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A Change in the Structure of Training of Qualified Specialists for Providing the Sustainable Innovative Development of the Region

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In the article the authors dwell upon the analysis of the professional-qualified structure and the market of educational services. The perspective directions for the training of qualified specialists for the innovative development of the Krasnoyarsk region are defined.

Keywords: qualified specialists, educational system, educational institutions, demand.

The needs of the economy of the Krasnoyarsk region in high qualified specialists are determined by perspectives of the innovative development of the main branches of specialization, realization of investment projects, exploiting considerable natural resources of the northern and eastern areas. The necessity for innovative development of regional economy influences on modification of the structure of training specialists on all levels of education. At present time in the Krasnoyarsk region there is a problem of elaborating effective regional policy based on estimation of the situation on the labour market and improving the mechanism of training specialists in order to balance the demand and supply for skilled workers.

For estimating the possibility to satisfy the requirements of economy of the Krasnoyarsk region in qualified specialists it is necessary to analyse the professional-qualified structure of employment and define professional characteristics of future specialists.

The professional-qualified structure of the population of the Russian Federation, the Siberian Federal District, the Krasnoyarsk region has changed with the development of market relations (see Table 1)

So in the early 1990's in the structure of population 52,9 % people had elementary vocation and secondary general education. Main part of the people was low-skilled workers. During the considered period the share of workers has reduced from 56, 5 % in 1989 to 48, 4 % in

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Table 1. The Distribution of the Number of Population of Russia, the Siberian Federal District, the Krasnoyarsk Region on Level of Education, 2009 (%)

No.	Population	Russian Federation	Siberian federal area	Krasnoyarsk region
1	The quantity of population including:	100	100	100
2	-higher education	28,2	24,5	24,6
3	-secondary vocational education	27,1	26,4	28,3
4	-elementary vocation education	18,9	18,9	14,5
5	-secondary general education	20,9	22,8	25,0
6	-basic general education	4,6	6,7	6,8
7	-elementary education, without education	0,4	0,6	0,8

2009. Also the share of high-skilled and skilled workers has fallen from 39,5 % in 1989 to 30,6 % in 2009. That situation is caused by the changing activity of many industrial enterprises, reducing industrial production, liquidating large industrial enterprises.

In employment structure the share of specialists has risen. The number of people who have higher education has increased from 12,6 % in 1989 to 24,6 % in 2009. The share of people with secondary vocational education has fallen. The increasing the share of people who have higher education may be caused by the rising demand for new "market professions". The needs in high-qualified specialists are increasing mainly in sphere of services; trade, insurance, bank sphere, management and government. But in industry the low-skilled toil is kept.

As the analysis of employment shows, the highest level of employment is among population who have higher education and the lowest level of employment is among people who do not have special education.

The training of qualified specialists in the Krasnoyarsk region is determined by the level of development of the educational system.

The educational system in the Krasnoyarsk region is represented by a great number of educational institutions (see Fig. 1)

The system of training specialists is considered as a balanced one if the number of institutions of secondary and elementary vocational education exceeds the number of higher educational establishments in 6-7 times. In the Krasnoyarsk region this exceeding is more than 10 times. This fact testifies that it is necessary to reform the education system.

In spite of a great number of institutions of secondary and elementary vocational education the major number of students are in higher educational establishments (see Table 2).

The increasing quantity of students of higher educational establishments is not only a regional, but also Russian and the world tendency. But in the Krasnoyarsk region this process has accelerated its rate. So in 2000 the number of students in the Krasnoyarsk region was 320 on 10 thousands of population, in 2009 that number was 435.

