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Trends in the development of education sphere in Russian regions

The article presents the analysis of the dynamics of education development in the subjects of the Russian Federation in 2010–2012. The regions are classified by the growth rate of the indicators of education development. The place of the Vologda Oblast in these processes, as well as the degree of compliance of regional education development with the national results, are defined.

Education sphere, integral criterion, dynamics of education development.



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The current situation in the sphere of education is characterized by frequently changing objectives of its development. The policy documents of the Russian Government set the task of switching to the innovation way of Russian education development, which attaches certain dynamism and the pursuit of international competitiveness to the processes in this sphere.

The latest messages to the system of Russian education are associated with the introduction of the regulatory mechanisms of financing costs, of a new remuneration system (NRS), the approval of new state educational standards for primary and secondary (complete) general education and the adoption of the new Law “On education” in 2012, which will come into effect in September, 2013.

These circumstances greatly alter the structure of national and regional education systems, expanding the liabilities of the regulatory and administrative authorities and demanding a new quality of technical and staffing support of education process, the expansion of forms of educational institutions management, transparency of education systems¹.

However, not all the territories of the Russian Federation are prepared to the new functioning conditions of the education sector. For the most part, this is conditioned by the socio-economic differentiation of Russian regions that affect the functioning of regional education systems, particularly, the resource endowment necessary for learning activities. The citizens' level of satisfaction with education depends directly on the place of residence and provides the basis for the propagation of social and economic inequality of the regions, since the educational level of population largely determines the investment attractiveness and opportunities for effective economic growth [4, p. 43-44].

In this regard, of special importance is the evaluation of trends in the development of regional education systems, which is the purpose of the present study.

In 2011 ISED T RAS staff members held a pilot phase of the monitoring of the development of the education systems of the Vologda Oblast municipalities. In the course of this study a number of deficiencies in the methods of complex evaluation were revealed, to eliminate which it is necessary:

1. To consider the most important and relevant parameters of the education system coordinated with the topical directions of education policy, as well as with the indicators adopted in the official monitoring systems

(for example, CPEM – complex program of education modernization “Our new school”).

2. To evaluate the dynamics of the level of education development. It is reasonable to begin the assessment since 2010, the start implementation of CPEM “Our new school”, as in the course of the project implementation new educational standards were introduced, and higher educational institutions were to meet new requirements in the short time.

3. It is extremely important to consider the share of individual evaluation indicators in the system of indicators, when making calculations.

4. To supplement the data calculation with the medium-term forecast of indicators by the basic directions of education system development, in order to formulate specific proposals for the improvement of educational services².

In 2012–2013 the evaluation method was adjusted, the data necessary for calculation were collected, and the weighting coefficients of each indicator were determined by expertise, the development level of regional education systems in the dynamics was estimated.

The analysis of normative-legal documents, regulating the functioning of the education system at the federal and regional levels and determining the strategic priorities of its development [5, 10, 11], made it possible to single out four of the most actual in the current conditions development directions of this sphere:

- 1) to search for and support gifted and talented youth;
- 2) to develop education human resource;
- 3) to develop education material and technical base;
- 4) to create conditions for life protection and health support of children in educational institutions.

¹ Order of the Russian Ministry of Education and Science No. 373 as of October 6, 2009, Order of the Russian Ministry of Education and Science No. 413 as of May 17, 2012.

² More detail on the territories assessment by education indicators can be found in: Shabunova A.A., Golovchin M.A. Evaluation of education development in municipal territories. Problems of development of territory. 2012. No. 1(57). P.91-96.

The list of 18 indicators was formed in compliance with these directions. As a result of the necessity to calculate target state objectives in the education field, individual indicators for monitoring the effectiveness of the Complex programme of education modernization “Our new school” were introduced in the system of indicators³.

The selected indicators were combined into 4 thematic blocks. The list and characteristics of the indicators included in blocks are presented in *table 1*.

The method of multidimensional comparative analysis, based on the Euclidean distance method was applied, in order to determine the assessment parameters of education development level under the developed system of indicators [12, P. 91-96]. This method allows considering not only the absolute indicator values of each territory,

but the degree of proximity (distance) to the indicator-standard as well⁴.

The sub-indices by the indicator of the education sphere development (k_i) were calculated according to the following formula (1):

$$K_i = k_i \times \frac{x_{it}}{x_{st}}, \quad (1)$$

where x_{it} – the value of the i -th indicator in the region in the t -th year;

x_{st} – average Russian index value, taken as a unit;

k_i – weighing coefficient of the significance of i -th indicator.

