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REGIONAL SCHOOL INDUSTRIAL PARK

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Abstract

Staffing of industrial enterprises that produce machine-building products is a real problem. The solution to this problem is possible on the basis of the development of the principles of continuing education. The problem of vocational guidance of school leavers occupies a special place. Elimination of the deficit of engineering personnel of enterprises and firms at the expense of preferences of graduates of general education schools can be achieved, in particular, by creating "School Industrial Park". The publication outlines the basic principles of the creation of a system of "School Industrial Park" and the features of methodological support for them.

Keywords: *engineering, industrial park, staffing of engineering production, vocational guidance.*

Introduction

Industrial production is the basis for the economic development of the state. To ensure this development, it is necessary to provide personnel for enterprises that meet the requirements for achieving the level of economic and social development of the region in which these enterprises operate, as well as improving the quality of training specialists for high-tech industries and developing the ability to achieve concrete practical results in their work [1].

A new quality of training specialists for high-tech industries is needed, which will ensure competition between the country and the most developed industrial countries in the world [2,3].

Problem

To develop the motivation of schoolchildren to study the subjects of natural science and physics and mathematics cycles, to develop scientific, technical and engineering abilities, to form innovative behavior of students, it is necessary:

- ensure the creation of conditions for the development of a system of vocational guidance in the school;
- to develop mechanisms for carrying out interaction with universities and the personnel department of city-forming enterprises;

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- build management activities for optimal and effective interaction with social partners;
- to develop network cooperation of teachers of the school with representatives of higher education institutions for the implementation of educational activities; including in the remote form [4,5];
- to introduce new elements of the content of education and upbringing, pedagogical technologies and educational and laboratory complexes;
- to raise the qualification of school employees on the problem of providing enterprises with engineering personnel [7];
- to form a new style of engineering thinking for schoolchildren who are capable of systemic projective, predictive, scenario formats of knowledge and action based on the analysis of trends in scientific and technological development [6];
- use innovative methods aimed at creating an educational environment in which important guidelines for building individual educational paths and programs are formed, determining the contours of educational scenarios for schoolchildren, and professional self-determination [8].

To successfully solve these problems, it is necessary to have a different quality of training specialists for high-tech industries that will be able to compete with the most developed industrial countries in the world. Overcoming this situation will help the implementation of the project “School Industrial Park”.

Methodology

This project is aimed at implementing the principle of continuous technical and natural science education, from school to production. The main tasks that will be solved during the implementation of this project are: improving the quality of training specialists for high-tech industries and developing the ability to achieve concrete practical results in their work.

The concept defines the strategy and prospects for the development of education in the field of technology and technical creativity in the unity of goals, objectives and means to achieve them on the basis of analysis of the features of technological development as a socio-economic and cultural phenomenon.

The purpose of the project: implementation through the program of pedagogical, methodological, material and technical support of the educational environment “School Industrial Park” for the development of the motivation of schoolchildren to study subjects of natural and physical and mathematical cycles, the development of scientific and technical and engineering capabilities, the formation of innovative behavior of students.

Tasks:

- Ensure the creation of conditions for the development of a system of vocational guidance in the school;
- Develop mechanisms for engaging with higher education institutions and the personnel department of the city’s city-forming enterprise;
- Implement the model of the School Industrial Park in the system of additional education of the school together with the social partners;

- Build management activities for optimal and effective interaction with social partners;
- Develop network cooperation between school teachers and representatives of higher education institutions for educational activities of the school Industrial Park; including in the remote form;
- Introduce new elements of the content of education and upbringing, pedagogical technologies and educational and laboratory complexes;
- Improve the qualification of school staff on the problem of the project being implemented;
- To form a new style of engineering thinking for schoolchildren who are capable of systemic projective, predictive, scenario formats of knowledge and action based on the analysis of trends in scientific and technological development;

Use innovative methods aimed at creating an educational environment in which important guidelines for building individual educational trajectories and programs are formed, determining the contours of educational scenarios of schoolchildren, professional self-determination.

The main idea is the continuity of the formation of engineering thinking through all subjects, courses and activities, from the first grade to the end of the school, in the senior classes, through the individual educational trajectories of students. The "School Industrial Park" environment is open and accessible to every student. Every child can realize his opportunities in any direction of activity - in technical creativity, art design, marketing, advertising, design, robotics, modeling and prototyping, microelectronics, etc.

