

## **Centres of advanced professional training of personnel as the leaders of technologization: a case study of Russian regions**

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**Abstract** This paper examines the essence and structure of the introduction of modern educational technologies and world standards in the process of training highly qualified workers. Our globalised economy is calling for highly professional staff that knows where to search for information and how to process it. However, even more importantly is to adapt to the ever-changing working environment and the constant flow of new information and data.

In this paper, we focus on the issues of advanced training techniques as well as training of the highly qualified personnel. Moreover, we discuss the role and the importance of WorldSkills in the high-quality training of high-quality professionals worldwide in general and in Russian Federation in particular. In addition, the paper assesses the technology of professional training according to the WorldSkills standards.

Our results might help the stakeholders and policy makers to identify the main areas of work for the design of leading centres for advanced vocational training with a particular focus on the less-developed regions. These centres might be of a special importance for the professional training in the regions of the Russian Federation and might also provide new boosts for the Russian economy via increasing its competitiveness and innovativeness.

### **1 Introduction**

In the Russian Federation there is an oversupply of people with higher professional education (Korotkov 2006). This can be viewed as the socialist heritage and can be found in other former socialist countries (see e.g. Cabelkova et al. 2015; Gulicheva and Osipova 2017). According to OECD (2019), the country boasts one of the highest tertiary attainment rates in the world being over 60 % for the age group of 25-34 years which is quite impressive when compared with the OECD average of just over 40 %.

This overabundance is due to the fact that most young people seek to obtain a diploma of a higher educational institution immediately after completing full secondary education. Often, a significant part of young applicants enters the profession by chance on the principle of territorial remoteness and do not think at all why they need this specialization.

The market economy, not only in Russia but throughout the world, is rapidly developing, technology does not stand still, and new jobs are created daily that require advanced competencies from the employee (Bond and Tykkylainen 1996; David 2015; Medvedev 2015). The preparation of a “professional of the future” at the moment takes a very long time — so long that the profession can disappear altogether by the time you graduate.

The economy of any developed country needs skilled workers who can work in accordance with the latest international quality standards. High-tech industries require appropriate training, and the speed of technology development necessitates the rapid introduction of new technologies, standards and tools (Drucker 1999; Graham et al. 2017). The WorldSkills movement forms just this task for itself as a mission.

WorldSkills International was founded in the 1940s with a purpose to create new employment opportunities for young people after WWII in the war-torn Europe and the rest of the world. It has constantly grown acquiring wider popularity and recognition and currently lists 79 countries worldwide and hosts many international contests and competitions. It is very active in Russian Federation with several branches and representatives across this vast country (Smirnova et al. 2018).

Currently, on the basis of the WorldSkills Academy in the regions, a project is being implemented to create a network of advanced professional centres. The centre of advanced vocational training is a platform - an aggregator and operator of regional resources for vocational guidance, accelerated vocational training, training, retraining, advanced training of all categories of citizens in the most popular, new and promising professions and competencies at a level that meets WorldSkills standards.

During the period of work, WorldSkills Russia Academy employees developed analytical maps to ensure the launch of centres for advanced training in the regions of the Russian Federation and the design of training programs. At the moment, the technology for creating this type of work is not designed for transfer to those who want to take the position of analyst in the management teams of the centres for advanced training. The task of creating a network of centres of advanced training in various regions of the Russian Federation requires not only solving the problem of formalizing the acquired experience, but also describing the process of conducting analytical work to ensure the launch of the centre for technology transfer in order to conduct analytical work by the centres on their own. With regard to the above, this paper focuses on the following research tasks:

- definition of the concept of technology;
- conducting an analysis of the activities of WorldSkills Russia Academy to fix the design of the Advanced Training Centres;
- identifying ways of technological enhancement (description of actions, operations and procedures) of the process of creating centres of advanced vocational training.

Thence, our research focuses on the centres of advanced training. The subject of the research is the technology of professional training according to WorldSkills standards.

