



Application of innovative technologies in teaching chemistry in higher education

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ABSTRACT

This article focuses on the teaching of chemistry in higher education institutions of the country and develops developments to address the existing problems.

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Oliy ta'limda kimyo fanini o'qitishda innovatsion texnologiyalarni qo'llash

Kalit so'zlar:

innovatsiya,
kimyo,
yangi texnologik usullar,
smart,
smart education,
smart board,
smartfonlar,
mobil telefonlar,
planshetlar,
IT-texnologiyalari.

ANNOTATSIYA

Ushbu maqola mamlakatimiz oily o'quv yurtlarida kimyo fanini o'qitishga qaratilgan bo'lib, mavjud muammolarni hal qilish uchun ishlanmalarni ishlab chiqadi.

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Применение инновационных технологий в преподавании химии в высшем образовании

АННОТАЦИЯ

Ключевые слова:

инновации,
химия,
новые
технологические методы,
smart,
smart education,
smart board,
смартфоны,
мобильные телефоны,
планшеты,
IT-технологии.

Данная статья посвящена преподаванию химии в высших учебных заведениях страны и развивает разработки, направленные на решение существующих проблем.

Introduction. Teaching chemistry in higher education institutions, as one of the most important factors in improving the quality of education, is inextricably linked with a high level of knowledge, skills and qualifications of each specialist. The rapid development of this sector is one of the urgent tasks of today. Innovative activity in education began to be applied in the second half of the twentieth century. The term innovation began to be used in 1911 by the American economist I. Schumpeter. The term innovation was coined in 1930 by J. Schumpeter and G. Mensh. The widespread use of innovation terms has led to profound structural changes in education. Through this, the teaching of chemistry in higher education leads to the emergence of several innovative processes.

Main part. As a result of innovative changes in the formation of methods of teaching chemistry, an innovative society and, through it, innovative activity is formed. Innovative activity is aimed at the implementation of innovations, the introduction of innovations in the field of accelerated education, the formation of an innovative education system. A number of scientists were engaged in the field of innovative pedagogy, including A.A. Arlamov, N.F. Vishnyakova, M.M. Potashnik, M.M. Friedman, N.R. Yusufbekov can be included. Among foreign scientists, R. Adam, E. Rodgers, A. King, B. Schneider, L. Anderson, L. Brigs, H. Barnet and others have conducted research in the field of innovative pedagogy [1]. There are several challenges in higher education in the development of innovative activities. In the field of education it will be possible to divide into two areas: traditional and innovative.

Results and discussion. When analyzing the problems encountered in the field of teaching chemistry in higher education institutions, the problem of studying and solving some problems was raised. Under the influence of the above problems, the innovations applied in the teaching of chemistry in higher education are moving in different directions. They include the use of new innovative technologies in education, the development and implementation of new technological teaching methods, the use of new teaching methods, the expansion of independent teaching of chemistry, the introduction of information technology in higher education to expand the world of teacher thinking. it is necessary to improve the system of teaching chemistry through the use of innovative educational systems of relations.

At the same time in higher education Smart technology is a modern approach, new innovative technologies aimed at determining the optimal or convenient time for the tasks to be performed, regulating the use of resources and performing specific tasks, ensuring the active participation of all participants. The term smart was first used in 1954 by Peter Drucker. The word smart has the following meanings when spread [5]. In the modern world, smart technology is widely used in many areas of urban management, transport, communications, education and higher education. IT technologies are encompassing all aspects of human society. The intensive development of such information technologies has led to the definition of traditional learning outcomes and the development of e-learning and the emergence of Smart education. Smart-educational concepts are being developed on the basis of smart technologies. The solution of technological, pedagogical, organizational tasks through these concepts means that innovations are applied in higher education. Under the influence of adaptation of such technologies there are processes of growth of intellectual technologies, high level of education, specialization of innovations. And the introduction of Smart Board, smartphones, mobile phones, tablets and other Smart-learning devices into higher education has begun a profound structural change in traditional education.

№	Principles	Activity
1.	Through the use of information technology, learning tasks and educational programs are implemented.	Growth of information flow in any type of education, materials related to the learning process, specialization of education.
2.	Research in higher education, separate grouping of students in independent study	This principle is to train specialists with a creative approach to education, to conduct research on independent information.
3.	Development of mobile communications, educational information in the educational process	Distance education (LMS) systems do not limit higher education. In the process of training, the level of professional training and retraining will move to new platforms.
4.	The student deeply studies the activities of production organizations and enterprises in the professional society	In a professional community, customers train professionals. IT technologies give students new opportunities.
5.	Forms individual learning through the development of in-depth learning.	In the development of information systems, the education system should establish professional activity, the introduction of digital technologies in higher education.
6.	Diversity of education	Develops a wide variety of education through digital technologies.

Figure 1. Basic principles of smart education

Develops the activities of higher education institutions through high-tech, organizational and new technologies based on these principles. To increase the effectiveness of distance learning, pedagogical and information technologies are achieved through the application of international standards. Develops horizontal connections in higher education.

Conclusions. In conclusion, it can be said that Uzbekistan has achieved a high level of quality through the widespread use of innovative new technologies in higher education. The development of innovative technologies in higher education leads to the widespread development of material, economic, pedagogical principles.

The development of IT technologies will be based on the principle of “Teacher-student-computer” based on the widespread use of pedagogical technologies, humanitarian ideas and the requirements for teachers;

On the basis of information technology, quality technologies are selected in the teaching of chemistry in higher education, traditional education is preserved, research work is applied in the field of technology;

An innovative concept on the information activity of chemistry teaching in higher education will be developed.

Methodological systems of innovative activity are developed, educational processes are solved on the basis of independent learning in solving educational problems on methods and technologies.

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