The implementation of the innovative project program is carried out through the use of new, modern teaching technologies in the classroom (E-learning, inverted class, semantic reading, case studies, problem training, project activities, etc.), a variety of extracurricular activities, diving, distance learning, networking, visiting and vacation schools, educational excursions, days of science, weeks of high technology and technological entrepreneurship, etc.).

Pedagogical tasks:

The educational work solves the following pedagogical tasks:

- To familiarize the students with the main directions of the history of the development of technical ideas, devices and systems in various branches of science and technology, with the legal and regulatory framework for the protection of intellectual property;
- To teach correctly use (verbally and in writing) scientific and technical terminology, periodical literature, formulate definitions of technical concepts, make out a scientific report, abstract, information, scientific article;
- To teach to apply methods of searching for new technical solutions using modern computer technology;
- To identify and develop the natural talents and abilities of students who show an increased interest in science, technology, technical creativity and educational research activities;
- To cultivate interest in the peculiarities of life and creativity of the authors of the Great Discoveries and Great Technical Facilities of the past and present;

- To form the trainees' motivation for mastering the experience of entrepreneurial activity.

As the industrial park is a new form of territorial integration of science, education and production in the form of a union of scientific organizations, design bureaus, educational institutions, manufacturing enterprises or their divisions. Thus, the school Industrial Park in our understanding is an environment that is created in an educational institution specifically to translate the theoretical knowledge of students into a real product, into production, into a product.

Discussion

For ourselves, we determined the productivity of the activity in 4 directions:

1. Mastering information and communication technologies for processing and processing information.
2. Vocational guidance - assistance in the selection of technical professions.
3. Applied use of technical means in life, the ability to apply them in life.
4. Multidimensional activity, based on the integration of humanitarian and technical knowledge.

The opportunity to realize this idea we began to look for in the system of connections and relations. We list the main types of activity that are combined in special spaces - techno parks - to support innovation as realized ideas:

- Research (including interdisciplinary); examination of perspective developments;
- Inventive activities and design, development of prototypes and technologies, marketing and sales;
- Support for the commercialization of developments;
- Management and technical entrepreneurship;
- Principles of creating an industrial park:
- The provision of the opportunity to participate in creative productive work during off-hour time;
- Development of modern technologies for the development and improvement of technical devices and systems in the interests of man, society and the state;
- Providing the opportunity to learn the experience of providing services to the population at an affordable market price;
- Self-financing to work independently and for a long time;
- Cooperation and trust in the business community;
- Independence and civic engagement.

The main idea is to bring high business standards among learners in the most convenient and unobtrusive way for them. Structure of the content of the activity:

- Realization of the project "School Industrial Park";
- Characteristics of available material resources;
- Small Academy of Sciences on the scientific and industrial profile;
- Center for Personnel Development of the Novokramatorsk Machine-Building Plant;

- Personnel services of enterprises;
- Regional and city employment services;
- Center for extracurricular activities;
- Station of Young technicians.

The main activities used in the technology park to support innovation as realized ideas: research (including interdisciplinary); inventive activity and design, development of prototypes and technologies, production, marketing, management.

These are different activities and spaces: training and research, modeling and design, production and interaction with business, presentation of achievements.

To implement the model of a school Industrial Park it is necessary: methodological support in the development and creation of a program for the implementation of the project "School Industrial Park" assistance in the preparation of the regulatory framework, an advanced training program for educators engaged in the implementation of the model of a school Industrial Park, acquisition of modern technical equipment.

The structure of the maintenance of the "Industrial Park" consists of an educational and production unit, a block of educational and methodical support and a block of administration.

The learning process is based on the information and cognitive method, with the gradual orientation of students from acquaintance with new technologies to participate in the process of developing new work algorithms, creating separate modules, simple systems using the equipment of laboratories of the School Industrial Park. As part of the training, students receive the skills of engineering and research thinking.

At the first stage, the cognitive-gaming component dominates. Children get acquainted with the basics of various modern technologies and choose those in which they will be further developed.

At the second stage, educational and practical work is envisaged - studying the principles of operation of various devices, familiarity with the algorithms of their actions.

