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Social Aspects of Education Integration (Based on Survey Findings on Uniform State Examination and Education Affordability)

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Introduction: the purpose of this article is to study the opinion of interested and non-professional segment of society regarding the Uniform State Exam on mathematics and affordability of higher education in Russia. The authors checked the hypothesis of interconnection between social opinion and changes in the exam procedure, economic and socio-demographic situation, educational system reformation and integration of educational space in the RF and other countries.
Materials and Methods: we studied the survey data of students in Togliatti State University, their parents or legal representatives between 2009–2016. We processed the results by methods of probability assessment with the help of complex features reflecting possibilities of the applicants admitted to higher educational institutions and social affordability of higher education.
Results: we theoretically grounded and developed the method of social opinion study about the Uniform State Exam and affordability of higher education in the region. Dynamics of social opinion was studied with the help of adapted probability rates describing either quantitative or qualitative features of social processes. We studied and analyzed scientific papers devoted to the attitude of society to secondary school final exams, admission to higher education institutions, and social mobility of the applicants and determined theoretical background of education space integration with the education systems of other countries.
Discussion and Conclusions: the research showed that even in the region with visible economic and socio-demographic problems the concerned part of society gradually understands that the Uniform State Exam serves to keep education quality in the country making it more affordable. The results of the study may be useful to specialists in the field of education, as well as interesting to the general public.

Keywords: mathematics Uniform State Exam, affordability of higher education, higher education institution, education integration, social opinion, social mobility of applicants and students

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Социальные аспекты интеграции образования (по результатам опроса о ЕГЭ и доступности образования)

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Введение: цель статьи – изучение мнения заинтересованной, не профессиональной, части общества относительно единого государственного экзамена по математике и доступности высшего образования в России. Авторами проверена гипотеза взаимосвязи общественного мнения с изменениями процедуры экзамена, экономической и социально-демографической ситуацией, реформированием системы образования, интеграцией образовательного пространства России и других стран.
Материалы и методы: исследовались данные опроса студентов Тольяттинского государственного университета за 2009–2016 гг., их родителей или законных представителей. Обработка результатов выполнена на основе методов вероятностной оценки с помощью комплексных характеристик, отражающих возможности абитуриентов при поступлении в высшие учебные заведения и социальную доступность высшего образования.
Результаты исследования: теоретически обоснована и разработана методика изучения общественного мнения о ЕГЭ и доступности высшего образования на уровне региона. Динамика общественного мнения исследована при помощи адаптированных вероятностных показателей, позволяющих описать как количественные, так и качественные характеристики социальных процессов. Изучены и проанализированы работы ученых, касающиеся отношения общества к школьным выпускным экзаменам, поступлению в высшие учебные заведения и социальной мобильности абитуриентов.
Обсуждение и заключения: исследование достаточно полно показало: даже в регионе с видимыми экономическими и социально-демографическими проблемами заинтересованная часть общества пришла к пониманию того, что единый государственный экзамен способствует сохранению качественного образования в стране, в то же время делая его более доступным. Практическая значимость статьи заключается в выявленной положительной тенденции изменения общественного мнения заинтересованной части общества относительно ЕГЭ по математике в РФ. Результаты проведенного исследования могут быть полезны специалистам в области образования, а также интересны широкой общественности.

Ключевые слова: единый государственный экзамен по математике, доступность образования, высшее учебное заведение, интеграция образования, общественное мнение, социальная мобильность абитуриентов и студентов

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Introduction

The Russian society keeps disputing about final USE at secondary schools. After the Russian Federation signed the Bologna Declaration 2003, USE was announced one of the points of education reform in Russia. We would like to recall that the aim of the Bologna process is convergence and harmonization of education system in European countries and creation of uniform European space of higher education [1]. Now 47 countries take part in this process, where exams similar to Russian USE exist.

