USING ELECTRONIC LITERATURES AND PRACTICAL PROGRAMS IN TEACHING CHEMISTRY

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ABSTRACT

This article examines using electronic literatures and practical programs in teaching chemistry in Higher Education. The importance of teaching and learning using electronic textbooks, literature, and practical programs, virtual laboratories in the teaching of chemistry was discussed. you will get information about working with programs. This article talks about facilitating the experimental part of chemistry.

KEY WORDS: chemistry, e-learning course, e- literatures, practical programs, interactive development, individual, lectures, educational information technology, element of galvanic, laboratory work

INTRODUCTION

As we know, Chemistry is a science that studies the structure and transformation of substances. Chemistry, along with other sciences, was created as a product of human activity, it was realized in order to satisfy natural needs, to produce necessary products, to derive from one to another, and, finally, to know the secrets of various phenomena. Chemistry is one of the experimental exact sciences, knowledge and skills are strengthened more in practical training and laboratory training. In many cases, the use of toxic and harmful, flammable and explosive reagents and complex equipment is required for laboratory training.

Reviewing it in a virtual state with the help of a computer before directly starting to perform laboratory work - saves reagents, ensures safety, and increases the efficiency of the educational process. For this reason, many chemical virtual laboratories are currently being developed and used in practical classes to strengthen students' knowledge.

If we analyze the concept of electronic literature, it also called digital literature. It is a genre of literature encompassing works created exclusively on and for digital devices, such as computers, tablets, and mobile phones. A work of electronic literature can be defined as "a construction whose literary aesthetics emerge from computation", "work that could only exist in the space for which it was developed/written/coded—the digital space". It means that these writings can't be easily printed, or can't be printed at all, the reason, elements crucial to the text are unable to be carried over onto a printed version. According to Di Rosario et al. 2021 "Electronic literature is a digital-oriented literature, but the reader should not confuse it with digitized print literature."

Thus, an American postmodern literary critic, N. Katherine Hayles characterizes electronic literature as "'digital born' (..) and (usually) meant to be read on a computer", clarifying that this does not include e-books and digitized print literature.

Electronic literature can understand chemistry notions and develop critical thinking abilities because electronic literacy emphasizes reading, writing, understanding, evaluating, communicating, and using the information in different formats.'

Using a practical program during the teaching chemistry subject, students will do practical activity, it can help structure a lesson and improve engagement and knowledge retention: Many students learn more easily by actually "doing" activities.

LITERATURE REVIEW

In the teaching of chemistry in higher education, the e-learning course is important in the educational process. The structure and method of presentation of educational and methodical materials in electronic form in the teaching of chemistry should vary depending on a specific form of their use. Ultimately, it is necessary to be able to use a large amount of educational and methodological resources, a large number of users, as well as to ensure that an individual approach, active methods of teaching and feedback are supported. From a technological point of view, taking into account the possibilities and needs of student participants in the process of higher education, developing methodically based principles of providing educational and methodological resources and organizing the use of the system of educational and methodological, scientific research and information resources. is one of the main tasks in the direction.

In 2001, Candidate of Pedagogical Sciences Zenkina, Svetlana Viktorovna conducted research about the theme: "Computer programs for educational purposes as a means of increasing the efficiency of chemical education for students of natural sciences". So that, she supported the importance of using electronic textbooks in the teaching of chemistry in his dissertation.

The development of a professionally oriented course in informatics and computer technology for students of natural science specialties of universities was carried out in the works of Prokudin D.E., Simaneva T.A. In the study of the Polish scientist Gmorch Richard, the optimal conditions for the implementation of the methodology for using a computer in the system of professional and methodological training of chemistry teachers, increasing its effectiveness through computerization, are considered.

It should be noted that in the modern education system of England, Germany, the USA and other developed countries there is a significant variety of curricula that take into account the specifics of the state, land, etc. Regional education authorities are endowed with sufficient powers to independently choose certain programs, teaching aids in accordance with the needs of the territory.

Changing the educational paradigm is impossible without the implementation of innovative educational technologies, which have recently been actively developed and introduced into educational practice (Arutyunyan E.B., Guzeev V.V., Dyachenko V.K., Tretyakov P.I., Sennovsky I.B., I.Yu.Sokolova, Erdniev P.M., Erdniev B.P., Catterick D.

From a technological point of view, taking into account the capabilities and needs of all participants of the educational process, developing methodologically based principles of providing educational and methodological resources and organizing the use of the system of educational and methodological, scientific research and information resources, in this direction is one of the main tasks.

