Human Capacity of Regional Economy's Reindustrialization

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Abstract. The aim of the article is to develop a program of regional human capacity, which is considered as the basis for effective reindustrialization of the region's economy. The study analyzed existing organizational and methodological approaches developing human capacities, focused on education and training of highly professional, creative and creatively-oriented personnel for the innovative regional economy. The article presents the consideration of education system as a key and fundamental element forming and developing region's human capacities. The paper identifies the main directions to develop a system of preschool, school, secondary special and higher education, aimed at creating the necessary conditions forming and developing human resources that can ensure effective reindustrialization of the region's economy.

1. Introduction

Currently, one of the main factors of sustainable development of the state is human potential. Human development is considered as the basis for the effective reindustrialization of region's economy [1]. In this regard, the adoption of a human development program aimed at ensuring the reindustrialization of region's economy is a priority for the authorities to improve quality of life and a model of sustainable region's socio-economic development [2].

The aim of the study is to design a program developing region's human resources, which is considered as the basis for effective reindustrialization of the region's economy.

2. Method of research

We used general theoretical methods of cognition as formalization, theoretical analysis, concretization, comparative and logical analysis. The initial data of the study are works of domestic and foreign researchers devoted to the problems of human development and education system.

3. Research results

Nowadays, measurement and assessment of the level developing human capacity in modern international practice is based on "Human development human development index". It includes three main areas of human development: long and healthy life, quality education and a decent standard of living.

Education system is considered as the basis of human development which provides education and trains highly professional, creative and creatively-oriented personnel. If the region has an efficient education system, we have a possibility of forming the necessary personnel potential which is capable to provide effective reindustrialization of the regional economy. Consequently, one of the most

important guidelines of the human development program is to determine the main priorities for improving integrated education system operating in the region. In this regard, it seems appropriate to study issues devoted to the definition of scientific and practical recommendations for improving preschool, school, secondary special and higher education aimed at ensuring the regional innovative development[3].

Preschool education is one of the most important and basic elements of education system. The main task of preschool education is to create the necessary conditions to form a harmonious and creative personality. The main priorities of preschool education system are the following:

1. Creating an educational environment for the development of children's creativity.

Children are innate innovators with vivid imagination and unique manner of self-expression. Children have the ability to see things in a new perspective, identify a problem, and come up with an unusual and effective solution. [4] Every child is born creative, but this ability can be limited. If children do not have creative way of thinking and their creative energy, they need opportunities and materials to gain creative experience. In this regard, preschool institutions and kindergartens should use curriculums with a variety of creative activities aimed at development of the right hemisphere of child's brain.

Arts such as drawing, painting and construction are closely related to children's visual perception and cognitive development. Developing artistically, children acquire skills of visual art, they develop their skills from combining simple shapes and figures to conscious modeling. Music education is an integral part of the creative curriculum for preschool institutions. Through musical creativity, children develop self-control and concentration, as well as a sense of teamwork. Children are always active. Dance classes are a good way to turn their energy into something creative and rhythmic. Dance moves help children develop imagination and motor skills. Theatrical activity is important part of children’s creative potential [5].

To develop creative abilities and children’s creative activity it is necessary to form a psychological atmosphere of freedom and security, so preschool institutions should be focused on creating a comfortable psychological environment aimed at each individual pupil [6].

2. Development of creative imagination and children’s creative activity using advanced pedagogical technologies.

Today, in many preschool educational institutions in their process of training activities use both classical (considering illustrations, conversations, reading literature, role-playing games) and innovative methods and technologies (TRIZ, methods of Nikitin, Voskobovich, Mikhailova, Schedrovitsky) aimed at finding solutions to problem situations, stimulating cognitive activity of children and accustoming them to independent search for solutions to the problem [7, 8]. Games with elements of advanced technologies in preschool will create prerequisites for development of children’s technical thinking.

3. Development of engineering thinking in preschool children.

The modern state policy of education defines engineering education and technical creativity of children and youth as a priority direction. It determines the success of Russian advanced technological development.

Design classes are an effective method to develop engineering thinking in preschool children. There are light construction, construction of large modules, paper and natural material in this method. A variety of designers (LEGO, TICO, Kuboro) allows you to engage with children of all ages, different areas. It includes design, mechanics, electronics, automation, programming and technical design [9, 10].

One of the topical directions to develop children’s engineering thinking is implementation of STEM-projects, formation of an accessible engineering education in the region, which involves the creation of regional innovation infrastructure equipped with affordable modern equipment that supports scientific, technical and engineering component of students (children's technology parks, scientific and educational laboratories) [11].

4. Involvement of parents to develop creative thinking children.

A very important role for developing creative thinking children and activity is a family, the authority of parents and family relations. Joint creative activity is one of the most productive ways of spending time for adult and a child. Children's abilities to a certain type of activity depend on the atmosphere of enthusiasm in a family. If the family is interested in technology, children also show a tendency to design activities.

The next element of education system is school education. The main directions for developing the school system are the following:

1. Integration of general education programs and programs of additional education which allows to independently attend any interesting classes without leaving the school. It will create favorable conditions organizing of informative, rich and useful leisure for children. This direction will be especially relevant for families, if parents work until late at night and do not have the opportunity to drive children to various classes and centers of additional education.

2. Creating conditions to develop the engineering education. It archived by organization of engineering schools and technological classes, schools and children's technology parks.