## **2 Literature review**

The idea of popularizing working professions and increasing youth interest in them arose in 1946 in Spain, when the country needed a large number of qualified specialists to rebuild cities after the war. The movement for conducting professional trainings and competitions originated in 1947, this year the first championship of professional skill was held, in which six participants competed. Subsequently, this movement was called WorldSkills International. The first championships were held in order to popularize working professions and increase their prestige. Today, WorldSkills is an effective training tool in accordance with international standards and the needs of new high-tech industries (WorldSkills 2017).

Participants improve their skills by competing in six blocks of competency: construction and construction technologies, information and communication technologies, manufacturing and engineering technologies, the service sector, creativity and design, as well as transport and logistics. WorldSkills International as of 2019 has eighty countries, including Russia, which joined the movement in 2012.

At the core of the WorldSkills movement are competency standards that are documented by international and Russian expert communities, as well as a measurement line based on them. In this sense, WorldSkills championships are one form of measuring training according to WorldSkills standards.

Each WorldSkills competency is a world or national level standard, because when developing and standardizing competencies, the world professional community needs to agree on what a specialist should be able to and know in a functional place, and what his professional profile is. Each competency is constantly being upgraded at championships of various levels, which allows you to actually see how it works and, if necessary, supplement and correct the WorldSkills standard after the event.

An important task solved by the WorldSkills Russia movement is the implementation of WorldSkills standards in educational programs, which allows translating the world's best practices into the education and training system, as well as collecting and replicating domestic experience, as interesting projects for training specialists using WorldSkills standards are appearing in Russia, and the main task is to find these best practices, highlight them, formalize and disseminate them in the country's education and training system (Kochetkov 2017). The main activities of WorldSkills Russia are:

- professional development of teachers (Master of Industrial Training) according to WorldSkills standards - five thousand people annually at the expense of the federal budget (subsidies);

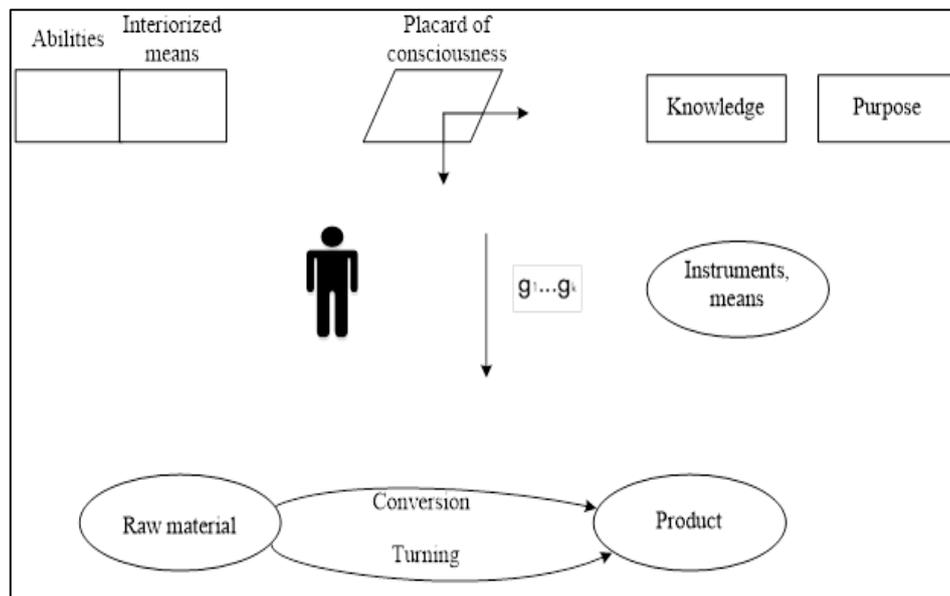
- building a special program of professional training and additional professional education for citizens of pre-retirement age - two five thousand people annually for six years at the expense of the federal budget (subsidies);
- training of WorldSkills Russia experts at various levels;
- continuing education programs for the management teams of professional educational organizations, higher educational institutions, organizations of additional professional education, regional executive authorities and representatives of large enterprises in the region in which training is implemented (WorldSkills 2017).