There are three main positions related to USE: its full cancellation, support or improvement. Pedagogues met USE introduction in Russia cautiously but took it more loyally over time. We cannot say the same about the rest of Russian people. Their idea about USE bases on media publications. After introducing USE as experiment, (2001–2008), the attitude of population to it was sharply negative, as to all new, unknown, criticised. Then the authors had an idea of annual social research in Samara region devoted to opinion of secondary school graduates and their parents about USE, its results and consequences. The research was done by the chair "Advanced Mathematics and Mathematical Modeling" of TSU and covered the school graduates who sat mathematics examination in 2009–

2016 and entered TSU by results of USE, and their parents (legal representatives).

Already 15 years had passed since experimental USE introduction in Samara region, and for over 8 years, USE results had become mandatory for admission to HEI. This period was enough to get used to new format of the exam and admission. Due to annual surveys, the authors had a possibility to see changes in opinion of secondary school graduates and their parents. The main objective of this research was the study of opinion of interested, non-professional segment of society regarding USE and higher education affordability, linkage between these opinions and processes going in the region. The research problem of this article touches the social aspects of mathematics education and its integration into European one, USE and higher education affordability in particular, and their connection with events happening in the region. The factors hypothetically influencing on social attitude are the following: changes in the examine process, education reform, Russian education integration with other countries, changes in economic and socio-demographic situation.

The authors developed a methodological approach to the problem of research. These methods let, in the course of literature study, theoretical preparation to research done and analysis of collected empirical materials, to establish a theory and ways of studying dynamics of public opinion regarding mathematics USE and higher education affordability on regional level. We made a theory base for probability rates describing both quantitative and qualitative features of studied processes and adopted them for this research. The factors effecting on social opinion in this range of problems were fixed. We studied and analyzed a number of research works regarding public attitude to secondary school final exams and admission to HEI. We determined theoretical background of education integration space in our region with education systems of other countries.

The authors identified opinion trends of school graduates of the region and their parents, about math USE and possibility of admission by its results to HEI. We processed the results of surveys and studied them with the help of probability rates and determined the grade of influence of many factors on social opinion. We also compared the conclusion with results of studies by other scholars. After integration process of domestic and European education systems status estimation at the regional level, we analyzed the possibilities of integration extension.

The works of such eminent mathematicians as N. Rozov [2], G. Malinetskiy [3], and others contain ideas of USE being an integration form of Russian education with education of developed western countries. As our experience shows, most of students in a regional HEI do not attach such meaning to USE. Most of them are sure that in other countries exams are easier because they have no USE. It is widely believed that to pass an exam in your own school would be easier and results would be much better. Such an attitude comes from family and school, under the influence of parents, teachers, speeches and media publications. However, most of respondents answered positively the question about fairness of their mathematics USE score and necessity of this exam nowadays; that in whole contradicts to this situation.

Actually, practice of such exams exists worldwide. Particularly in Poland, there is exam called Matura, similar exams are in other European countries. At the same time there is no exact similarity, each country has its own process for final school exams and HEI admission rules. For example, in Poland there is basic and advanced type of mathematics exam, in Russia basic and core levels of the USE relatively. In very few countries, Ministry of education so totally controls USE process as in Russia. During transfer to testing exams in Russia, the authors of test assignments were oriented on western systems and in particular at the USA experience. American prototype of USE is American College Testing. However, the experts say that Russian analogue differs significantly from ACT, and not to the better [4]. The main distinction of American predecessor from Russian

equivalent is the part called "scientific thinking". Here it needs to understand and analyze certain information and the object of research, to evaluate two or three alternative assumptions, theories or point of view on some notable phenomena[1]. This very part often plays a crucial role when admitting to a HEI.

In Russia very often controversial situations and problems occurred that attracted the attention of journalists to USE and have always been under wide public discussion [5]. All-Russia center of studying of public opinion and fund "Social opinion" annually publish social surveys data about USE[2]. By materials of these surveys, we can conclude that schoolchildren showing good results at the exams, their parents and teachers are gradually accustomed to USE estimate it positively. We cannot say the same about schoolchildren with low USE scores and people not participating in USE process but only having heard of it.