The index method, allowing different characteristics to be reduced to a comparable form, is used in the study in order to calculate the integral index of the development of educational services.

Table 1. Indicators for assessing the level of education development in the regions of the Russian Federation

Block	Indicator
1. Search for and support of gifted and talented youth (4 indicators)	Share of the schoolchildren, participating in all stages of Olympiads
	Share of students at educational institutions, supported under the programmes for the support of gifted children and talented youth
	Share of students provided with modern conditions for creative activities
	Share of graduates (11-12th forms), who received the General Certificate of Education for gold and silver medalists (calculations by indicator has been made for 2011-2012)
2. Development of education human resource (5 indicators)	Share of teachers, attested with qualification grade
	Share of teachers, who underwent in-service teacher training in the total number of teachers in educational institutions
	Teachers' average salary as compared to the average salary in the region's economy
	Staffing of educational institutions with teachers, having higher professional education
3. Development of education material and technical base; (5 indicators)	Share of teachers under 30 years of age in the total number of teachers in educational institutions
	Share of students, provided with the opportunity to use study equipment for practical works in accordance with the new FSES PGE (Federal State Educational Standard of Primary General Education)
	Share of students, provided with the opportunity to use modern libraries and media resources.
	Share of students, provided with modern conditions for exercises
	Share of schools with broadband Internet (at least 2 Mb/sec)
4. Protection and promotion of child and youth health (4 indicators)	Share of educational institutions equipped with modern canteens
	Share of students, studying at institutions with a licensed medical office
	Share of students, studying at institutions where at least 1 qualified health worker is present
	Share of students at educational institutions, who are provided with high quality hot meals
	Share of schoolchildren, whose educational plan provides for more than 3 hours of physical education per week

³ RF Government Decree of September 9, 2010 No. 1507-p (edited December 5, 2011) “On the implementation of national education initiative ‘Our new school’”.

⁴ Average Russian value of the indicator is considered as a standard.

Such index construction gives the opportunity to reflect the significance of each of the indicators constituting the system.

Heads of the education governing bodies were polled, in order to determine the weighing coefficients by individual indicators in the second quarter of 2013. Heads of two regional education authorities (Yaroslavl and Kirov oblasts) and 9 municipal education authorities of the Vologda Oblast (Belozersky, Kichmengsko-Gorodetsky, Gryazovetsky, Kharovsky, Babayevsky, Ustyuzhensky, Mezhdurechensky, Kirillovsky districts, Cherepovets) participated in the survey.

The calculations made it possible to follow the dynamics of the integral index of education development in the territorial context for the 2010–2012 period. In order to simplify the dynamics analysis, the regions of the Russian Federation were ranked by growth (decline) rates of the indices and formed in five groups:

1. *Regions with extremely high development rates (more than 134%) – 12 subjects of the Russian Federation.* These are the territories, which demonstrate the highest growth of the indicators of the education development level, indicating large interest of regional authorities in the results of educational reforms and the reasoning of educational policy.

2. *Regions with high development rates (from 104 to 134%) – 33 subjects of the Russian Federation.* These are the territories, which demonstrate steady growth of the indicators of the education development level (at least 3%). The control and administration authorities in these territories should affect the adoption of measures on maintaining the existing high development rates of the regional educational system.

3. *Regions with moderate development rates (from 98 to 102%) – 9 subjects of the Russian Federation.* These are the territories, characterized by lack of significant changes in the level of education development for the studied

time period, that preserved but not improved their positions by the calculated index. The specific management actions, improving the effectiveness of the education system and monitoring its results, are to be adopted for the development of these territories.

4. *Regions with low development rates (from 84 to 97%) – 15 subjects of the Russian Federation.* These are the territories demonstrating the drop in the index values (at least 3%). The inclusion of the region in this group shows the loss of previously accumulated potential for education development, the government's disregard of the resolution of education issues.

5. *Regions with extremely low development rates (less than 84%) – 12 subjects of the Russian Federation.* These are the territories that demonstrate the greatest decline in indicators of the education development level, indicating the necessity to take urgent measures on creating conditions for the effective development of both infrastructure and personnel of educational institutions.