The quantity of students of higher educational establishments in the Krasnoyarsk region is considerably lower than such index in highly developed educational centers such as Moscow, Tomsk and Novosibirsk. The level of the Krasnoyarsk region is lower than the level in Russia in general. By 2009 this gap had increased. This situation may have negative consequences for the future economic development of the

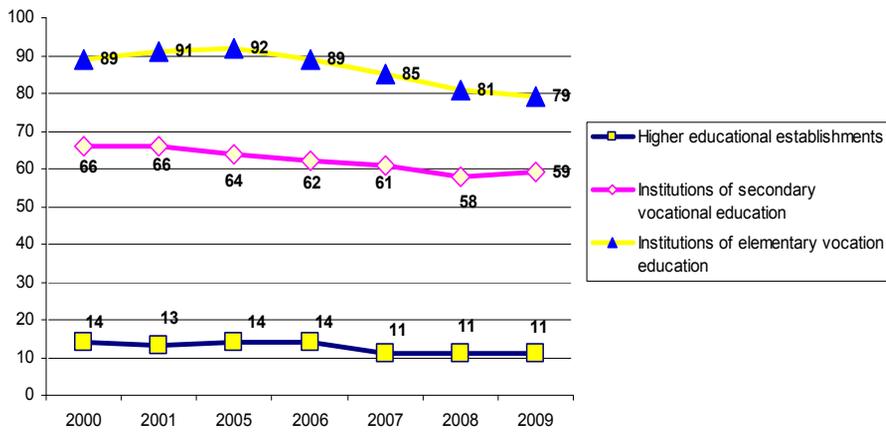


Fig. 1. The number of Educational Institutions

Table 2. The Quantity of Students in Educational Institutions of the Krasnoyarsk Region (thousand people)

No.	Educational institutions	2000/01	2001/02	2005/06	2006/07	2007/08	2008/09	2009/10
1.	Higher educational establishments	94,4	105,1	120,1	118,9	117,9	118,8	112,7
2.	Institutions of secondary vocational education	59,2	62,2	61,5	58,8	56,6	53,1	59,0
3.	Institutions of elementary vocation education	34,8	34,4	34,7	32,4	30,2	27,7	25,6

Krasnoyarsk region and result in a deficit of high-qualified specialists.

The question of financing the educational system is very important for the analysis of the educational services market of the Krasnoyarsk region. Increasing contradiction between the demand in qualified specialists and the impossibility of qualitative training of specialists in educational institutions has the following results:

1. The young people leave the Krasnoyarsk region in order to get more qualitative education in other regions and in other countries.

2. The enterprises have deficiency of qualified specialists, which results in unreasonable economic losses.

3. The educational institutions are forced to open new “fashionable” specialities, which

are not always in demand on the regional market, increase payment for education.

4. The majority of educational institutions “washes out” their specialization, extending range of specialities, and so don’t guarantee a proper level of education.

Analysing the educational system of the Krasnoyarsk region, it is very important to estimate professional-qualified characteristics of professional education. It is necessary to define the number of specialists which the educational institutions are training on consolidated groups of specialities: industry and building, agriculture, transport and communication, economics and law, public health, education, culture and art. The distribution of students of higher educational establishments on groups of specialities is given in Table 3

Table 3. The Distribution of Students of Higher Educational Establishments in the Krasnoyarsk Region by Groups of Specialities (%)

Year	Number of students –in total	Including						
		industry and building	agriculture	transport and communication	economics and law	public health	education	culture and art
2001	100	53,6	12,0	-	7,0	3,0	23,6	0,8
2002	100	52,3	13,0	0,5	8,0	3,0	22,4	0,8
2005	100	48,6	12,0	1,6	12,5	3,0	21,3	1,0
2006	100	47,2	13,0	1,8	13,0	3,0	21,0	1,0
2008	100	47,6	12,5	2,2	12,0	3,0	21,7	1,0
2009	100	44,2	12,8	3,4	12,5	3,2	22,3	1,6

As the analysis of the distribution of students of higher educational establishments shows, in the Krasnoyarsk region the share of training students for industry and building has essentially fallen. This is conditioned by the changing specialization of regional economy and decreasing its industrialization. The low demand for qualified specialists in branches of industry have resulted in the falling share of training such specialists by 9,4 % during the considered period.

A considerable decreasing number of students of education speciality is observed. On the one hand, the falling demand for teachers because of decreasing quantity of children influences on this, on other hand, the institutions of secondary vocational education are competitors with higher educational establishments in training qualified teachers.

In the distribution of students of higher educational establishments in the Krasnoyarsk region on groups of specialities the share of students of economics and law speciality is increasing. The development of market relations has determined high demand for economists and lawyers of different specialization. Although many higher educational establishments have

opened economic faculties and faculties of law, the demand for these specialists remains high. To speak about any surplus of these specialists is premature.