The WorldSkills Russia Academy has done work on analysing WorldSkills standards, assembling WorldSkills International movement tools, analysing the regions of the Russian Federation, designing centres for advanced training. However, the actions, operations, procedures for launching a centre for advanced training in pilot regions require a technological description to continue work with other regions of the Russian Federation.

In order to solve the problem, it is necessary to identify the concept of “technological enhancement”, which can be used within the framework of the topic. In the book, Shchedrovitsky (2015 made the following fixation on this subject:

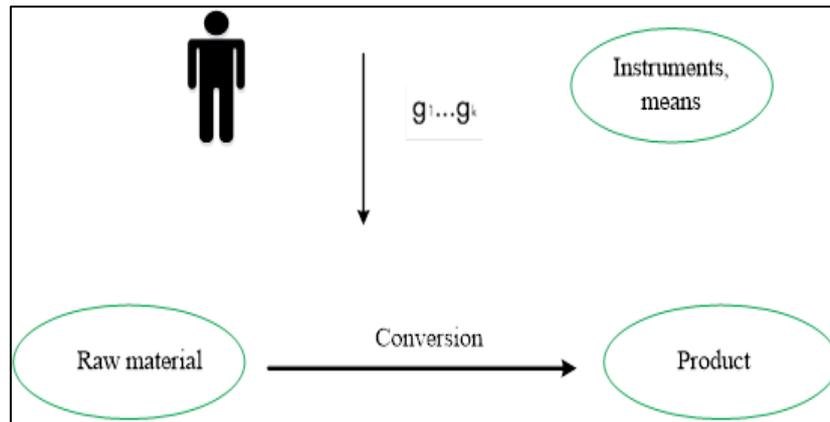
- “... technology is always a limitation on the network” - the technological process determines the timing, and then with the help of the network planning method it is necessary to determine the beginning of work, allocate resources, etc.;
- “technology does not work without human activity”.

With regard to the above, Shchedrovitsky (2015) set the scheme of the act of activity (see Figure 1 that follows), denoting the elements of which, it is said that “this will be the composition and structure (although it is depicted only in some moments) of the act of activity. This activity is called transformation. The “g1 ... gk” symbols in the diagram indicate actions or operations, and also tools and means are indicated nearby” (Shchedrovitsky 2015).



**Fig. 1.** Action act scheme  
Source: Own results based on Shchedrovitsky (2015)

Khristenko et al. (2016) describe the system thinking technology by fixing the steps of using technology in the thinking of the manager who wants to master it. The term "technology" is often defined as some set of methods and tools to achieve the desired result; in the broad sense, the application of scientific knowledge to solve practical problems. The technology includes working methods, its mode, sequence of actions. The word is formed from two ancient Greek words: τέχνη – “art or skill”, and λόγος – “word, thought, meaning, or concept”. In our opinion, the concept of “technologisation” for development within the framework of this paper can be described through the following scheme (see Figure 2).



**Fig. 2.** Technologization concept

Source: Own results based on Khristenko et al. (2016)

In general, technologization consists in describing the steps (actions, operations, procedures) performed to convert the source material into a product using certain tools (tools and tools). To work on technology, one needs an appropriate position.

