THE IMPORTANCE OF INFORMATION AND COMMUNICATION TECHNOLOGIES IN THE TRAINING OF FUTURE ENGINEERS

Chorshanbiev Zafar Esanpulatovich
Karshi Engineering Economics Institute,
Professor of the Department of Higher Mathematics

Absamatov Zuxriddin Axmad ugli
Karshi Engineering Economics Institute,
Senior Lecturer of the Department of Higher Mathematics

A B S T R A C T	K E Y W O R D S
this article highlights the state of training future engineers, the existing problems studied, Information Theory, Research on the introduction of information and communication technologies in education, the use of intellectual and communicative abilities, the peculiarities of modern multimedia complexes, the promising opportunities for improving the effectiveness of the study of technological processes, as well as the levels of ensuring computer literacy of.	future engineer, trend, ICT, intelligence, computer education, computer modeling, technological processes, computer literacy.

Introduction

Redistribution of classroom hours between traditional and new subjects in technical higher education institutions, increasing the share of independent work in the set of subject hours, maintaining and improving the quality of teaching in the conditions of the development of distance and open teaching of information technology in technical systems. requires the development, justification and application of pedagogical literature, including literature based on modern computer technologies.

Main Part

 In addition to the requirements for the modernization of teaching, conditioned by modern trends in the development of education, the need to ensure the essence and methodological consistency of their study is relevant when considering technological phenomena, processes and laws in a technical higher education institution in general and special courses of Sciences. Analysis of the educational process in a technical higher education institution in terms of students ' concepts about technological processes shows that they do not use their fundamental technological basis sufficiently when considering these processes in the practical aspect of universal and special Sciences. The formalized expression of educational material, characteristic of both natural and scientific disciplines and those that develop its state, and the algorithm of educational and scientific activities of students, leads to the fact that

understanding the technological essence of science allows its place to absorb ready-made knowledge and acquire a limited amount of skills. At the same time, modern trends in the development of the teaching of natural and scientific sciences are aimed at the formation of skills for the use of thinking, intellectual and communicative abilities in a new way in order to successfully organize professional and social activities in multi-factor situations that are continuously changing in students [4].

In Uzbekistan, our scientists carried out scientific research in this direction, in particular, research on the introduction of information and communication technologies in education A.A. Abduqadirov, A.Kh. Abdullaev, M. Aripov, U. Begimkulov, N.A It was carried out by Muslimov, S. Rahmonkulova, R.H. Hamdamov and U. Yuldashev.

Information theory, which has developed in recent years, shows thinking as a formalized process of information processing. N.M. Amosov gives the following definition of the concept of intelligence within the framework of information theory: "Intelligence is defined as a set of tools and methods of managing complex systems, and is considered to be a performance guided by their models and criteria of management optimality" [3]. It should be noted here that Amosov, giving this definition, divides intelligence into human-artificial types, therefore, at the beginning of the path to creating artificial intelligence, the set of tools, methods and models becomes almost unlimited.

As M.A. Fayziev noted in his research, "Computer simulation models made it possible for students to work on educational materials in different modes, students can choose interactive options when learning educational materials" [4].

As Kh.Sh. Kadirov noted in his research, "Works on the creation and introduction of a detailed training system for future teachers to use information and communication technologies in their professional activities require a systematic approach and the cooperation of all departments involved in education. is enough" [5].

As I.A. Eshmamatov cited in his research, "The effective course of any process, the successful organization of activities depends on the factors affecting it. Accordingly, there are factors that affect the effective development of information and communication competence of pedagogues of higher education institutions during the period of research.

