

# Innovative Technologies in Teaching Computer Science

**Kholiyarova Feruza Khafizovna**

Samarkand Branch of the Tashkent University of Information  
Technologies named after Muhammad al - Khwarizmi, Uzbekistan

E-mail: [feruza1377@mail.ru](mailto:feruza1377@mail.ru)

## **Abstract:**

*The article discusses the main methods of innovative technology and their effective use in teaching students computer science at school.*

**Keywords:** *innovative technology, methods and forms of innovative technology, efficiency, computer science.*

## **Introduction**

The use of innovative technologies in the educational process has led to the emergence of new educational methods and forms of teaching computer science. Due to the significant restructuring of the content of education at present with the introduction of new innovative technologies, the approach to organizing educational activities has changed, and the need to activate the student's cognitive activity has increased.

The introduction of new innovative technologies allows for more efficient organization of the educational process, providing students with new tools, methods and sources for obtaining educational material. To improve the educational activities

of students using innovative technologies, basic knowledge of modern information technologies, the technical capabilities of communication technologies is necessary, and one must be able to use information resources, be able to work independently using modern computer technology, as well as act actively, make decisions, and flexibly adapt to changing living conditions. The introduction of innovative technologies into the educational environment, based on the dialectical unity of methodology and means of their implementation, significantly increases the effectiveness of educational activities due to the automation of information processing and calculations, which forms an understanding of the essence of educational material.[1]

Innovative technologies have an integrating property in relation to all other technologies, which new technologies, methods and teaching methods are developed so that the student can achieve success in life, using all his capabilities.

In connection with scientific and technical progress and the development of information and communication technology, more attention has now been paid to the problems of teaching computer science. Because technical sciences, among which are rapidly developing and have great practical significance, such as information technology, electronics, etc. A modern computer science teacher needs tools not only for presenting interesting lessons, but also powerful tools for composing such lessons, as well as tools for monitoring students' knowledge, tracking academic performance and problem areas in learning.

In the process of studying computer science using innovative technologies, the computer acts not only as a source of information, but also as a means of learning and a powerful tool that allows you to activate the process of cognitive activity, promoting the development of flexibility of thinking and the formation of the ability to navigate and adapt in your activities.

Therefore, the computer science teacher must set a goal - to provide positive motivation for learning, to activate the cognitive activity of students, and to achieve this goal, in addition to mastering knowledge, it is no less important to master the techniques with which you can receive, process and use new information.

At present, in the teaching of computer science, modern innovative technologies are used to develop the cognitive and creative activity of students, which improve the quality of education, effectively use study time and reduce the part of the reproductive activity of students by reducing time.[2]

Innovative technologies in the study of computer science are aimed at individualization, distance and mobility of the educational process, regardless of the age of students and level of knowledge, and a large number of innovative technology methods are presented that can be used in lessons during the learning process. The

methodology for using innovative technologies in the study of computer science involves:

- improving the learning management system at various stages of educational activities;
- strengthening the motivation for learning; □ improving the quality of teaching and education, which will increase the information culture of students;
- improving the level of training of personnel in the field of modern information technologies;
- mastering the skills of working with various types of information using a computer and other information technology tools, organizing one's own information activities and planning their results;
- development of cognitive interests, intellectual and creative abilities by means of information technology;
- demonstration of the possibilities of modern information technology in the educational process.

One of the methods of active teaching of computer science using innovative technologies is problem-based learning, project method, interactive technologies, business games, integrated lessons, etc.

In a business game, several players interact, making decisions in a situation that simulates a real one, and the teacher directs the game, analyzes and evaluates the players' actions. Each participant plays a certain role, makes decisions and can quickly see the result, thus gaining his own experience.

Business games in the study of computer science provide targeted activity of students' mental processes: stimulate thinking when using problem situations, ensure memorization of the main points in classes, arouse interest in the discipline being studied and develop the need for independent acquisition of knowledge.

To increase motivation in the educational process, the use of the project method is one of the most successful methods in teaching computer science.

