THE USE OF MODERN PEDAGOGICAL TECHNOLOGIES IN TEACHING BIOPHYSICS BASED ON A CREATIVE APPROACH

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Abstract. *This article reflects on the use of modern technologies in teaching biophysics, the importance of organizing on the basis of a creative approach to organizing a lesson.*
Keywords: *virtual laboratory, creativity, social competence, individual competence, multimedia, traditional teaching.*

Introduction. Biophysics is the science of living matter-based physics. It is at the limit of physical and biological sciences and uses physical, chemical and and mathematical methods in the study of the structure and function of living systems. Since the subject of biophysics are physical and physico-chemical processes in the body, biophysical methods are mainly used in research, which are adapted for Biophysical research. All methods of research should achieve quantitative results. Only then can quantitative correlations of changes in the physical indicators of the living system be found.

In medicine, medicines are scientifically researched using biophysical techniques, explaining the effects of drugs from cell organelles to tissues, organs, to biophysical conjunctions.In pharmacology –the use of the theory and methodology of this science in the production of medicines, whose cost-effective, environmentally friendly and harmful properties are reduced as much as possible, in determining their biological and physical properties, is 70-80%. The use of modern technologies in providing students with knowledge is important in organizing the educational process. Today, modern virtual laboratories and simulators have been created in the teaching of physics and biophysics, from which we can see Phet and Labster.

The virtual laboratory most commonly used in the study of Mathematics , Chemistry , Physics, Biology and science in developed countries is the"PHET"platform created by the University of Colarado. The platform includes about 10,000 simulations of Mathematics, Physics,Biology , Chemistry, and geography to meet international education standards.We are at first dry for this platform *https://phet.colorado.edu /* you will need to read the address.(fig 1)

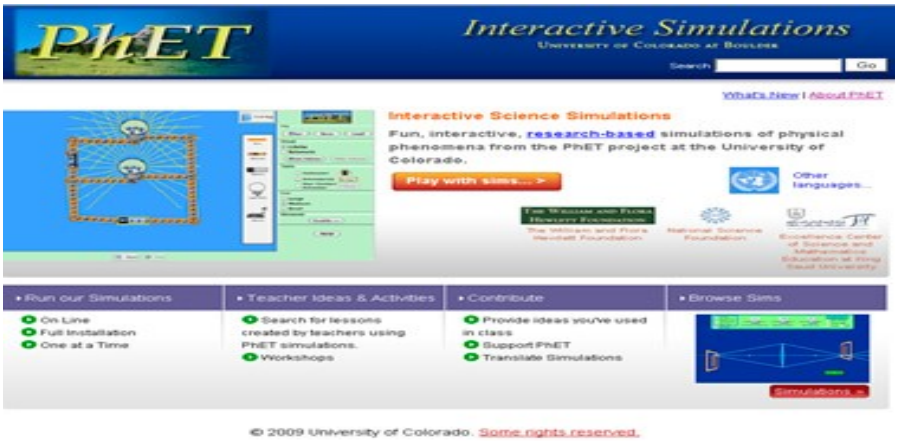

Figure 1. An overview of the PhET program.

English-language simulations of the PHET platform, consisting of 222 topics, have been widely used in some subjects of science, Chemistry, Physics and biology in presidential schools affiliated with presidential educational institutions of the Republic of Uzbekistan.For example, if we consider some simulations related to the chapter "substance and its properties", the first topic in the project of the textbook "Science" of the 6 class offered to us.This chapter largely defines the study of the following concepts.

1.Three states of matter. (Gas, liquid, solid). location of molecules. Gas compression and expansion. Diffusion phenomenon in gases.

2.See in the experiment how metals transfer heat and electricity.

3.The phenomenon of diffusion depends on the type, temperature, volume of substances.