The assessment of indicators of the education development level showed that the regions of the Russian Federation are sharply differentiated by its rate of development in the 2010–2012 period (*tab. 2*). Thus, 45 (out of 81) of the subjects of the Russian Federation were able to improve their positions in this time period, while the positions of 27 subjects deteriorated.

The highest growth rates by the dynamics of support provided to talented youth are inherent in the Vologda Oblast (growth of indices for 2010–2012 amounted to 937%), the lowest rates are observed in the Republic of Buryatia (33%).

The dynamics of the indicators of the development level of personnel potential in the education sphere is more positive in the Samara Oblast (118%), and the least positive in the Republic of Bashkortostan (86%).

The survey results suggest that the development of education material and technical base is at the fastest pace in the Vologda Oblast (10.2 times), at the slowest pace in the Omsk Oblast (23%).

The most advantageous position by the dynamics of the protection and promotion level of child and youth health is taken by the Republic of Dagestan (193%), while Kamchatka Krai takes the least advantageous position (39%).

Cross-grouping of the regions showed that in general, the trends of education development coincide with the level achieved in the course of this development. It should be noted that the group of territories with high rates and level of development, significantly broader than the group with low rates and level of development (12 subjects against 6 subjects of the Russian Federation).

The peculiarity of the grouping is that large academic centres (Moscow and Saint Petersburg) were included in the group of “the falling behind” in terms of development rates, which is explained by high development level that had been already reached by their regional education systems.

The level of education development is significant for the strengthening of the territory’s economic potential and competitiveness, which is evidenced by the assessment of the dual interrelation between the index of education development in the regions of the Russian Federation and the size of the gross regional product in constant prices, calculated by the Pearson correlation. In 2012, the correlation coefficient is 0.31 ($r = 0.314$ ($p(0.01)$)), that confirms the existence of a significant interrelation between indicators. It should be noted that the closeness of the interrelation has been increasing over time.

The Vologda Oblast is included in the group of regions with extremely high rates and level of development. Constant improvement of the level of each sub-index in the region provided

for a favorable situation in terms of education development: thus, in 2010 the integral index was 0.19 units, in 2012 – 0.63 units (3 times higher). The level achieved by the Vologda Oblast exceeds the indicators of the neighbouring Northwestern regions: the Pskov Oblast (33%), the Arkhangelsk Oblast (34%), the Murmansk Oblast (32%), the Novgorod Oblast (20%), the Kaliningrad Oblast (9%), Saint Petersburg (16%), the Republic of Karelia and the Komi Republic (27% and 24% respectively), which became possible due to the notable achievements of the region in the sphere of support for talented youth (100% from the leading position) and the development of education personnel potential (77% from the leading position).

High growth rate indicators of the education development in the Vologda Oblast determine the availability of broad options for resolving strategic development issues of the territory by improving the education system. The critical level was determined for the comparative analysis of the obtained results. It represents lower threshold, the achievement of which impedes the normal functioning of the education sphere. In this study it is calculated as the arithmetic average of indices by all regions of the Russian Federation (x_{st}).

According to the survey results, a number of important indicators of the education system exceeded the limit of the critical level in the Vologda Oblast for 2010–2012, which is a positive trend for the region’s education development (*tab. 3*). This applies to such indicators as:

- the share of schoolchildren – participants of all the stages of All-Russian Olympiads (deviation is 10.9%);
- share of students in educational institutions, provided with support within the programmes for the support of gifted children and talented youth (deviation amounts to 43.7%), which is the maximum value of the indicator for 2012;

Table 2. Matrix comparing the RF subjects by the pace and level of development of the education sphere for the 2010–2012 period