At the final stage, students develop algorithms for the operation of systems, modules, blocks, mechanisms, applying theoretical and practical knowledge obtained during classes in the Industrial Park and at school.

In the future, on the basis of the School Industrial Park, it is possible to organize technical Olympiads of various levels.

The creation of laboratories facilitates the innovation and renewal of the content of the work of associations, the development of modular educational programs of a new generation, the acquisition by the students and teachers of the functional skill of research as a universal way of mastering reality, developing the ability to research the type of thinking, and activating one's personal position on the basis of acquiring new knowledge.

Expected result: experience of real adaptation of students in a market economy, mastering of modern methods of searching for new technical solutions, dynamic development of social relations in productive technical creativity in the field of science, technology and production.

This is a new direction, which we develop jointly by various educational and scientific institutions and enterprises. This is the desire of teachers to encourage children to invent, rationalize. That is, work on projects that will allow children to prove themselves as novice

inventors, logically consciously present their invention. The task of teachers of the Industrial Park is to help children in their work.

The Industrial Park was created in order to support the active part of children and youth, to enable them to develop, help, find grants and investors for their work. One of the important parts of our work is the vocational guidance of children. That in the future they would choose a profession related to technology: engineers-designers, engineers-technologists.

Classes in the Industrial Park give students the opportunity not only to get acquainted with the achievements of high technologies, but also to take a real part in the project activity, ie, to acquire new skills and skills in the technology sectors that determine the development of Kramatorsk and the region for the long term. All this they do not receive in the conditions of the existing in school class-lesson system.

Industrial Park allows:

- Significantly intensify and accelerate the process of modernization of the education system;
- Serve as a growth point for the development of a new education system, which includes, along with the CRC and innovative educational institutions of a new type;
- Promptly and flexibly react to new demands of the society and provide ultimately a new level of education, one of the important features of which will be a competence approach to the knowledge gained;
- Will give an opportunity at an early stage to select the talented and talented children, but also to involve them in creative work and thereby become a smithy for the preparation of qualified engineering and research staff to ensure long-term projects for the development of the country's economy;
- To unite intellectual, technical, financial resources for the accelerated decision of a problem of increase of level and quality of technical education of young generation in short terms.

Practical significance The practical significance lies in the fact that Industrial Park will provide:

- Successful modeling of the development of the technosphere in the general educational institution of additional education, in accordance with its goals and objectives;
- Will expand the modern views of students on the content, forms and methods of implementing scientific and technological progress;
- Will open perspective directions of the content of educational activity on the basis of the interrelation between basic and additional education of children, in the sphere of science, technology and technical creativity;
- Will increase the level of design and technological activities of students and thereby contribute to raising their level of readiness for social and professional self-determination in the field of technology and production.

The associations of the "School Industrial Park" implement programs of additional education in various areas of creative activity: artistic and aesthetic education (artistic design, technical design, arts and crafts, etc.); technical creativity; 3D-modeling and prototyping (CAD / CAM technology); microelectronics and radio electronics; robotics; design and

technological activities in various areas of scientific and technological progress (nano-technologies, modern information technologies, video editors and video editing, etc.); formation of the scientific picture of the world.

The implementation of supplementary education programs is carried out through the use of various forms of activities (training sessions, debates, seminars, workshops, conferences, exhibitions of technical creativity, demonstrations by masters in technical sports, competitions, festivals, concerts, etc.) that contribute to strengthening the basic component of general education, development of sociocultural and spiritual and moral values and practical training of students for life and professional careers in conditions with scientific and methodological support of teachers. Purpose: to provide the educational process with effective means of supporting the education, upbringing and development of students. Tasks: creation and updating of the data bank on information and technological support of the main activities of the institution using ICT; systematization of software and methodological psychological-didactic support, control of the results of pedagogical activity (training, education, development); systematization of monitoring results and means of regulatory support for management activities.

Conclusion

The School Industrial Park will raise the profile system of technical education to a new level, encourage students to engage in creative activity, and also bring the teaching staff of secondary specialized educational institutions and higher educational institutions to the sphere of additional school education. The global aims of creating the School Industrial Park of the park are to develop, to help young people see their future and promote their achievements.

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