Labster is the world's leading platform for virtual labs and science simulations. Students' learning outcomes improve with Labster because we engage them with game-based elements that inspire them to explore science. Students then apply their knowledge to solve a real world problem within the context of a story. Inside the 3D environment of an immersive simulation, students master urriculum-aligned theory, interact with advanced equipment, learn techniques and perform experiments.[1] (Figure 2)

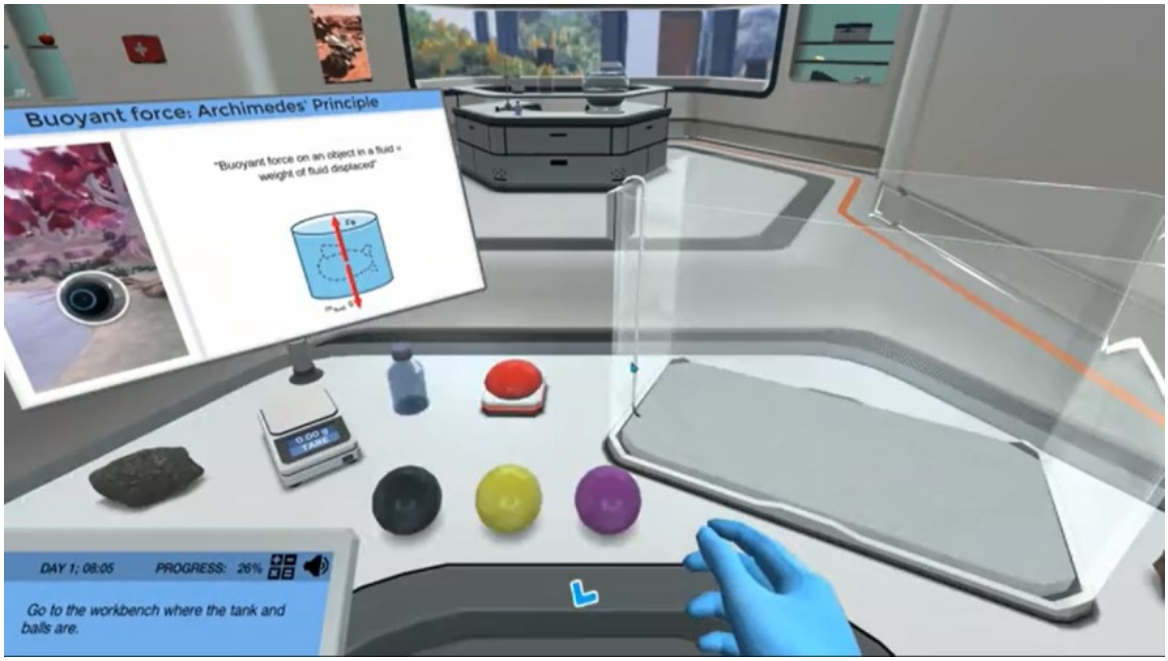

Figure 2. An overview of the Labster virtual laboratory.

Research Methodology. The study used thematic scientific resources, educational and regulatory documents, methods of study and analysis of educational and methodological literature, pedagogical observation, social survey, comparative analysis of student activities, expert assessment, mathematical-statistical processing of research results.

Analysis and results. In order to determine the level of effectiveness of the selected technologies in the teaching of the subject of information technology, various methods were used, such as observation, questioning, testing, a written survey, in order to study the effectiveness of students' work on themselves, a virtual survey was conducted. As a result of the survey, the following data were obtained: the majority of students preferred Labster virtual laboratory, which showed the development of the ability to work on themselves - 55.7%, while 44.3% of the remaining students prefer Phet learning technologies. The results obtained can be seen in this table (Table 1).

The direction in which the experimental testing is carried out	Research groups	Number of students	Rating (85-100)		Rating (70-85)		Rating (55-70)		Rating (0-55)		teaching quality	educational performance
			количество	%	количество	%	количество	%	количество	%	%	%
Faculty of treatment	Experimental group (used Labster virtual laboratory)	20	6	30	10	50	4	20	-	-	80	100
	Experimental group (used Phet technologies)	15	3	20	9	60	2	13,3	1	7,7	80	93,3

Conclusion

In conclusion, this study proves that the use Labster virtual laboratory in education can positively affect the motivation and performance of students. The results show that the use of virtual reality technologies can be used to create an environment conducive to autonomy, which encourages students to take responsibility for their education and actively participate in the learning process.

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