3. Implementation of the National technology initiative (NTI) in schools. According to NTI, initiative students will be able to get acquainted with advanced technologies of NTI ("Person", "Information", "Infrastructure", "Technology", "Production" and "Ecology"). For example, the area of "person" teaches students about bionic technologies, preventive medicine. The direction of "Information" reveals the block chain, big data, artificial intelligence, quantum technology. In the lesson "Technology" get information about the development of unmanned vehicles and machine vision [12].

4. Organization of vacation profile shifts at schools, aimed at creating conditions for active involvement of students in research activities of natural science, engineering and technology areas.

5. Development of social entrepreneurship with a business community to organize thematic areas where students could try themselves in a simulation or game forms of profession.

The third element of education system is secondary special and secondary vocational education. The main directions for developing the level of education are the following:

1. Development of social partnership between educational institutions and industry.

Nowadays, a common form of social partnership between educational institutions and enterprises is training by the dual education method. Dual education method includes concentrated theoretical training in educational institutions and concentrated practical training at enterprises. Dual education involves real inclusion of strategic partners (employers) in developing of a new content of vocational education based on professional standards and competencies.

2. Popularization of working professions.

The main measures promoting increase of specialties prestige of working and change of the skeptical attitude in the Russian society to working professions are the following:

- active use of social advertising opportunities;
- organization of specialized field trips, allowing students to personally get acquainted with prospects of employment in chosen specialty and working conditions at enterprises;
- application of social measures to support graduates of secondary vocational education institutions who have chosen work in their profile specialty;
- providing job security to graduates who have received secondary special and secondary vocational education;
- development and implementation of attractive mortgage programs for young workers;
- promotion, support and recognition of labour dynasties;
- active involvement of students to take part in Federal and regional competitions "best in profession", as well as the WorldSkills Russia championship, etc. [13, 14, 15].

The next element of education system is higher education. Priority directions developing higher education are the following:

1. Development of cooperation between universities and industry, contributing to economic progress and forming innovative and competitive region's economy.

At present, domestic and foreign studies, pay attention to issues of cooperation between universities and industry, it is considered as one of the main sources of knowledge production and new technological achievements, as a catalyst for socio-economic development of the region [16, 17]. At the same time, the key factor determining the probability of successful use and transformation of interaction potential between universities and industrial enterprises into innovative products, services or processes is the level of absorbing potential. [18]. One of the indicators characterizing effectiveness of scientific and technical cooperation between universities and industrial enterprises can be such indicators as the level of patent generation, the time gap between research activities and industrialization of joint technological achievements.

Scientific and technical cooperation between universities and industrial enterprises can have two directions. On the one hand, industrial enterprises that do not have scientific and technical potential and equipment of their production base can come out with appropriate requests to universities to carry out the fundamental and/or applied scientific research. On the other hand, sites of industrial enterprises, equipped with the required technologies and equipment for research, can act as a scientific and technological base for research conducted under the leadership of representatives of universities.

The state plays important role in ensuring the development of scientific and technical cooperation between universities and industrial enterprises. At the same time, the state should also act as a state entrepreneur and venture capitalist, with its traditional regulatory activities.

The central element in ensuring effective cooperation between universities and industrial enterprises is to identify effective channels of interaction between parties. It includes mechanisms of knowledge transfer, ranging from scientific publications and published reports, public conferences and meetings, licensing and patenting to contract research and consultations [19, 20]. Also important role in promoting cooperation between universities and enterprises is played by their geographical proximity, which greatly facilitates formal contacts between participants.

In addition to direct scientific and technical cooperation, integration between universities and industrial enterprises can be focused on training of talented young people with all competencies to ensure the effective development of cooperating enterprises. Enterprises provide educational institutions with the basis for practical training, training, production and pre-diploma practices, where students will be able to consolidate theoretical knowledges. To improve the level of employers' skills at enterprises we should involve leading enterprises in educational activities. Also it will enable master new complex sections of studied disciplines. It will allow representatives of enterprises to select the most distinguished and talented students as potential candidates for future employment in organizations.

2. The use of blockchain technology in education.

Blockchain is the main technology used to create cryptocurrencies such as bitcoin. The blockchain is the technology of a distributed ledger that uses cryptographic methods and algorithms for distributed consensus, to create functions of decentralization, traceability, immutability, and currency properties [20].

Blockchain technology can store a complete, reliable set of records of educational activities, including processes and results in formal and informal learning methods. In addition, blockchain technologies can be used to protect intellectual property created in the process of educational and research activities of teachers by recording data in a blockchain network. The main advantage of this technology is its openness, boundless and unlimited nature, allowing everyone to have equal access to technologies and network [21].

4. Conclusion

Thus, the study found out that the main direction of human potential is development of education system. To ensure the effective reindustrialization of region's economy we suggested the following recommendations:

1) to develop preschool education it is advisable to ensure the creation of a favorable environment aimed at development of creativity, creative imagination and creative activity of children, active involvement of parents improving creative and engineering thinking of children;

2) to improve the school system of education, it is necessary, firstly, to ensure the integration of general education programs and programs of additional children's education, secondly, to create conditions for active involvement of students in engineering and research activities, thirdly, to ensure the development of social entrepreneurship with business communities, thematic platforms;

3) to improve the efficiency of secondary special system and secondary vocational education, it is necessary to actively develop the technology of dual education and implement a set of systemic measures aimed at promoting working professions among young people;

4) it is necessary to ensure the development of effective cooperation between universities and industry, as well as using the main opportunities of blockchain technology in education.

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