Computer modeling technical higher education institution, which is the organizing part and instrument of Computer Education, maintains promising opportunities for improving the effectiveness of the study of technological processes in courses of general and special Sciences. These opportunities include:

- showability, variativeness, interactivity of the educational material to be presented, increasing the volume of information and, through this, reducing the amount of hours of audience training;

- conducting experimental activities that are complicated, impossible or dangerous in educational laboratory conditions, ensuring a high number and variativeness of experiments;

- to carry out the modernization of laboratory research, obtained according to the actual technological processes through computer-made models for the visual demonstration of technological processes;

- increase the efficiency of independent work of students by giving the opportunity to choose and implement the individual's own direction in independent thinking, corresponding to the level of knowledge of students, temperament and thinking characteristics;

- an important form of information presentation in students-the development of skills for independent work with a model, the development of skills for applying a mathematical model in planning,

conducting and interpreting the learning experience obtained according to the original, the ability to evaluate the field of Model application;

- creating conditions for the implementation of an individual-oriented approach to teaching;

- to pay more attention to the rationalization of student and pedagogical labor and the creative aspect of educational research by transmitting the functions that accounting and verification take a lot of time;

The implementation of the opportunities listed above is especially relevant in the field of studying new ideas of production. Because first of all, they are part of a series of technological processes that cannot be directly observed, and the understanding of the essence of these phenomena occurs on the basis of model representations about them. Secondly, technological processes take place under conditions when the safety rules of experiments on objects are strictly followed, and do not imply the possibility of experimentally checking their assumptions by the student. At the same time, this opportunity, like the student's right to make mistakes, should have an informal nature of interest in the subject of study, and the study itself should be valid in this sense in order to become closer to scientific creativity. Thirdly, in technological processes, mathematical calculations are voluminous, requiring differential and integral calculation, operator methods, free possession of correct and reversible changes of functions and originals, leading to the fact that mathematical calculations in the performance of these calculations are prioritized over technical conclusions, and in experimental activities-difficulties in assessing the data to be obtained. Fourth, all these difficulties are complicated in the implementation of pedagogical guidelines for the study of processes that go at the objects of technological processes.

In these conditions, the requirements for the goals and methods of teaching in general and teaching natural and scientific subjects in particular are changing. Speaking about the development trends of technological education in the world, V.A.Aleshkevich notes that continuous updating and"... the multidimensional labor market determines the need for the development of non-standard thinking abilities in young specialists, requires the presence of intellectual and communicative abilities that allow you to successfully organize activities not only in a narrow professional, but also in a wide range of social, economic and cultural spheres. It is according to such an opinion that in terms of technological education a.S.Kondratev also forbids:"at present, we must achieve that for students there should be a list of inventions of science, not a set of formulas, but a way of thinking in the process of studying the surrounding world."

The development of new teaching technologies should be aimed, including the formation of emotional motives and preferences of students, but within the framework of this research, we will focus more on the development of their intellectual abilities.

In accordance with this theory, thinking is often conceived as an activity for solving issues, while one of the most important expressions of thinking activity is the formation of a goal or the setting of a goal. In this case, the conditions for which the goal is set are often not fully determined, so thinking is not just a process of solving issues, but also a process of its formation at the same time in accordance with the ratio of values of various objects and phenomena.

The natural and scientific Sciences of higher educational institutions must be adapted to the assimilation of scientific materials by students. It cannot be the same because of the principled differences between thinking in the process of scientific understanding and thought-provoking experimental data in the process of studying science. Students, on the other hand, should be

encouraged in thinking activities by formulas, descriptions, schemes and graphs. This makes it possible to produce a realistic picture of technological processes in production in students.

To ensure the computer literacy of specialists and pedagogical staff, four levels of their training are offered.

The first level should provide the initial level of computer literacy of the teacher. It provides for understanding the principles of computer operation and knowledge of the launch of computer programs; assessment of pedagogical software tools; knowledge of various methods of using a computer in the educational process; knowledge of knowledge and resources relevant to training.

The second level provides for knowledge of various technical means of teaching; knowledge of the terminology and base components of the computer system; knowledge of systems for processing texts; knowledge of the role of computers in the field of selected science and strategies for their use; understanding the impact of computers on society; understanding the impact of computers on the teaching process.