The number of specialities for agriculture and public health has remained invariable for long time. This number is determined by not only demand for these specialists, but also possibility of narrow-specialized higher educational establishments.

The share of students of transport and communication speciality has increased. The demand for specialists in the sphere of culture and art remains low.

The distribution of students of institutions of secondary vocational education on groups of specialities differs from the distribution of students of higher educational establishments. This difference is caused by the following factors:

1. training specialists in institutions of secondary vocational education is more oriented on industrial sector of economy.
2. the institutions of secondary vocational education in Krasnoyarsk region was founded for training specialists in accordance with needs and perspectives of development of branches of Krasnoyarsk region.

Table 4. The Distribution of Students in Institutions of Secondary Vocational Education of the Krasnoyarsk Region by Groups of Specialities (%)

Year	Number of students –in total	Including						
		industry and building	agriculture	transport and communication	economics and law	public health	education	culture and art
2001	100	46,3	12,2	11,6	11,0	9,4	7,0	2,5
2002	100	47,0	12,2	11,0	11,6	8,8	6,9	2,5
2005	100	47,0	12,8	9,4	12,0	9,0	7,4	2,4
2006	100	45,5	13,9	9,1	12,3	8,9	7,9	2,5
2008	100	45,0	12,9	9,7	12,4	8,9	8,6	2,5
2009	100	44,8	13,3	10,1	12,2	8,8	8,4	2,4

The distribution of students of institutions of secondary vocational education on groups of specialities is given in Table 4.

As the analysis of the distribution of students of institutions of secondary vocational education shows, the main part of students is oriented on industrial sector of economy. So in 2009 the share of students of industry and building, agriculture, transport and communication specialties was 68,2 % (for comparison: in higher educational establishments the share of students of these specialties was 60,4 %).

However, the process of training of specialists in institutions of secondary vocational education has similar tendencies with the process of training specialists in higher educational establishments:

1. In connection with the increasing demand of industrial enterprises the share of students of these specialties is falling. This tendency is characteristic for transport and communication specialties.

2. The share of students of economics and law specialties is increasing. The demand for these specialists determined the number of students of these specialties.

3. The number of students of pedagogical college is decreasing. This situation is caused by

demographic processes, which have resulted in reducing quantity of children and so decreasing demand for teachers.

As the analysis of graduates of higher educational establishments shows, in the Krasnoyarsk region at present time there are primarily training qualified specialists for industrial needs. Humanitarian specialties, as economics and law, public health, education, culture and art, in total number of graduates is less, then 40 %. While in developed educational centers and in Russia on average the share of graduates of humanitarian specialties is 60 %.

However in the Krasnoyarsk region the tendency of increasing specialists of humanitarian specialties is observed. The number of graduates of economics and law specialties is increasing with the highest rate. The number of graduates for agriculture is increasing too. This is the result of reviving agriculture in the Krasnoyarsk region, which is determined by the demand for these specialties. The high share of graduates for industrial needs is provided by a building branch. The intensive development of this branch determines the high demand for specialists of building specialties.

Table 5. The Prognosticated Estimation of Graduates of Higher Educational Establishments on Group of Specialities in the Krasnoyarsk Region until 2025 (%)

NO.	Specialities	2009	2010	2015	2020	2025
1.	industry and building	44,2	41,2	38,4	38,0	37,0
2..	agriculture	12,8	13,9	15,3	16,1	16,5
3.	transport and communication	3,4	3,6	3,9	4,1	4,2
4.	economics and law	12,5	14,4	15,7	15,4	14,4
5.	public health	3,2	3,7	4,0	5,0	5,0
6.	education	22,3	22,3	21,7	21,0	21,0
7.	culture and art	1,6	1,0	1,0	1,4	1,9
8.	In total	100	100	100	100	100

The prognosis of graduates of higher educational establishments for economy of the Krasnoyarsk region is made on basis of following suppositions:

1. For prognosticated period the innovative character of economic development of the Krasnoyarsk region will determine high demand for specialists with higher education.