RESULT AND DISCUSSION

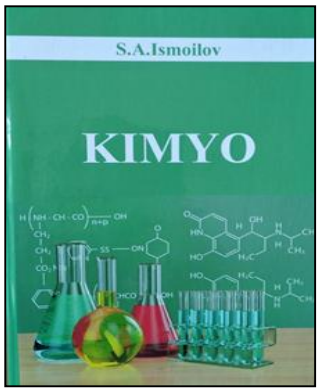
In addition to lectures, the use of a computer program in teaching chemistry is effective in consolidating knowledge. At an intermediate stage between obtaining new information (lecture) and knowledge control (survey, test), it is necessary to organize the work of students in mastering the material of the topic, based on self-control. One of the effective methods is training testing. This activity involves the individual work of each student with a computer program proposed by the teacher. The student gets the opportunity to work at a pace that is convenient for him and pay special attention to those issues of the topic that cause difficulties for him. Training testing programs are not made for knowledge control (they do not provide for the accumulation of points and getting a mark), but for the purpose of detailed study, mastering the topic and preparing for the final knowledge control. The testing program in organic chemistry (L.A. Deineka) is used during the final classes with students studying in the specialty "Nursing".

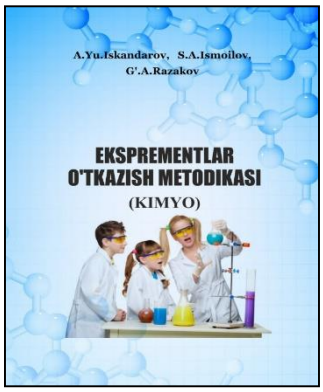
The first experience of creating our own computer programs was implemented in training and testing programs created jointly with students of the Faculty of Natural sciences. These programs allow you to quickly conduct a survey during practical classes with students of the Natural sciences, Chemisty. The "Structure of the Atom" program is a dynamic model illustrating the structure of the atomic nucleus, indicating the number of protons and neutrons, and electrons revolving around the nucleus. The model "Electronic configurations of atoms" is an interactive Periodic system of chemical elements, which allows you to get acquainted with the structure of the electron shells of atoms.

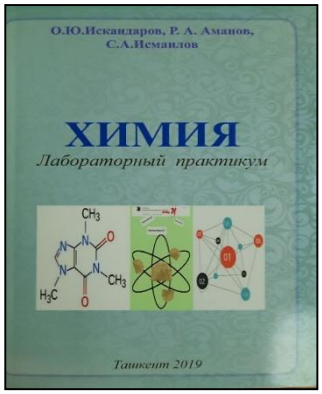
In the lower right corner of the description there are buttons for switching from training to test mode. By default, the coloring of the cells of the periodic system characterizes the metallic / non-metallic properties of the elements.

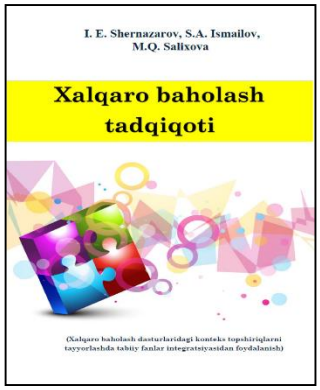
In addition, students of the graduate course undergo pedagogical practice, and students of the lower course undergo educational practice. Scientific-research and scientific-methodical researches in the departments "Chemical modification of natural and synthetic fibers" and "Methodology of teaching chemistry using innovative and informational technologies in secondary-special and higher educational institutions" by professors-teachers is being conducted. "Chemistry" electronic textbook for students of academic lyceum and vocational college, "General chemistry" textbook for bachelors of chemistry teaching methodology, "Laboratory exercises in organic chemistry", "Laboratory training" Several methodological manuals such as "Basics of Chemistry" and "Electrochemistry", "Chemistry of Complex Compounds", "Polymer Chemistry" have been published for students of the "Natural science faculty of methods of teaching chemistry department. In addition, about 40 scientific articles and theses have been published by professors and teachers of the department in international and republican conference materials collections and scientific journals.

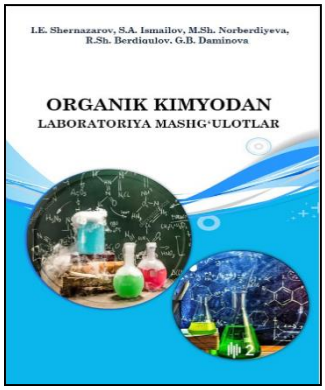
Everywhere young learners can find electronic sources about teaching chemistry subject, during the analyzes we discuss following electronic literatures and practical programs:











CONCLUSION

Nowadays, we must see a specialist with a higher education as a person who freely navigates the global information space, has the necessary knowledge and skills to search, process and store information using modern information technologies, computer communications and systems. The development and perfection of the methods and means of modern information technologies create real opportunities for their use in the education system in order to develop the creative abilities of a person in the process of his education. It is with new information technologies that we today associate the real possibilities of building an open educational system that allows each person to choose their own learning path; a fundamental change in the technology of obtaining new knowledge through a more efficient organization of the educational process based on such an important didactic property of a computer as the individualization of the educational process while maintaining its integrity due to programmability and dynamic adaptation of curricula.

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