Literature Review

In Russia, a great deal of scholarly articles are devoted to pupils trainings for USE, to analysis of its results on various school subjects, the structure and content of test assignments, process of exam, to HEI admission and other relating problems. It is noted, "USE is necessary as an instrument of knowledge quality value and consequently, of social leveling when admitting young people to HEI" and we need to stop complicating admission process[3]. The USE process being analyzed, various arguments "for" and "against" USE are discussed, founded recommendation to change USE and separate school from USE suggested [6; 7]. Many studies are devoted to USE application for quality value of school education [8; 9]. One of the most discussed and criticized is mathematics USE, since this exam is essential for all school graduates and its specific contributes.

The publications about social opinion regarding USE based on social survey are very interesting. Schoolteachers convincing pupils in USE complexity and a chance to have a low score put schoolchildren in alert before exam. Therefore, the survey made in 2012 among teachers of two Russian cities Omsk and Tumen (2 156 respondents) showed that the attitude to USE of most of them was negative [10].

One of the ideas predetermining USE introduction was social affordability of higher education. In Russia, as worldwide, there are well-known instruments providing advantages for admission to HEI for the children from wealthy families. Family income and education, its social and cultural resources influence greatly at applicants' social mobility [11]. The results of some public surveys done by Russian scholars could confirm it [12–14]. In so-called "selective" or "prestigious" HEI mostly the children of most successful parents study [12; 15]. Graduating from different HEI, the graduates have unequal opportunities in future employment [16; 17]. There are studies showing that students from less wealthy families have less social mobility, they could have had higher incomes if they had graduated a more "selective" HEI [18–20]. In developed countries, there is support for applicants from different social groups aiming to align the opportunities of applicants and students for higher education [21].

Thus, we studied and analyzed the works of scholars regarding the public attitude to school final exams and admission to HEI by USE results. Many aspects of USE organization and admitting to Russian HEI by its results studied well enough in details in domestic academic articles. Among them, the works regarding expert evaluation in this field prevail. There are also studies basing on a number of social surveys about USE. But interconnection of USE and higher education affordability in Russia needs deeper studying. At the same time, foreign scholars have been for years studying in details the affordability of higher education and social mobility of

[1] The ACT [Электронный ресурс]. URL: http://www.actstudent.org (дата обращения: 10.01.2017).

[2] Не полюбившийся ЕГЭ. Данные фонда «Общественное мнение» // Отечественные записки. 2012. № 4 (49). С. 92–94. URL: http://elibrary.ru/item.asp?id=19413339 (дата обращения: 25.11.2016).

[3] *Смирнов И. П.* ЕГЭ: великий и ужасный // Профессиональное образование. Столица. 2015. № 7. С. 1. URL: http://m-profobr.com/files/----------7,-2015.pdf (дата обращения: 02.12.2016).

applicants and students. Having analyzed these works, we conclude that one of the theoretical backgrounds of education integration in our region and other countries is the affordability of quality higher education at home country for bright and talented applicants independently of their social status. In turn, the level and quality of higher education should ensure graduates' social mobility and worthy job either in home country or abroad. In integrated education, only equal possibilities can be positive without loss in academic, education and cultural capital of the region. There are such universities in Russia but in general, social security system for students in our HEI is insufficient [22]. Due to strong social support programs for students, increase of education services export in other countries we observe the intensifying migration of talented applicants from Russia abroad instead of mutually advantageous integration of higher education now [23].

Materials and Methods

Materials for study included the survey of the 1st year TSU students taking profile mathematics USE. We used the following methodology of a survey. Questionnaire included information about a respondent and his/her USE score in mathematics, 7 questions for the student and 5 for his/her legal representative. We selected students by a random repetition-free method without systematic errors that correctly represented the proportion of general population. About 92 % of survey participants were from Samara region including 77 % of Togliatti inhabitants, the rest were from Ulyanovsk, Saratov, Orenburg and other regions. More than 5 000 students and almost as many adults participated (table1).

