform methodological work in the work of the teacher.

Nowadays, the availability of modern computers in educational institutions and unlimited free access to the "Internet" helps to widely introduce new pedagogical technologies into the educational process, and their effective use makes it possible to rationally organize the educational process and achieve good results.

In teaching "Physics and Biology" subjects, based on their specific characteristics, the use of modern information technologies in the lessons and their use creates a wide range of opportunities for teachers. Information technologies can be used both during classes and in organizing extracurricular activities of students.

In "Physics and Biology" lessons, information technologies can be used in the following directions:

- in developing multimedia scenarios of lessons or scenarios of some parts of lessons;
- preparing didactic materials for classes;
- using ready-made software products;
- searching for necessary information on the "Internet" to prepare for classes and extracurricular activities;
- when working with website materials;
- developing tests using ready-made programs;
- in the use of computer simulators in the organization of knowledge control.

A multimedia projector can be used in the lessons, as a result, all the students in the audience can clearly see the notes related to the topic being taught. Using computer technologies, it is possible to conduct tests on various topics during the academic year. Tasks can be checked immediately in class and individual mistakes made by each student can be identified. According to the results of error analysis, students are given individual homework.

This form facilitates the work of independent, control documents, because all tests are automatically evaluated immediately after completion and allows

International Journal of Pedagogics
(ISSN – 2771-2281)
VOLUME 03 ISSUE 04 Pages: 56-61
SJIF IMPACT FACTOR (2021: 5. 705) (2022: 5. 705) (2023: 6. 676)
OCLC – 1121105677
Crossref doi Google Scholar WorldCat MENDELEY
Publisher: Oscar Publishing Services

you to complete the task at a convenient time, if students have questions, they can ask the teacher. This educational technology is individual in nature, because the student determines the environment in which he should learn, and will be able to return several times to individual lessons, tests, assignments. Such an educational system forces the acquisition of independent study, self-discipline and management skills.

Computer models are easily adapted to the traditional lesson and allow organizing new types of educational activities. As a result, at the stage of knowledge consolidation, students have the opportunity to solve their tasks and check whether they are thinking correctly with the help of the computer.

As a result of creative and research work, students' interest in studying physics and biology will increase significantly and become an additional motivational factor. Therefore, such classes are effective, because students increase their knowledge in the process of independent creative work.

Many students who have computers use educational programs to complete homework, present the results of completed tasks in the classroom, and as a result, it is possible to conduct individual work with students and expand their educational environment. Multimedia presentations should be one of the most effective and innovative forms of presentation. It is recommended to use multimedia presentations at any stage of the lesson, which allows for a deeper and more conscious mastering of the studied material, saves time in the lesson, and quickly combines various educational tools that contribute to its saturation with information.

It is possible to develop and systematize a "media library" of presentation lessons for all sections of the Physics and Biology course. Presentation creates an opportunity to show creativity and individuality. In modern conditions, not only the level of knowledge of students is assessed, but also the ability to work independently, the ability to solve problems from the perspective of various disciplines. One of the ways of working with gifted students is to develop their research skills.

CONCLUSION

Using a personal computer, students get acquainted with and strengthen the skills of physical processes, animation, new innovative technologies, modeling methods, creating visual images, understanding global environmental problems, studying problems from different angles, interdisciplinary integration, creative development of thinking skills, activation of activities in the educational process.

REFERENCES

1. Collection of Laws of the Republic of Uzbekistan, 2017, Chapter 18, Article 313, Chapter 19, Article 335, Chapter 24, Article 490, Chapter 37, Article 982. Collection of Laws of the Republic of Uzbekistan, 2017, No. 30, Article 729.
2. Semenyuk N.V., Romanova N.Yu. «Interactive teaching methods in physics and biology lessons». // Education and training. - 2015 №1, C34-37.
3. Barotov M.U., Tolegenova M.T. «Use of pedagogical technologies in solving physics problems». Scientific journal Herald pedagogy. Nauka i Praktika. (Pedagogy). 2021. B-131-135.
4. Shonin M.Yu. «Cognitive interest in the learning process» // Pedagogy. Moscow. Humanitarian University. 2017. №1, -C.27-28.
5. D.Inogamova, N.Rustamova. «Using interactive teaching methods in the process of self-education

International Journal of Pedagogics
(ISSN – 2771-2281)
VOLUME 03 ISSUE 04 Pages: 56-61
SJIF IMPACT FACTOR (2021: 5. 705) (2022: 5. 705) (2023: 6. 676)
OCLC – 1121105677
Publisher: Oscar Publishing Services

of future teachers». International Journal of Psychosocial Rehabilitation 24(9), 447-454.

6. D.Inogamova, S.Safarova. «Forms of organizing learning activities medical college students in classes medical genetics». International Journal of Early Childhood Special Education (INT-JECSE), ISSN: 1308-5581 Vol 14, Issue 03 2022.
7. Tolipova J.O. «Using pedagogical technologies in biology teaching». I; Part II - T.: Teacher, 2004.
8. Barotov M.U., Inogamova D.R., Hikmatova N.A. «The concept of interfaith integration and its role in the educational process». Eurasian Journal of Mathematical. Theory and Computer Sciences (ISSN: 2181-2861), November 12, 2022, Issue 12.