

## **Algorithm for Teaching Fundamental Subjects Using Innovative Educational Technologies**

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**Abstract:** Using modern educational tools, the essay informs readers about the study of biophysics in the medical field. Information about modern pedagogical methods for teaching biophysics is available in medicine. Today, the university professor is no longer the main source of information when teaching biophysics to medical students; instead, he expresses his views on the need to broaden students' perspectives on education through the use of various information and communication technologies.

**Keywords:** Information technologies in medicine medicine, innovation, information and communication technologies, medical products.

In the modern world, physics and medicine are two scientific fields that support and develop each other. Medical biophysics is recognized as a field of research on which the professional education of future doctors is based in accordance with medical technology [1]. Biophysics is built on the premise of early development.

Due to their applicability to molecular, membrane and cellular interpretations of biological phenomena in living beings, physical and chemical models were defined in terms of physical, chemical and biological patterns in microbes, populations, biocenotic and other systems, and various layers of the biosphere [1].

Biophysics has its own laws and procedures, even if it is in close connection with other natural disciplines.

The development of biophysical theory and its implementation in biology and medicine was influenced by the formation of the theoretical foundations of the biological sciences.

The recognized science of the 20th century is biophysics. However, it cannot be argued that the goals of this discipline were not achieved by the twentieth century. This is evidenced by numerous discoveries and studies carried out in the twentieth century by a large number of scientists. One of these, Maxwell's experiments on color theory, showed that he had distinct hues using a dynamic vertex, and the German physiologist Helmholtz discovered the speed at which nerves pulsate. The Dutch physiologist Einthoven, the founder of electrocardiography, made a heartbeat recorder and first used it for diagnostic purposes. The famous physiologist Sechenov, while studying the dynamics of respiration, discovered patterns of melting of gases in biological solutions. Here are some more examples.

Biophysics has now evolved into fundamental issues such as inheritance and variation, ontogeny, phylogeny, metabolism and the teaching of biophysics using innovative methodologies.

Methods used in biophysics include various optical methods, spectroscopy, electrometric methods, microelectronic methods, chemiluminescence, laser spectroscopy, directed atoms [3].

One of the most important issues in the education system of developed countries is the informatization of education, that is, the use of information technology in the learning process.

Currently, it is known in the country's education system that the creation of an information environment in the innovation sphere is a pressing issue. [4].

Expanding the educational space to meet new requirements is relevant in the context of the growing role of human resources in education as a criterion for political and economic development in the field of education from the point of view of expanding the information space and entering the world community.

For modern teaching specialists, the main task of our time is not only the constant improvement of teacher qualifications, but also psychological, political, economic and information literacy and historical knowledge. Today's teacher must work to improve students' knowledge using innovative pedagogical technologies. In this regard, one of the most commonly used concepts, which we will use later, is innovation. "Innovation" is a new result that is achieved by achieving specific goals [6,7].

Understanding modern innovative pedagogical technologies and the widespread use of knowledge in the field of education, especially in higher educational institutions, is the main condition for increasing the knowledge of students, as well as the qualifications of young specialists. In general, innovation is recognized as a key factor in improving the quality of education.

Efficiency of innovative technologies:

- determines the process of learning innovative
- technologies and innovations in education that are absorbed in everyday life through television or the Internet and open the way to a new world.
- teaches the student to adapt to innovation and intelligence, to explain and express his views and opinions.
- innovative methods are active teaching methods, which means that 80% of theoretical knowledge and 90% of practical knowledge are retained in the memory of students by this method.
- Today the quality of education in every educational institution is unsatisfactory;
- ineffectiveness of the results of reforms in education;
- insignificance when the number of documents increases;
- lack of self-education skills among students;
- There is a lack of overall creativity among students and teachers.

The only way to solve this problem is to introduce the latest innovative approaches in the educational process, encourage each student to learn, and increase his motivation to study and work independently.

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The only way to solve this problem is to introduce the latest innovative approaches and methods into the educational process, stimulate each student to learn, and increase his motivation to study

and work independently. Thanks to new innovative technologies aimed at improving the quality of education in research and analysis, the following conclusions can be drawn:

- improving the quality of student education,
- professional competence, ability to apply various innovative
- technology in the learning process and its results;
- systematic and targeted use of innovative technologies
- in education will allow you to achieve great success;
- introduction of new innovative educational technologies
- often incompatible with modern requirements
- financially
- technical base of each educational institution,
- lack or low level of knowledge of personnel also
- problematic.

The introduction and integration of advanced technologies into the teaching and educational process of educational institutions is necessary to provide the younger generation with quality education. Consequently, the main responsibility of every teacher is to research, implement and successfully apply advanced educational technologies, and keep up with scientific and technological progress.

All teachers are well aware of the importance of creative teaching aids for the introduction of advanced educational technologies into the educational process. One such tool is online education. With the help of e-textbooks, students can improve both their subject knowledge and computer skills. With the help of this textbook, students will be able to work independently and apply their theoretical knowledge in practice, which will enable them to achieve success in their studies through the use of electronic textbooks.

In relation to modern medical higher education, it is important to prepare future specialists who are ready to master new knowledge, accustomed to multifaceted activities, quickly adapt to new requirements, and also prepare them for a competitive environment that fully meets modern requirements [8]. In this regard, it is necessary to improve the quality and level of diagnostic, therapeutic and clinical research conducted by future doctors in a practical laboratory, as well as to improve the quality of professional training in this area.