Table 1. **The number of respondents between 2009–2016 respectively**
Таблица 1. **Количество участников опроса в 2009–2016 гг.**

Number of 1st year students / Количество студентов I курса очной формы обучения	The year of the survey / Год опроса								Total / Итого
	2009	2010	2011	2012	2013	2014	2015	2016	
Total, people / Всего, чел.	3 030	3 114	3 421	2 914	3 106	3 450	3 151	3 645	25 831
Respondents, people / Опрошено, чел.	783	754	632	585	567	587	541	604	5 053
Respondents, % of total number / Опрошено, в % от общего количества	25,8	24,2	18,5	20,0	18,3	17,0	17,1	16,7	19,6
Respondents, parents or legal representatives, people / Опрошено родителей или законных представителей, чел.	781	754	632	584	567	587	541	603	5 049

The sample proportion was 0,196 (19,6 %) from the total number of 1st year TSU students, full-time course. For this sample maximum size of representativeness error at the level of confidence probability is 0,95 (95 %) not increasing 1,24 %, that let spread the survey results to all 1st year TSU students. Total number of respondents was 10 106, and 9 196 of them were Togliatti inhabitants. According to statistics, the number of school graduates constituted more than 3 000 people in 2015, nearly the same in 2016, but in 2009–2014, this number fluctuated from 4 000 to 5 000. Today TSU have about 80 % of Togliatti secondary school graduates (about 75 % for the years of the survey) coming to our University; that is why this research represents social opinion of Togliatti secondary school students, their parents and legal representatives at the significance point of 0,05 %.

We processed the data by probability rates reflecting possibilities of applicants when entering a HEI and social affordability of higher education in the region [24].

This is ratio of unrealized potential on the segment $[k_{max}, k_{min}]$:

$$\gamma(k_{\max}, k_{\min}) = \frac{\sigma(k_{\max})}{m}. \quad (1)$$

Normalised ratio of unrealised potential:

$$\gamma(\alpha) = \frac{\alpha}{1-\alpha}\gamma(k_{\max}, k_{\min}), \ 0 \le \gamma_\alpha \le 1;$$

$$\frac{\min}{\max}. \quad (2)$$

Complex feature of social opinion on t elements (questions):

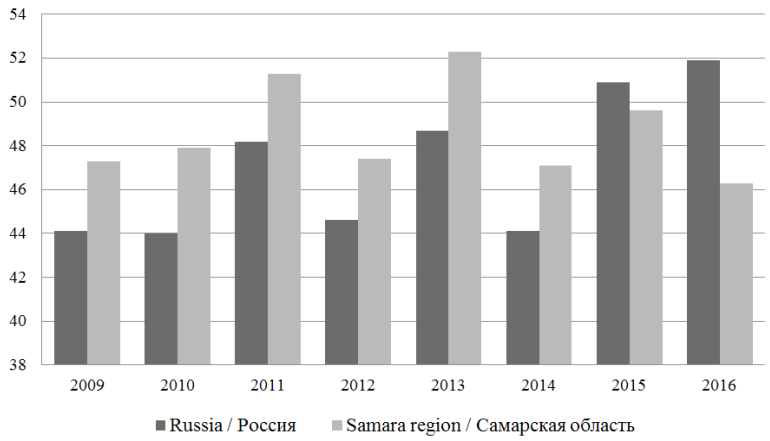
$$S_m = \sum_{i=1}^{m}\left(\frac{\alpha}{1-\alpha}\gamma_i(k_{\max}, k_{\min})_i\right). \quad (3)$$

γ_i – Unrealised potential ratio of i-element (question).

