

## Information Technologies in a Modern School

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**Abstract:** Any educational institution chooses for itself valuable reference points of development. The result of the quality of education largely depends on what position the educational institution will take in relation to schoolchildren. For us, the development of a Specialized Boarding school-lyceum "Information technologies" is the development of our students, ensuring their success in life. To achieve these goals in the implementation of the educational program of the school-lyceum staff there was a need to study and implement modern pedagogical technologies and innovative forms of education. The school-lyceum carries out activity in the STEAM direction with training in three languages with profound studying of computer science, mathematics, physics and other disciplines of applied character. The concept of the boarding school incorporates the best international experience in the construction of an educational model for the creation of information and educational space, favorable for the harmonious formation and development of the individual capable of self-development, self-determination and self-realization in the modern information society. The article reveals the peculiarities of studying in a Specialized Boarding school –lyceum "Information technologies", the ultimate goal of which is the formation of the basic, social, profile competence of the student.

**Keywords:** Education, School, Information technology, Robotics, STEAM

### Introduction

Modern reforms in the country, the rapid informatization of the society and dynamics are fundamentally changing the education requirements.

Today, the level of education of a person directly affects his ability to work, competitiveness. Innovation is the secret to success, according to the Organization for economic cooperation and development. The modern period of development of education in the Republic of Kazakhstan is marked by large - scale pedagogical innovations aimed at improving the quality of education-it is the updated content of education, new author programs, the development of innovative educational projects, the emergence of new types of educational institutions.

The adoption of the state program" Digital Kazakhstan " actualizes educational decisions on the implementation of the provisions of the Program in school education by qualitative changes in its information technology content.

In the era of information globalization and rapid evolution of technologies are increasingly in demand profession related to engineering, science, IT-technologies, etc. Sharp increase in the needs of society in terms of forced industrial-innovative development in people with non-standard thinking, making new content in the industrial and social life, able to set and solve new problems related to the future, and led to a qualitative leap in the development and implementation of information and communication technologies in practice.

It is this context of the development of the education system that has become a challenge for the opening of an innovative school in our region - Specialized boarding school-lyceum "Information technologies".

School-Lyceum "Information technologies" was founded in September 2017, is located in the city of Karaganda is a large industrial, scientific and cultural center of Kazakhstan. The city has large coal mining enterprises, machine-building, metal-working and food processing enterprises, a large number of transport and communication enterprises.

The mission of the school is aimed at promoting the development of engineering education in Kazakhstan through the introduction of innovative educational system model STEAM-direction focused on the best Kazakh traditions, international experience and practice in the development and use of information technology in teaching. The overall objective is to develop students' individual, creative and research skills through active learning and the use of information and communication technologies and robotics.

Education at school is conducted from the 7th grade in three languages: state, Russian and English. The educational process is built in combination of traditional values with new ideas of development. The basic values are tolerance, harmonious development of the child's personality, the basis of life is healthy lifestyle, family values, understanding the value of education.

Today, at school, education is focused on the model of education associated with the standards adopted in the modern business world - functional literacy, competence, knowledge of several languages, computer skills and as the ultimate goal – access to the international educational space. The main criterion of success of educational activity of school is achievement of the level of education corresponding to the international standards for its continuation in any country of the world.

The implementation of the school model is carried out in accordance with the curriculum, ensuring compliance with the requirements of state educational standards and maintaining the variable component: grade 7 – personality-oriented education through research activities of a research nature, aimed at the development of creative abilities, grades 8-9 – individual trajectory of development of students through socially significant projects, grades 10-11-practice – oriented education through project activities and technology startups.

Given the nature of the school is the basis for the organization of educational process based on the following competencies: grades 7-9 – the basic skills of working with digital information, methods of its production, transmission and storage; laid the foundations of programming, robotics and 3D simulation; beginning of work in complex software environments; grades 10-11 – formed in-depth skills in the software environment, the ability to independently develop software code; the skills of modeling and design of robotics and engineering systems, active use of modern information and communication technologies are formed.

Taking into account the direction of profile of Lyceum education of information culture of Lyceum students is a task not only teachers of Informatics, but also teachers – subjects, as information culture today becomes a component of the General culture of the person. ICT is integrated into all teacher training programs. In Lyceum the single information and educational space by the maximum computerization and internetization of all directions of educational process is created.

We live today in a world of high technology, but in many countries of the world there is a shortage of scientific and technical personnel. That is why the so-called STEAM education is widely spread. The need for the formation of the STEAM-educational environment in Kazakhstan is relevant not less than in other countries. This approach is successfully implemented in innovative schools of higher level of Mathematics, Computer science and Natural Sciences in Kazakhstan. In order to implement the educational policy in the field of STEM education, it is planned to strengthen the elements of this approach in educational programs aimed at the development of functional literacy of students in mastering modern technologies, skills of research and project work. In this regard, within the framework of updating the content of education, the implementation of early education in the basics of Natural Sciences and information literacy has begun. Taking into account the possibilities of the Lyceum, several approaches have been chosen::

- integration of Computer science with all disciplines;
- implementation of a research project for students in the framework of existing STEAM-objects for achieving the most significant results;
- STEAM as an addition to the school curriculum..

The Lyceum has a laboratory of design, robotics and artificial intelligence. The main activities of the laboratory - software development, design and programming of Android robots, the development of mobile robots.

The course of robotics is a series of courses on robotics, which is training in the Assembly and programming of various robots (Mbot, AirBlock, UnoCraft) and the creation of robots on Board Arduino.



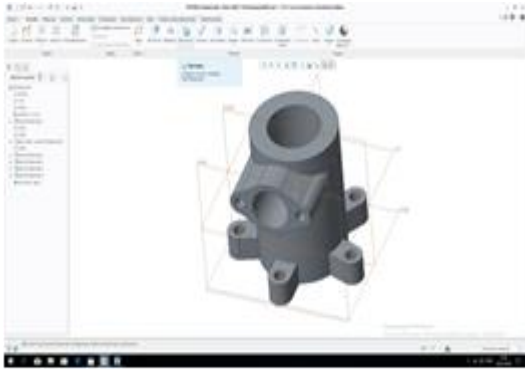
With block programming, students create their own interactive programs, animations, games, music applications and creative projects - and share them with all Internet users.



The program "Learning Arduino using The C++ programming language" taught students to design electronic devices based on the Arduino microcontroller platform, which helps to acquire engineering skills and has a scientific and technical orientation.



The school participates in the educational project "Engineers of the future". School students realize their development in the program Creoparametrix, making different models on a 3D printer. Students learn engineering 3D modeling and prototyping.



The course "IT Essentials" Cisco Networking Academy helps to learn how to assemble and configure a computer, it is safe to connect it to the network, to take the first step towards a career in it. It develops critical thinking and problem-solving skills using real-world equipment and the cisco packet tracer network configuration simulation tool.

The acquired skills students can demonstrate at various competitions and contests: the international festival of robotics "Roboland" (Karaganda), the international Olympiad INFOMATRIX (Almaty, Suleyman Demirel University), the world Olympiad in robotics (WRO).

## Conclusion

Based on the mission and goals of our Lyceum, it is important for us to create an information and educational space that is favorable for the harmonious formation and development of a person capable of self-development, self-determination and self-realization in the modern information society; mastering technological and engineering skills that open up opportunities for innovative solutions to modern problems; increasing the motivation of students to choose engineering professions and create a system of continuous training of future qualified engineering personnel with academic knowledge and professional competencies for the development of priority areas of national science and technology, the ultimate goal of which is the formation of the basic, social, profile competence of the student.

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