The project method is a flexible model for organizing the educational process, focused on the self-realization of students through the development of their intellectual and physical capabilities, creative abilities in the process of studying educational material.

When studying computer science, students complete various projects, such as creating crosswords, cartoons, educational and developmental games, etc. Classes using interactive technologies, including multimedia presentations, allow students to visually absorb educational material.

Multimedia presentations in teaching computer science provide: intensification of learning, student activity, individualization of learning, development of independence, increased motivation, etc.

Thus, the organization of teaching computer science based on innovative technologies ensures a higher quality of students' knowledge due to clear planning of lessons and increased motivation in studying the content of the subject.[3,4]

In the process of studying computer science, students develop the ability to work with information to complete a given task, master software at a higher level, learn to research, put forward their ideas, and analyze educational material.

As the authors of this article, we consider it appropriate to offer the following conclusions and recommendations to future teachers:

- Although the principles of using innovative pedagogical technologies in teaching have been analyzed and practical recommendations have been developed, their use has not been sufficiently implemented in all systems of our education system. The role of using pedagogical technologies in education is immeasurable, and the scope of research in this area should be further expanded.

- The appropriate, targeted, and effective use of innovative technologies by teachers in the process of education and upbringing creates broad opportunities for developing in learners the ability to engage in dialogue, work in a team, think logically, synthesize and analyze existing ideas, and find logical connections between different points of view.

## References:

- [1] M. Henderson and G. Romeo, *Teaching and Digital Technologies: Big Issues and Critical Questions*. Cambridge: Cambridge University Press, 2015.
- [2] A. Normurodov and A. O'rishov, "Comparative analysis of technologies for the development of optical networks," *InterConf*, pp. 685–688, 2021.
- [3] A. N. Urishev, "GPON systems in the modern world," *Scientific Progress*, vol. 2, no. 1, pp. 78–85, 2021.
- [4] F. N. Farhodjonovna, "Spiritual education of youth in the context of globalization," *World of Science and Education*, no. 1(9), 2017.
- [5] S. Selwyn, *Education and Technology: Key Issues and Debates*, 2nd ed. London: Bloomsbury Academic, 2016.
- [6] A. Anderson, "Technology integration and higher-order learning outcomes: A comparison of GPON and legacy networks," *Journal of Information Technology Education*, vol. 18, pp. 22–34, 2019.
- [7] R. D. Zheng, "Digital literacy in the classroom: Impacts on student engagement," *Computers & Education*, vol. 144, pp. 103704, 2020.

- [8] I. W. Waits and J. Lewis, "Distance Education at Postsecondary Education Institutions: 2006–2007," *National Center for Education Statistics*, U.S. Department of Education, 2008.
- [9] M. Morze, O. Buinytska, and R. Vasiutina, "Formation of digital competence of future teachers," *Information Technologies and Learning Tools*, vol. 68, no. 6, pp. 122–134, 2018.
- [10] J. Blackmore, "Virtual spaces and real learning: The evolving role of digital technologies in education," *Australian Educational Researcher*, vol. 40, no. 2, pp. 225–236, 2013.
- [11] A. N. Safarov, "Implementation of information technology in higher education of Uzbekistan: Challenges and opportunities," *Central Asian Journal of Education*, vol. 3, no. 2, pp. 87–95, 2021.
- [12] M. M. Hossain, "Spiritual values in education: A key to peace and development," *Journal of Educational and Social Research*, vol. 6, no. 3, pp. 23–31, 2016.
- [13] S. S. Hasanov and Z. Zokirova, "Digital pedagogical platforms: Opportunities and limitations for teacher training," *Pedagogical Research*, vol. 5, no. 4, pp. 212–219, 2020.
- [14] S. Akhmedov, "A review of modern fiber-optic communication systems: Emphasis on GPON and FTTx," *Journal of Telecommunications and Information Technology*, no. 2, pp. 44–51, 2019.
- [15] L. T. Williams and H. L. Smith, "Spiritual development and academic performance: A correlational study," *Journal of Youth and Theology*, vol. 15, no. 2, pp. 120–133, 2017.
- 1.