Results

We have revealed opinion trend of school graduates, their parents or legal representatives of our region, about mathematics USE and possibility of HEI admission by its results between 2009–2016. We checked the hypothesis of interconnection between social opinions and exam process correction, reform of education system in the country, Russian education integration in other countries, changes of economic and socio-demographic situation in the region.

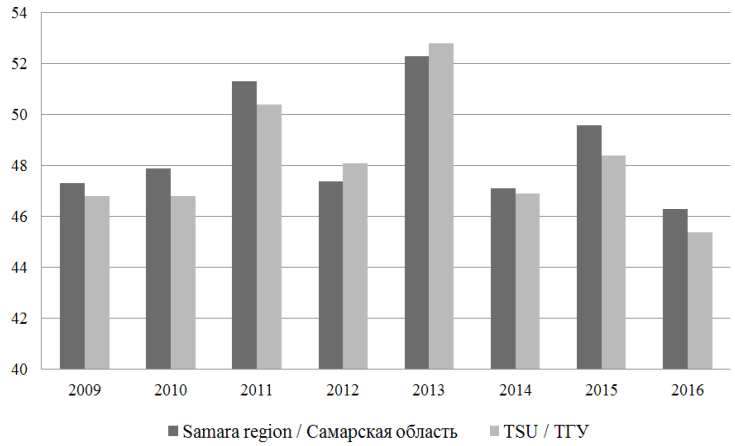
Samara region was an experimental platform for USE from 2001, so when USE became essential in the whole country (2009), our school graduates were more adapted to it. The results were higher scores on mathematics USE and this became possible due to the eight-year period of adaptation and practice accumulated by the education system of the region (fig. 1). The situation changes gradually mirror-like since USE procedure change and by 2016; the applicants from our region had lost their advantages. There is a correlation dependence of average mathematics USE score in the region from the following factors: the process of USE and different procedure of its conduction.



F i g. 1. Results of USE in mathematics in Russia and Samara region
Р и с. 1. Результаты ЕГЭ по математике по РФ и Самарской области

Average scores on mathematics in TSU are a bit lower every year than average mathematics scores in Samara region for the following reasons (fig. 2). Now the population of Togliatti constitutes about 22 % of Samara region population, i.e. this rate reflects the average level in the region. The socio-demographic situation in Togliatti deteriorates. For example in 2016, Togliatti became a leader in unemployment in Samara region. Many of city enterprises stopped, 2,4 people pretended

for one working place. Real income of people decreased compared to previous year in 2014 by 10 %, in 2015 by 7,8 %. The average salary in 2015 decreased by 10,1 % (excluding inflation)[4]. The youth has no social mobility in the city. TSU is a university with average rate of "selectiveness" [12] and applicants having high grades of USE choose universities with higher rate of "selectiveness" in other cities.



F i g. 2. USE results in mathematics in Samara region and TSU
Р и с. 2. Результаты ЕГЭ по математике по Самарской области и ТГУ

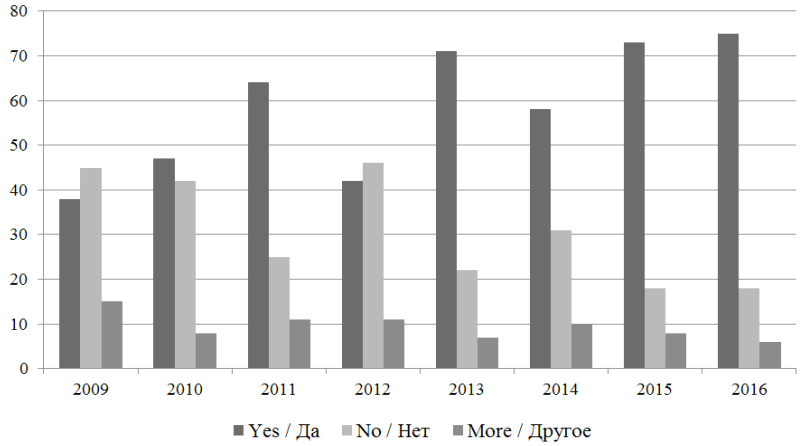
Among the reasons causing USE introduction, 26 % of survey participants in 2016 indicated different levels of training in schools. Next 18 % consider USE more objective estimation than admission exams at HEI. Other 15 % think that without USE the corruption in universities will strengthen. Following 26 % refer to possibility of university choice without personal presence. Finally, 14 % suppose that USE helps to increase education level. The respondents could answer this question choosing not more than three variants indicating main reasons. It is remarkable that when answering this question the number of people mentioning corruption as one of the reasons of USE introduction decrease from 42 % in 2009 to 15 % in 2016. USE practice changed the social opinion and the most of respondents do not consider now a problem of corruption at HEI as sharp as before.