The third level is intended for a prospect where there is a possibility of comprehensive training, which provides for:

- knowledge of working with programs in a language environment that the computer understands;

- knowledge of the nature of modeling systems and the possibilities of their application;

- choosing a suitable computer, organizing a local network and knowing how to connect to it;

The fourth level is intended for deep learning, which is carried out in the presence of the following knowledge:

- knowledge of the structure of the teaching process using the computer environment;

- knowledge of the structure of the curriculum and the changes required for the effective application of computers as a means of solving issues in the relevant field;

- knowledge of author's languages or programming environments.

In conclusion, the acquisition of methods of using information and communication systems of technological process management in the training of students of engineering directions is considered as an important competence. That is why in this, taking into account the consistent and continuous interaction from modern computer systems and software, the study assumes the improvement of plans and programs. Using the results of the analysis of socio-political factors for the formation of training goals and objectives, it can be concluded that modern approaches in educational theory and practice in the training of future engineers are the main source of the development of society, its educational and professional competence, the direction of values that are the inner core of its personal culture, its moral and volitional qualities.

Foydalanilgan adabiyotlar roʻyxati

1. Чоршанбиев, З. Э. (2021). Дифференцированное обучение студентов на занятиях высшей математики в техническом вузе. *Academy*, (4 (67)), 42-47.

2. Shadiev, R., Khimmataliev, D., Fayzullaev, R., & Chorshanbiev, Z. (2020). Professional culture of the future teacher of vocational education: a communicative aspect. *Journal of Critical Reviews*, *7*(4), 399-400.

3. Oʻzbekiston Respublikasi Prezidentining 2019 yil 11 iyuldagi PQ-4391 sonli "Oliy va oʻrta maxsus taʼlim tizimiga boshqaruvning yangi tamoyillarini joriy etish chora-tadbirlari toʻgʻrisida" gi Qarori.

4. Амосов Н. М. Алгоритмы разума. Киев: Наук. Думка, 1979. - 246с.

5. Esanpulatovich, Z. C. (2021). BASES OF USING PROJECT TECHNOLOGY IN THE CONDITIONS OF DIFFERENTIATION OF EDUCATION. *Berlin Studies Transnational Journal of Science and Humanities*, *1*(1.5 Pedagogical sciences).

6. Chorshanbiyev, Z. E. (2019). The pedagogical potential of e-learning environments to improve mathematical and scientific training of engineering personnel. *European Journal of Research and Reflection in Educational Sciences Vol*, *7*(1).

7. Rakhimov, O. D., & Chorshanbiev, Z. E. (2021). PROSPECTS FOR THE APPLICATION OF DIGITAL TECHNOLOGIES IN TRAINING THE" LABOR PROTECTION" COURSE. *European Journal of Life Safety and Stability (2660-9630)*, *2*, 34-40.

8. ERGASHEV, Nuriddin. "The analysis of the use of classes in C++ visual programming in solving the specialty issues of technical specialties." *http://science. nuu. uz/uzmu. php*.

9. Ergashev, Nuriddin. "RAQAMLI TEXNOLOGIYALAR MUHITIDA TA'LIMNI RIVOJLANTIRISHNING YETAKCHI TENDENSIYALARI VA ISTIQBOLLARI." *International Scientific and Practical Conference on Algorithms and Current Problems of Programming*. 2023.

10. Gayratovich, Ergashev Nuriddin. "A MODEL OF THE STRUCTURAL STRUCTURE OF PEDAGOGICAL STRUCTURING OF EDUCATION IN THE CONTEXT OF DIGITAL TECHNOLOGIES." *American Journal of Pedagogical and Educational Research* 13 (2023): 64-69.

11. Gayratovich, Ergashev Nuriddin, and Kholikulov Bekzod Jovliyevich. "Theory and Methodology of Software Modeling Using the Web Platform." *Eurasian Scientific Herald* 16 (2023): 59-63.