Level	Rates				
	Extremely high (more than 134%)	High (from 104 to 134%)	Moderate (from 98 to 102%)	Low (from 84 to 97%)	Extremely low (less than 84%)
High (over 0.53)	Vologda Oblast (335)	Republic of Mordovia (120) Kaliningrad Oblast (105)	Belgorod Oblast (102) Leningrad Oblast (102) Penza Oblast (98)	Republic of Khakassia (91) Moscow (89)	Yamalo-Nenets AO (80) Saint Petersburg (74) Tyumen Oblast (68) Buryat Republic (61)
Above average (from 0.49 to 0.53)	Amur Oblast (141) Magadan Oblast (136)	Chukotka AO (125) Mari El Republic (122) Republic of North Ossetia–Alania (118) Tambov Oblast (118) Jewish AO (115) Samara Oblast (113) Sakha Republic (Yakutia) (106)		Krasnoyarsk Krai (89)	Khanty–Mansi AO (79) Krasnodar Krai (75) Omsk Oblast (63) Ivanovo Oblast (58)
Average (from 0.43 to 0.48)	Stavropol Krai (177) Yaroslavl Oblast (148) Ryazan Oblast (138)	Kemerovo Oblast (134) Komi Republic (130) Astrakhan Oblast (125) Chelyabinsk Oblast (125) Kostroma Oblast (123) Perm Krai (120) Moscow Oblast (119) Kaluga Oblast (118) Republic of Kalmykia (116) Lipetsk Oblast (106) Kabardino-Balkar Republic (104)	Novosibirsk Oblast (102) Ulyanovsk Oblast (101) Chuvash Republic (101) Murmansk Oblast (98)	Tomsk Oblast (97) Republic of Karelia (93) Saratov Oblast (92) Volograd Oblast (91) Nizhny Novgorod (91) Sverdlovsk Oblast (84)	Voronezh Oblast (77) Novgorod Oblast (76) Republic of Adygea (65) Altai Krai (56)
Below average (from 0.40 to 0.42)	Sakhalin Oblast (165) Udmurt Republic (141)	Republic of Bashkortostan (127) Smolensk Oblast (123) Irkutsk Oblast (117) Khabarovsk Krai (113) Tula Oblast (110) Arkhangelsk Oblast (105)	Orenburg Oblast (101) Tver Oblast (98)	Oryol Oblast (96) Pskov Oblast (94) Kurgan Oblast (92) Rostov Oblast (88)	
Low (less than 0.40)	Chechen Republic (218) Altai Republic (189) Republic of Dagestan (175) Primorsky Krai (154)	Nenets AO (134) Republic of Ingushetia (133) Karachay–Cherkess Republic (123) Zabaykalsky Krai (120) Kursk Oblast (115) Bryansk Oblast (113) Kirov Oblast (113)		Kamchatka Krai (97) Tuva Republic (89)	

Source: author's calculations.

Note. The calculations were not made for the Vladimir Oblast and Republic of Tatarstan due to lack of the data for 2010.

The percentage ratio of the 2012 to 2010 indices is specified in brackets, next to the regions. The regions with high rates and level of education development are in yellow, low rates and level of education development are in purple.

- share of teachers, attested with qualification grade (deviation is 4.3%);
- staffing of educational institutions with teachers, having higher professional education (deviation is 1.5%);
- share of students, provided with the opportunity to use study equipment for practical works in accordance with the new FSES PGE (deviation amounts to 23.9%);
- share of students at educational institutions, who are provided with high quality hot meals (deviation is 2.9%);
- share of students, studying at institutions with a licensed medical office (deviation is 8.8%);
- share of students, studying at institutions where at least 1 qualified health worker is present (deviation is 2.5%).

It is necessary to highlight a rather high level of support provided to talented youth in the Vologda Oblast (the region takes leading positions by the share of talented children provided with support under state programmes). It points to a rather active position of the regional education system in the sphere of using available opportunities for creating conditions for the development of the gifted and talented, support of gifted schoolchildren and students in their undertakings, as well as the protection of their individual rights, creation of a secure development environment, formation of favorable emotional background and positive public opinion.

At the same time, the analysis of the calculations results showed that high growth rates of a number of the indicators of the regional education system development are conditioned by low starting positions of the Vologda Oblast. For example, in 2010 the share of students, provided with the modern conditions for exercises made up 10%, and the percentage of schools with broadband Internet amounted to 7%. This fact prevented the oblast from reaching the limiting values by most indicators, leaving them beyond the

boundaries of the critical level that applies to such indicators as:

- share of graduates 11th (12th) forms, who received the General Certificate of Education for gold and silver medalists (the indicator is below threshold level by 2.12%);
- share of students provided with modern conditions for creative activities (the indicator is below threshold level by 8.40%);
- teachers' average salary as compared to the average salary in the region's economy (the indicator is below threshold level by 12.01%);
- share of teachers under 30 years of age in the total number of teachers in educational institutions (the indicator is below threshold level by 1.28%);
- share of teachers, who underwent in-service teacher training in the past school year (the indicator is below threshold level by 1.80%);
- share of students, provided with the opportunity to use modern libraries and media resources (the indicator is below threshold level by 14.71%);
- share of schools with broadband Internet (the indicator is below threshold level by 21.73%);
- share of educational institutions equipped with modern canteens (the indicator is below threshold level by 9.89%);
- share of students, provided with modern conditions for exercises (the indicator is below threshold level by 3.88%);
- share of schoolchildren, whose educational plan provides for more than 3 hours of physical education per week (the indicator is below threshold level by 10.10%).

