



Studying Molecular Physics

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ABSTRACT

The article discusses the effective teaching of molecular physics, the study using modern pedagogical tools of the effective application of molecular physics in practice. The article will be useful for physicists, teachers and students.

KEYWORDS

Molecular physics, virtual laboratory, information technology, atom, ideal gas laws, molecular kinetic theory, diffusion.

INTRODUCTION

Department of Molecular Physics in Physical Education, the introduction of theoretical and practical experience based on modern pedagogical technologies, computer and information technologies, animation on educational sites on the Internet, the widespread use of virtual laboratory works and multimedia, their introduction into the physics system of academic lyceums. the creation of software pedagogical tools is a modern requirement.

Recommendations of educational scientists to improve the teaching of the Department of Molecular Physics of the General Physics Course play an important role in distance learning, modular pedagogical technologies. In the development of education, non-traditional educational technologies are used in the effective teaching of physics courses.

At the international level, research is being conducted on the effective use of technical means for the development and improvement

of teaching physics, improving knowledge, skills and abilities based on non-traditional learning technologies, taking into account the intellectual potential and individual abilities of students. This approach requires the development of students' ability to assimilate teaching materials based on innovative technologies..

MATERIALS AND METHODS

The science of "molecular physics" studies the phenomena associated with the interaction and collective motion of a large number of particles (molecules, atoms) that are part of macroscopic systems in various states of aggregation. Students will be required to become familiar with the methods and models used in the study of this area of general physics and have sufficient theoretical and practical knowledge and skills to successfully pass certification in their area of specialization in the future. Advances in molecular physics have led to the emergence of many areas of science and technology, such as the explanation and study of atmospheric phenomena, illumination of gas discharge processes, vacuum and cryogenic methods, and the study of cosmosis and capillary processes in living organisms in biology. can be used in the production of parametric compounds and alloys, in thermodynamics, chemistry (gas laws), in the analysis of statistical processes and in many other areas.

The following requirements apply to the knowledge, skills and abilities of students in the subject. Student:

- Although the laws governing atoms and molecules are the laws of quantum mechanics, most of the properties of bodies are associated not with the quantum nature of atoms and molecules, but with an excessive number of atoms and molecules, surface tension forces and capillary phenomena occurring on the

surface of liquids. know the reasons for your arrival;

- the use of the laws of an ideal gas and the equation of state of an ideal gas to calculate the parameters of the state of the gas for a given state, changes in the internal energy of the gas in various processes, the work done, the amount of heat received or transferred, and the heat capacity of the gas. get;
- to know the number or proportion of gas molecules moving in a certain range of speeds, the reasons for migration in gases and liquids, the value of the migration coefficients, the average free path of molecules and the values of the transfer coefficients, the difference between the states of an ideal and real gas. be able to calculate the parameters of the state of a real gas based on the knowledge gained.

When you get acquainted with mechanics and other sections of the first course of physics, when studying the laws of motion of bodies, they are considered as a single integral body. However, an increase in the volume of heated solids, a transition to a liquid state with continued heating, as well as a transition of liquids to a vapor state when heated, leads to the idea that any solid and liquid substance consists of small invisible particles - molecules. All substances in an aggregate state (solid, liquid, gaseous) are composed of these molecules. Converting solids to liquids and gases, converting gases to liquids and solids, and converting liquids to solids or gases support this idea. The smallest particle of a substance that embodies all of its chemical properties is called its molecule.

The science of molecular physics deals with the study of a large number of particles that make up matter, properties associated with the movement of molecules, the transition of matter from one state to another, and their laws.

The idea of the molecular structure of matter dates back to ancient times. But these assumptions were unscientific and unsubstantiated.

It is not a bad idea to divide the introduction of pedagogical technologies into the educational process with the topics of the section into a block called the "teaching element", which can be considered as a small unit of learning. During each lesson at the Department of Molecular Physics, the assimilation of educational elements is carried out sequentially. In the original case, after learning and fixing the training element 1, the result is checked, and the next training element 2 is transmitted. The study of the training element is organized in a similar way.

2. Receive information and information about the training element that must be learned; strengthen them; check assimilation. With insufficient assimilation by students, the previous information is repeated, additions are made to the curriculum, and then the transition to the study of the 3rd element of training is carried out.

According to the ideas of non-traditional learning technologies, information on learning elements is collected, processed, and the results of assimilation are checked. Such an organization of training at the Department of Molecular Physics also increases the possibility of conducting educational work in differentiated groups.

In the section "Molecular Physics" of the physics course, you can introduce simple experiments to introduce the concepts of molecular, molecular kinetic theory - a demonstration of the phenomenon of diffusion. With this understanding, the initial period of teaching the Department of Molecular Physics begins, the stages of which include preparation for the collection of information on the topic, obtaining information from various sources and generalizing information. You can specify

small learning units that make up the stages, i.e. teaching elements.