### 3 Methods of assessment

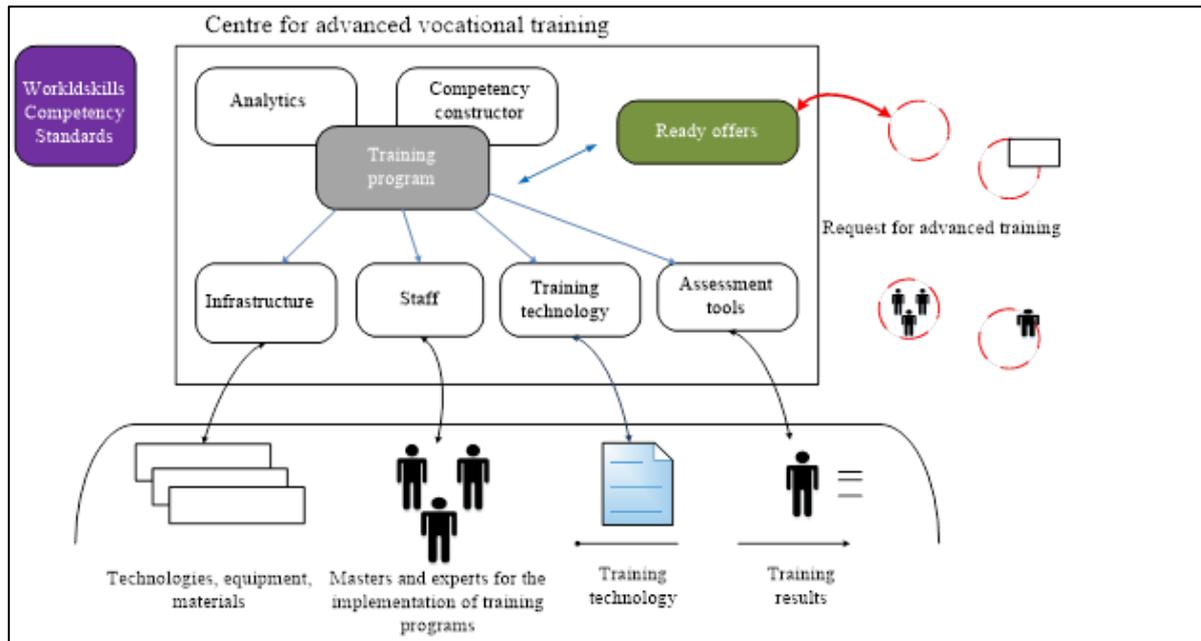
One of the promising directions for the development of the WorldSkills movement is associated with short training programs. Short programs for the development of the WorldSkills competency standard are intended for completely different categories of the population: schoolchildren, students, working industry specialists, persons of pre-retirement age, and many others.

Over the years the WorldSkills movement has existed in Russia, vast experience has been accumulated in the practice of WorldSkills competencies, which must be replicated.

The question arises: how to implement a short program of advanced vocational training. The initial response is the following four points:

1. Material and technical base corresponding to the infrastructure sheet according to Worldskills competence. A striking indicator of the availability of the necessary and relevant standard for the base is the status of the Specialized Competence Centre or the Demonstration Exam Centre. In close relationship with these statuses are colleges - interregional centers of competencies, which were used to create equipment that was relevant and relevant to the infrastructure sheets that existed at that time. Often in such centres, the national team is trained to speak at international championships, including at the world championships Worldskills International.
2. Teachers, Master of Industrial Training, WorldSkills experts - those who can teach in programs. This is a serious question, because sometimes it turns out that it is easier to buy equipment than to find the necessary teacher, especially now when a huge number of regional championships, demonstration exams, training programs for regional and national teams are implemented in Russia and abroad. The schedule of certified experts is planned, and it is often difficult to quickly attract them for jobs requiring this level of competency in WorldSkills.
3. Technology training. In the movement "Young Professionals (Worldskills Russia)" it is believed that only the training of champions and their results allow us to show the availability of training technologies. Passing a demonstration exam on the maximum set of assessment documentation (COD) at the proper level also allows you to see the availability of training technologies in an educational organization.
4. Evaluation of results according to WorldSkills standards. The most important and unique part of the movement is the assessment rules, which include from 150 to 300 aspects, according to which the assessment of completed tasks by competency takes place. This is a very detailed system, which is constantly updated at championships by the expert community in terms of competence. Assessment is used not only in training programs, it also allows, for example, to assess the level of competence of employees of enterprises. To implement short training programs, this tool also allows you to clearly formulate an order for training personnel in accordance with what level of tasks is required from trained specialists.

The implementation and the form of the assembly method for short advanced training programs can be displayed in the following diagram (see Figure 3).