The analysis of answers to question about fairness (impartiality) of USE in mathematics showed that opinion of secondary school graduates changed. Percentage of participants considering their scores on USE fair increased (fig. 3). Number of dissatisfied with the fairness decreased from 45 % to 19 %.

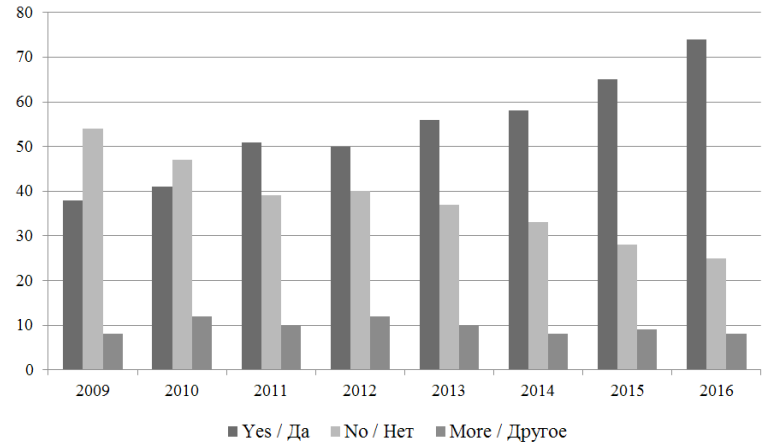
During first years of mandatory USE, students' expectations concerning results on mathematics were too high and some failures and changes happened during exams procedure that affected negatively on opinion about fairness. Before 2014, an information leakage occurred, variants of solutions on mathematics were disposed in internet prior to USE, so many of school graduates took advantage of using mobile gadgets at the exam [5]. When admission at HEI by USE results began, students had a biased attitude to fairness of USE. As you can see, over time necessary for addictive the surety in fairness of the results increased. About one-third graduates and even some of those who answered positively the question about USE fairness are still against USE because of its strictness. That is a paradox: no strictness resulted in total dissatisfaction of unfair scores, and now, on the contrary the dissatisfaction related to the system of this fairness support.

[4] Уровень жизни населения [Электронный ресурс] // Самарский статистический ежегодник 2016. URL: http://samarastat.gks.ru/wps/wcm/connect/rosstat_ts/samarastat/ru/statistics/standards_of_life/ (дата обращения: 05.03.2017).

The number of surveyed considering USE a necessary procedure for admission to HEI is fluctuating on average between 38 % and 74 % (fig. 4). Now, 78 % students suppose USE is necessary because it exempts from need to pass additional admission exams at HEI. This point of view share 49 % of parents. In addition, 25 % adults consider that their children take education more seriously due to USE. The rest 26 % suppose if their children passed exams both at school and admission tests at university material expenditure would be less. Besides, 38 % of school graduates hired tutors and 7 % in addition to it attended special training course at universities that contributed to parents' costs. 42 Percent of respondents indicate 50 marks as minimum admission score, 37 % indicate less score, even 25. 16 Percent consider that universities should admit everybody irrespective from USE score. Only 4 % of the surveyed pointed the values more than 50. These are students having similar scores and their parents.