2. The part of state financing will decrease on the average on 0,6 % a year and by 2025 it will have been 47 % from total number of students.

3. The state financing of training qualified specialists will be within the framework of filling state order.

The prognosis of needs of economy of the Krasnoyarsk region is made taking into consideration the policy of perspective economic development of region.

For calculation of prognosticated structure of graduates the factor's model elaborated in the Krasnoyarsk office of Research institute of Labour was used.

The calculation of number of students was made on group of specialities.

The prognosis of graduates of higher educational establishments on group of specialities is given in Table 5.

For satisfying the needs of the economy of the Krasnoyarsk region in high qualified

specialists it is necessary to change a structure of training. The share of graduates for industry will decrease. This tendency will result in modernization and a change of specialization of some large enterprises of Krasnoyarsk region. Graduates of traditional professions must provide only replacement of leaving qualified specialists of industrial enterprises.

In connection with the perspective development of agriculture in the Krasnoyarsk region the number of graduates for this branch will increase. The number of graduates for transport and communication will increase too. This will be caused by the developing transport infrastructure. The tendency of increasing number of graduates of economics and law specialities will remain until 2015. After this, the stabilization of the number of they are training will be determined by the situation on the labor market. The number of graduates for public health, culture and art will be stable.

The change of the structure of training of qualified specialists is caused by the requirements of providing innovative development of the region. Main of them are the following:

1. The demand for qualified specialists will be increased in branches which are orientated at innovative development, such as building, transport and communication, agriculture and

the sphere of services. This is conditioned by the necessity of changing technology of production. It is supposed that using a new technology will improve labor productivity. In estimation of researchers the labor in building is 50-70 %, the labor in agriculture is 70-80 % of total expenses. The usage of new technologies and qualified personnel will improve the quality of produced goods and services.

2. Research of the market of educational services in Krasnoyarsk region shows that the demand for qualified specialists may be satisfied by local educational institutions, which can quickly respond to changing demands from the side of employers.

3. It is necessary to reduce the number of institutions of secondary and elementary vocational education and make the correlation between number of higher educational establishments and number of institutions of secondary and elementary vocational education as 1:7 (in present time this is 1:11) for conformity in training qualified workers and specialists with higher education.

To satisfy the needs of economy of the Krasnoyarsk region in qualified specialists it is necessary to modify the system of training specialists. Firstly, practical orientation of training specialists must be among priorities. Secondary, it is necessary to intensify orientation at specialization of training specialists. It is necessary to change the structure of training specialists: to increase the share of specialists of humanitarian specialities. As the analysis shows, the orientation of training specialists for industry doesn't satisfy the needs of perspective economic development of the Krasnoyarsk region. In its turn, in the

Krasnoyarsk region the training programs for specialists in the sphere of services are not developed. Perspectives of the development of some branches of economy (oil-gas complex, forest industrial complex, food industry, road-building) determine the necessity of training specialists of these specialities.

In order to improve the educational system the regional program of support and development of socio-important and demanded specialities for higher educational establishments must be elaborated. It is necessary to create a system of stimulation of students of these specialities by means of giving special grants, paying scholarships.

For improving the quality of training specialists the possibilities to open specialities which do not correspond to the specialization of a higher educational institution must be restricted.

The state order must be an important instrument of training specialists. The state order must be formed on the basis of perspective needs of economy of the Krasnoyarsk region in high qualified specialists. For this it is necessary to make prognosis of development of productive forces of the Krasnoyarsk region, taking into account realization of large scale investment and innovative projects.

Private sources of funding must be the main source of financing the educational system. The state financing must guarantee the fulfilling the state order, training students in need and opening socio-important and demanded specialities.

Requests of businesses determining the perspectives of development of certain spheres of economy should play an important role in the forming of the state order.

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Изменение структуры подготовки квалифицированных специалистов для обеспечения устойчивого инновационного развития региона

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В статье дается анализ профессионально-квалифицированной структуры и рынка образовательных услуг. Определены перспективные направления подготовки специалистов для инновационного развития Красноярского края.

Ключевые слова: квалифицированные специалисты, система образования, образовательные институты, спрос.