**Fig.3.** Development and implementation of programs according to Worldskills standards  
Source: Own results

There are several options for implementing WorldSkills programs:

1. The entire WorldSkills standard is taken as the basis, the training includes all modules, and, at the exit, the specialist has knowledge and skills that correspond to the full WorldSkills standard. Such an implementation option can be done by embedding it in the main professional educational program (OPOP), and all students studying in this organization have the opportunity to master the standard of competency during training - training according to the standard is built into its training.
2. Another way can be implemented - the creation of a short program of advanced vocational training. WorldSkills Russia Academy makes continuing education programs for teachers (Master of Industrial Training) for at least 76 hours. To prepare students or specialists of enterprises, the duration of the program may be longer.

The framework of the Centre for Regional Development in the region is a subject of the Russian Federation. It is necessary to understand what resources it has and what development priorities it has identified. The infrastructure for advanced training programs is:

- specialized competence centres accredited by WorldSkills Russia Academy, which means they are equipped with equipment in accordance with international standards;
- WorldSkills standards demonstration test centres, which are also accredited by WorldSkills Russia Academy and are equipped according to international standards;
- Interregional centres of competence, which were created by the project of WorldSkills Russia Academy and the Ministry of Education and Science of the Russian Federation, and initially have advanced equipment in accordance with international standards.

Personnel or teachers of advanced training programs:

- certified Worldskills experts;
- experts with the right to conduct regional championships;
- educated by world standards teachers (Master of Industrial Training) of professional educational organisations.

One of the key functions of the Centre is analytical. This is due to the fact that it is important to constantly have a picture of what kind of training order is in the region. A significant part of the work is aimed at monitoring, analytics to identify orders for advanced training. In this case, an “order” does not mean an agreement between an educational organization and a customer organization for the training of certain personnel. The need is considered

in connection with various economic, technological, natural-social, political conditions that contribute to the fact that at a certain time it will require personnel with certain competencies.

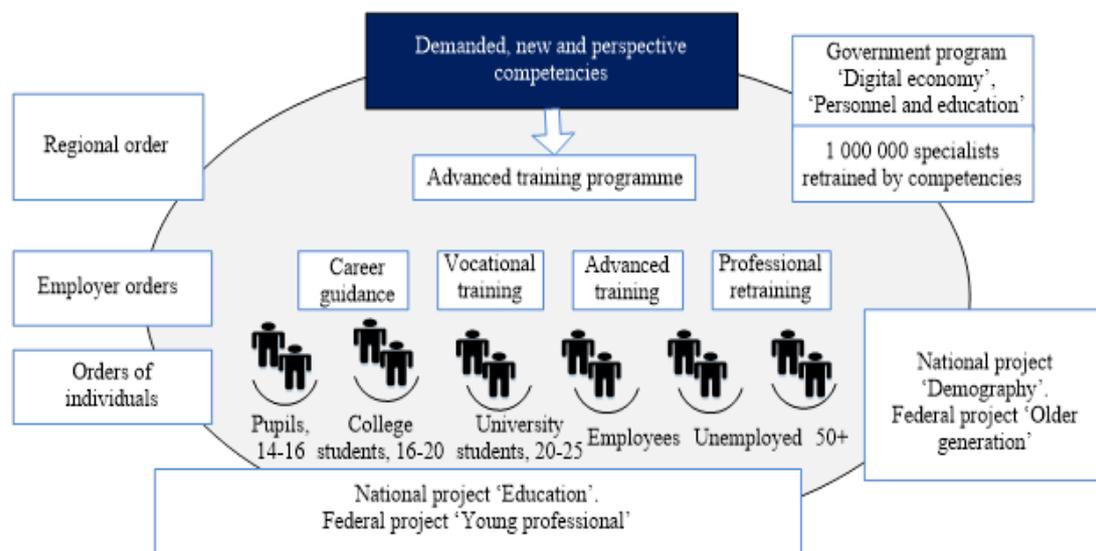
The target model of the activity is described in the Methodological Recommendations on the establishment and functioning of centres for advanced vocational training, approved by the order of the Ministry of Education of the Russian Federation dated February 28, 2019 by order No. P-16, defines the basic principles for the creation and functioning. The activities of the Centre for Advanced Training are aimed at the implementation of the following monitoring functions:

- monitoring, analysis of the current situation and dynamics of changes in the labor market of a constituent entity of the Russian Federation, forecasting the demand for workers with the aim of forming a list of competencies of advanced training, developing and implementing a set of measures to eliminate existing and potential shortages of personnel and competencies;
- development of priority groups of competencies for the subject of the Russian Federation, the formation of new competencies that correspond to the priorities of the development of the regional economy;
- the formation of a modern training system for priority competencies for the region;
- ensuring accessibility for citizens, including citizens of pre-retirement age, of all types of educational resources for the implementation of educational programs for priority competencies for the region;
- ensuring the implementation of individual trajectories;
- implementation of a set of measures for the vocational guidance of people studying in educational institutions, including training their first profession on modern equipment;
- creating conditions for the state final certification of students in educational programs of secondary vocational education using the demonstration exam mechanism.

#### 4 Main results

The model of centres for advanced vocational training does not imply financing and subsidizing mechanisms. The start of the project to deploy a network of centres in Russia coincided with the launch of a number of national projects, including areas for the implementation of additional professional programs and vocational training for various categories of citizens.

In the course of the analysis, the activities of the Centre for Advanced Training were technologized (Figure 4). The scheme captures the logic of the Centre for Advanced Training in the market.



**Fig.4.** Technologization of the center of advanced training  
Source: Own results

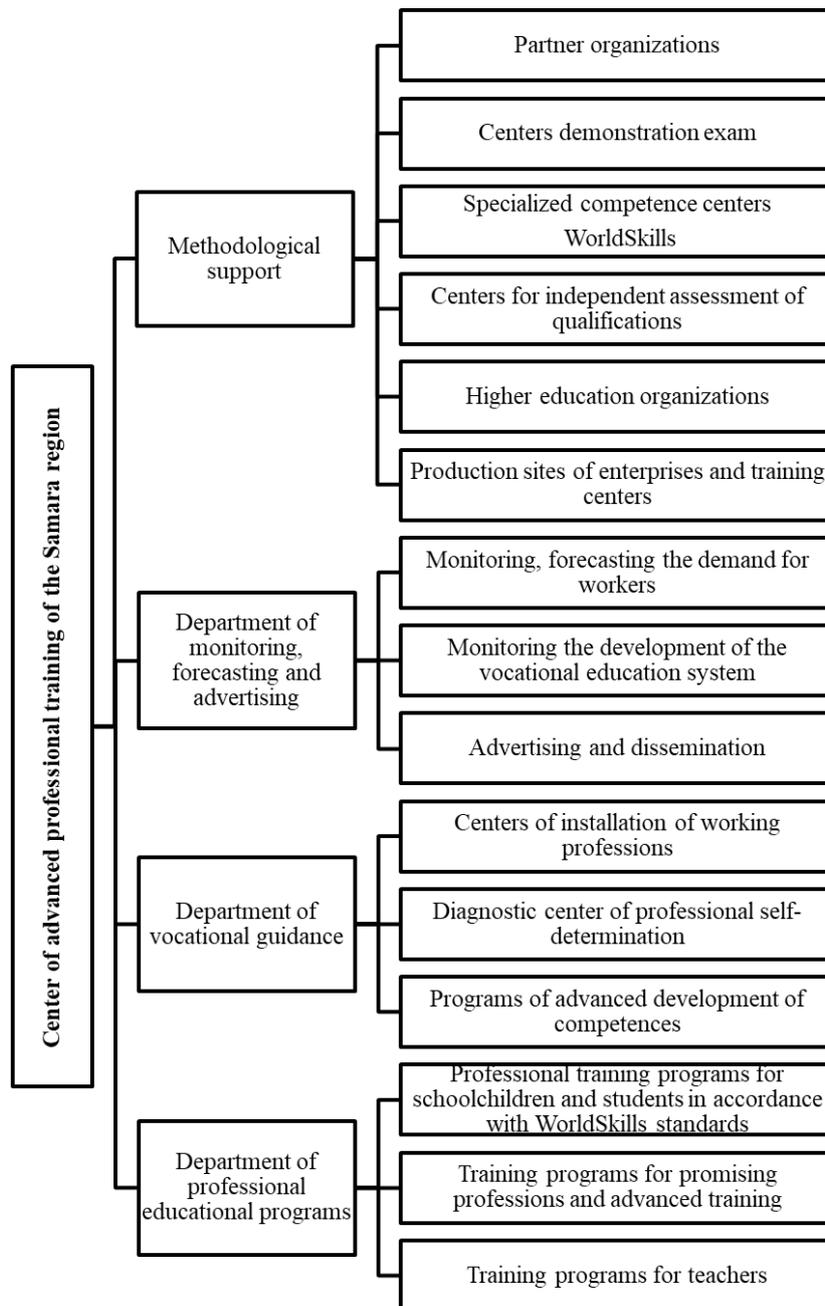
First of all, these are national projects and state programs that are crucial for its implementation:

1. The Federal project "Young Professionals" within the framework of the Federal project "Education", which includes a direction for advanced training of at least thirty-five thousand teachers (Master of Industrial Training) according to WorldSkills standards. To achieve this goal, in 2019, a set of internship sites for the implementation of training programs in the regions of Russia was carried out.

2. The federal project “Older Generation” within the framework of the national project “Demography”, which includes a direction for training seventy-five thousand citizens of pre-retirement age annually through vocational training and continuing education programs.
3. Direction "Personnel and education" of the state program "Digital Economy", including the task of retraining specialists in the competencies of the digital economy

The setting up of a technologically advanced analytic process for the focuses of analysing the region to ensure the launch of the Centre for Advanced Training and advanced training programs allows us to single out a request for training and often move on to implementing specific training programs.

In this paper, we consider the need to organize the Centre for Advanced Training of the Samara Region as a separate educational institution with a distributed network of partners of the Centre for Professional Education in the person of secondary vocational education, which are specialized centres of competence of WorldSkills, and higher professional education with human and material and technical resources for the implementation of the functions of the Centre.



**Fig. 5.** Organizational structure of the centre of advanced professional training of the Samara region  
Source: Own results

The goal of creating the Centre for Advanced Training in the Samara Region is to accumulate regional resources for vocational guidance, accelerated vocational training, retraining, advanced training of all categories of citizens in the most popular, new and promising professions and competencies at a level that meets WorldSkills standards. Organization of the work of the Centre is planned in the following areas:

- monitoring and forecasting of demanded workers in the Samara region;
- creating conditions for the introduction of practice-oriented and flexible educational programs, providing the possibility of building individual educational trajectories;
- training, retraining, advanced training of citizens in the most popular professions in conjunction with organizations - partners of the Centre for the Promotion of Professional Education, as well as in the interests of enterprises in the real economy;
- vocational guidance for people studying in educational organizations, training for the first profession (implementation of vocational training programs);
- organization of advanced training for teachers and vocational training masters;
- creation of conditions for the final certification of students in educational programs of secondary vocational education using the demonstration exam mechanism.

According to the directions of activity, the authors of the article distinguish the following divisions of the Centre for Production and Commercial Provision (Figure 5 above). Its set-up and implementation might be very beneficial for the region in question and should contribute to improving the economic situation and the situation on the labour market.

## 5 Conclusions

Overall, it appears that modern educational technologies are transferrable across regions and countries. They might contribute the overall well-being and the wealth of the countries or even single regions.

For many young professionals, modern training methods is one of the fastest means of social revaluation and an opportunity to find a job that they like with a decent salary. Over the years, more and more industry partners are recognizing the benefits of participating in the training of sophisticated professionals. Finally, an expert trained to international standards is more likely to help the company avoid a number of potential pitfalls.

The countries and governments should be competing with many other developed countries to train, attract and retain highly qualified individuals to sustain and increase the supply of highly qualified individuals to foster economic growth and prosperity.

Offering young people around the world a wealth of opportunities to engage in technical creativity should become a daily agenda. Our results show that motivating and promoting the future talent of qualified professionals is a useful task.

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