The learning process at the Department of Molecular Physics is that there are periods in the mastery of students, such as natural and social processes. It is necessary to analyze the beginning of the topic, the content of the text of each topic, the relationship of words and concepts from the point of view of the declared idea, physical phenomenon, definition and process in order to generalize them.

CONCLUSION

When organizing the studies of the of Molecular Physics, the goal, means, and results of the studies are taken into account. The main goal is to play a key role in this, the tools are selected based on this goal, the current results are checked and diagnosed. Molecules, molecular kinetic theory, and a number of experiments in later periods, such as distributing files, telling a story based on an image in an exhibition, extracting light objects from an ebony rod and glass rod rubbed with wool and cloth, and observing the charge through an electroscope (some of them performed by the reader), through repetition, shortcomings in the formation of knowledge and skills are corrected, additions are made, knowledge is strengthened by setting the task of making casings independently, in which repetition is the frequency of training. In accordance with the requirements of pedagogical technology, the teacher at the first stage of training sets four different organizational and managerial goals:

1. Preparing students for the study of a new topic;
2. Organize the study of a new topic.
3. Initial consolidation of a new topic.
4. Testing of learning outcomes.

REFERENCES

1. The concept of creating an information system in health care for the period until 2020 [Electronic resource]. - Access mode: <http://www.minzdravsoc.ru/docs/mzsr/informatics/9>. - Title from the screen.
2. Bakirova, G.Kh. Development psychology and staff motivation. - M.: Unity-Dana, 2009. - 440 p.
3. Information technology in medicine. 2007: Materials of the VIII All-Russia. specialized exhibitions and conf. Moscow, 18-19 oct. 2007 / otv. ed. Yu.Yu. Mukhin. M.: Konsef, 2007. - 114 p.
4. Information technology in medicine. 2009–2010: Thematic scientific collection / ed. G.S. Lebedeva, O. V. Simakova, Yu. Yu. Mukhina. - M: Radiotekhnika, 2010. - 152 p.
5. German experience of reforming healthcare // Issues of economics and management for healthcare leaders. - 2009. - No. 5. - S. 54–55.
6. Atoeva M.F. Frequency of teaching physics. Postgraduate student and applicant. - Moscow, 2010. - No. 6. - S. 41-43.
7. Atoeva MF Electrodynamics of bilimini davriilik tizimi asosida tashkil ethish. Halk ta'limi. - Toshkent, 2012. - No. 1. - B. 52-54.
8. Atoeva M.F. Uzluksiz physicist talim samaradorligi. Uzluksiz talim. - Toshkent, 2012. - No. 3. - B. 19-23.
9. M.F. Atoeva. Interdisciplinary relations in physics course at specialized secondary education. The Way of Science. – Volgograd, 2016. – №9 (31). – P.22-24.
10. M.F. Atoeva. The significance of periodicity at teaching physics. The Way of Science. – Volgograd, 2016. – № 10 (32). – P.62-64.
11. Атоева М.Ф. Эффективность обучения электродинамике на основе технологии периодичности. The Way of Science. – Volgograd, 2016. – № 10 (32). – P.65-66.
12. M.F. Atoeva. Use of Periodicity in Teaching Physics. Eastern European Scientific Journal. – Düsseldorf-Germany, 2017. № 4. –P. 35-39.
13. M.F. Atoeva. Didactic foundations of inter-media relations in the training of university students. International Scientific Journal. Theoretical & Applied Science. p-ISSN: 2308-4944 (print) e-ISSN: 2409-0085 (online). Year: 2020 Issue: 06 Volume: 86, P. 124.
14. M.F. Atoeva, R. Safarova. Pedagogical integration as a means of forming professionally important qualities among students of a medical university. Academicia. ISSN: 2249-7137 Vol. 10, Issue 8, August 2020. Impact Factor: SJIF 2020 = 7.13 ACADEMICIA: An International Multidisciplinary Research Journal <https://saarj.com>.
15. M.F. Atoeva. Pedagogical Tests As An Element Of Types Of Pedagogical Technologies. The American Journal of Applied Sciences, 2(09), (TAJAS) SJIF-5.276 DOI-10.37547/tajas Volume 2 Issue 9, 19.09.2020. ISSN 2689-09. 92 The USA Journals, USA www.usajournalshub.com/index.php/tajas 164-169. Имп.5.2.
16. Farkhodovna, A. M. (2020). The problems of preparing students for the use of school physical experiment in the context of specialized education at secondary schools. European Journal of Research and Reflection in Educational Sciences, 8 (9), 164-167.