Of special attention is the fact that the level of teachers' salary in the Vologda Oblast was under the threshold value by 13% in 2012, despite a notable rise (1.9 times for the 2010–2012 period). Still greater disparity (1.4 times) is observed in comparison with the region leading by this indicator (Moscow). According to the Complex of measures on

Table 3. Comparison of indicators of education system development in the Vologda Oblast in 2012 to the limiting and maximum values throughout the Russian Federation

Indicators	Actual value (2012)	Critical level		Maximum level		
		Value	Deviation	Value	Region	Deviation
Share of students in educational institutions, supported within the programmes for the support of gifted children and talented youth, %	45.54	1.88	43.66	45.54	Vologda Oblast	0
share of students, provided with the opportunity to use study equipment for practical works in accordance with the new FSES PGE, %	99.42	75.55	23.87	100	Tyumen Oblast	-0.58
Share of the schoolchildren–participants of all stages of the All-Russian Olympiad, %	60.61	49.72	10.9	74.35	Jewish AO	-13.74
Share of students, studying at institutions with a licensed medical office, %	87.75	78.99	8.76	100	Tyumen Oblast	-12.25
Share of teachers, attested with qualification grade, %	17.99	13.68	4.31	52.92	Samara Oblast	-34.93
Share of students at educational, who are provided with high quality hot meals, %	30.43	27.58	2.85	73.1	Moscow	-42.67
Share of students, studying at institutions where at least 1 qualified health worker is present, %	83.41	80.94	2.47	100	Tyumen Oblast	-16.59
Staffing of educational institutions with teachers, having higher professional education, %	97.41	95.88	1.53	98.84	Chuvash Republic	-1.43
Share of teachers under 30 years of age in the total number of teachers in educational institutions, %	11.93	13.21	-1.28	27.74	Republic of Ingushetia	-15.81
Share of teachers, who underwent in-service teacher training in the past school year, %	38.37	40.17	-1.8	60.84	Novgorod Oblast	-22.47
Share of graduates (11–12th forms), who received the General Certificate of Education for gold and silver medalists, %	5.49	7.61	-2.12	13.1	Kursk Oblast	-7.61
Share of students, provided with modern conditions for exercises, %	14.53	18.41	-3.88	80.76	Tyumen Oblast	-66.23
Share of students provided with modern conditions for creative activities, %	31.44	39.84	-8.4	88.73	Leningrad Oblast	-57.29
Share of educational institutions equipped with modern canteens, %	35.64	45.53	-9.89	99.56	Tyumen Oblast	-63.92
Share of schoolchildren, whose educational plan provides for more than 3 hours of physical education per week, %	12.15	22.25	-10.1	53.52	Buryat Republic	-41.37
Ratio of teachers' average salary to the average salary in the region's economy, %	94.65	106.66	-12.01	135.08	Moscow	-40.43
Share of students, provided with the opportunity to use modern libraries and media resources, %	18.06	32.77	-14.71	89.66	Yamalo-Nenets AO	-63.92
Share of schools with broadband Internet (at least 2 Mb/sec), %	5.7	27.43	-21.73	98.09	Saint Petersburg	-92.39

Calculated by the monitoring data of CPEM "Our new school". Available at: <http://www.kpmo.ru>

modernization of general education [5], the ratio of the teachers salary to the average salary in the region's economy should reach 100% at the end of 2013; yet it is not enough for the oblast to overcome the critical threshold and to attract young, innovatively active teachers to the education sphere.

Similar situation indicates the problems, the urgent solution of which is required for the harmonious development of the region's education system, but is impeded due to the stand of the official authorities. Thus, a lot of indicators, which are to be considered, either

are not reflected in strategic documents (share of schoolchildren, whose educational plan provides for more than 3 hours of physical education per week; share of students provided with modern conditions for creative activities), or their planned values are too small for the qualitative transition beyond the critical values. In this regard, it is appropriate to consider the assessment and the calculated threshold values, when elaborating the Complex of measures on the development of education system of the Vologda Oblast for 2014.

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