In the modern world, special medical devices are used in various fields of healthcare (such as therapy, surgery, gynecology, oncology, etc.), so future doctors cannot be treated separately from medical equipment. Awareness of the availability of medical equipment and the correct relationship between medical products and physical factors when carrying out diagnostic and therapeutic measures in the field of medical education, the ability of future doctors to improve their skills, and the ability to work with medical equipment plays an important role in enhancing cognitive functions. It should also be taken into account that each student works with many medical devices based on physical phenomena in medicine (mechanical phenomena, oscillations and currents, molecular, electric field and electric current, magnetic field, electromagnetic oscillations and waves, optics, laser radiation).

The main goal of teaching biophysics in medical schools is to teach future doctors how physiological processes occur in the human body, and to use physical laws and phenomena in medicine, for example, in diagnosis and optimal use of therapy. In this regard, medical students are required to find new ways to learn the characteristics of medical technology and practice in the field of professional training.

The content and purpose of professional education in modern medical universities is to demonstrate the results of the teacher's work, as well as the nature and content of the work and methods of their implementation.

Accordingly, it is necessary to identify indicators characterizing the ability of students to conduct diagnostic, therapeutic and laboratory tests.

- For this purpose, students can choose to use a medical device according to their application;
- Registration and formalization of your influence;
- Know the physical nature of the diagnostic or therapeutic effect of the physical factor used in the medical device;
- Knowledge of the harmful effects of medical equipment on the patient and how to remove it;
- Information regarding the development of modern medical equipment etc. can be obtained through the use of innovative educational technologies and tools.

Currently, modern teaching methods are widely used in the development of students' educational activities. The use of modern teaching methods leads to high efficiency of the educational process. Today, in a number of developed countries, interactive methods are called methods that form the basis of extensive experience in the use of modern pedagogical technologies that guarantee the effectiveness of the educational process [10].

Interactive methods are methods that activate students and encourage independent thinking, with students at the center of the learning process. When using these methods, the teacher encourages the student to actively participate. The student is involved throughout the entire process. The benefits of a person-centered approach include: -более эффективное обучение;

- high level of student motivation;
- taking into account previously acquired knowledge;
- adaptation of reading intensity to the needs of the student;
- support the student's initiative and responsibility;
- practical study;
- creation of conditions for bilateral negotiations.

The interactive method is a joint solution to a task or problem through dialogue, discussion and reflection. The advantage of this method is that all activities teach the student to think independently and prepare him for independent life.

When choosing interactive teaching methods, the purpose of training, the number and capabilities of students, the educational and material conditions of the educational institution, the duration of training, the pedagogical skills of the teacher, etc. are taken into account.

There are many different types of interactive methods, and all of them, like any progressive method, require, first of all, a lot of preparation by the teacher before the lesson.

Interactive training allows you to solve several problems at once. The main thing is to develop students' communication skills, facilitate the establishment of emotional connections between students, ensure the completion of educational tasks, teaching them to work in a team, and listen to the opinions of peers. The main features of an interactive lesson in the organization of these lessons can be better understood by considering some of its differences from a traditional lesson (Table 1) [10].

The differences in the table clearly show the advantages and disadvantages of these two types of training.

Over the past 20 years, new methods and a source of paperless information have rapidly entered into life, as well as into education: the video computer system.

Based on the sources of knowledge currently being studied, methods are divided into 5 groups and include a number of methods:

**1. Practice, experimental method:**

- experimentation, practice;
- Participation in the process of training, labor, production.

**2. Demonstration method:**

- Student observation, internship.

**3. Method of verbal expression:**

- explanation, awareness;
- tell a story;
- exchange of opinions;
- interviews;
- path - instruction, guidance;
- report;
- discussion, debate

**4. Working with the book:**

- read, study, browse quickly;
- Quote and work on it, write a statement;
- Writing an abstract, drawing up a synopsis.

**5. Video method:**

- computer exercises, tests;
- control;
- work on the Internet;
- preparation and screening of educational films;
- calculation of economic indicators on a computer based on programs developed on the basis of information technology, studying the influence of factors on them;
- covers multimedia presentations, presentations and more.

***Advantages of the methods:***

- know certain concepts, have certain skills;
- high level of teacher control over the educational process and learning environment;
- efficient use of time;
- based on accurate scientific knowledge.

**Conclusion.**

**Based on the above, we believe that:**

- ✓ reduction of hours in biology is unacceptable;

- ✓ Biophysics should be integrated with specialized subjects or with other theoretical subjects such as normal anatomy, normal physiology, histology, biomedical physics, pathological anatomy, pathological physiology, etc.
- ✓ teaching the subject must be progressive, high-quality, at a higher, modern level;

The transfer of knowledge must necessarily be carried out with the active participation of students; this requires the creation of clear, unified textbooks, teaching aids, the development of programs, laboratory work and seminars. We receive and perceive 90% of information through vision, so the learning process should be carried out using visual aids.

This means not only a static picture reflecting any physical phenomenon, but also visible in virtual movement. This resource allows teachers to easily and freely teach basic laws, the fundamentals of Information technologies in medicine and also conduct online laboratory work in many sections of the general education program. It is necessary to create an environment (ICT) through the Internet using interactive whiteboards, projectors, computers, portable devices and tablets and smartphones for teaching biophysics. By using an innovative playlist-style curriculum with professionally designed multimedia concepts, visuals and virtual solutions, the learning process can be made clearer and more meaningful.

A complex structure allows you to make a new topic interesting and understandable, perform various practical tasks, consolidate acquired knowledge, systematize various tasks, and student achievements. Also, with illustrations, videos, clear fonts, animated descriptions, and more, you can easily remember the information. Explaining real-life examples and concepts will help make it easy and effective. New models of the above-mentioned education will allow students to participate in the daily educational process if for some reason they are unable to continue their basic education. Of course, modern online education has a great future for most of the younger generation.

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