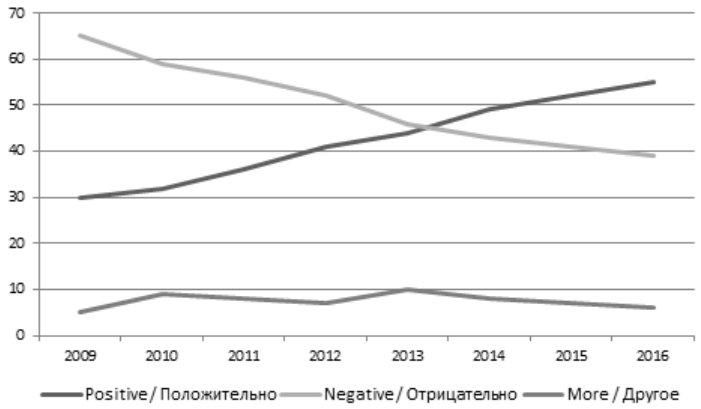


F i g. 3. Dynamics of students' opinion about USE fairness (impartiality) in mathematics
Р и с. 3. Динамика мнения студентов о справедливости ЕГЭ по математике



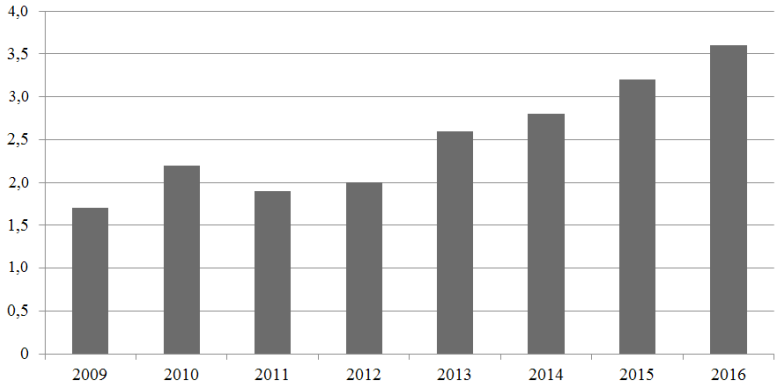
F i g. 4. Dynamics of respondents' opinions about necessity of USE in mathematics
Р и с. 4. Динамика мнения респондентов о необходимости ЕГЭ по математике

Figure 5 shows results of surveys about transfer from ten year school education to eleven year one. The opinions of school graduates and their parents on this process differ. Now, 36 % of adults refer negatively to this transfer and 11 % indicate financial reasons. In 2009, about 53 % parents pointed out financial difficulties among the reasons of unacceptability of eleven-year system of school education.



F i g. 5. Attitude to secondary school transition from 10 year education to 11 year one
Р и с. 5. Отношение к переходу школы с 10-летнего обучения на 11-летнее

Processing of research results performed using indicators (1)-(3) at the level $p = 0{,}95$. The ratios of unrealized potential (1) are calculated on the interval $[k_{max} = 5, k_{min} = 1]$. Due to transfer (1) and (2) to the levels of indexes regarding maximum values and generalized characteristics calculations S_m (3) for each year, we studied dynamics of social opinion concerning affordability of higher education in the region (fig. 6). There is an upward trend of public opinion about social affordability (average by 9 % a year). We would like to note that survey participants oriented of course, at affordability of higher education at a university with average rate of "selectiveness". Though about 8 % respondents expressing a dissenting opinion indicated that USE let the best school graduates with no problems enter the HEI in other cities they had chosen.



F i g. 6. Dynamics of social opinion (S_m) about affordability of higher education in the region
Р и с. 6. Динамика общественного мнения (S_m) о доступности высшего образования в регионе

We confirmed the hypothesis with probability 0,95 and one can see a positive correlation dependence of social opinion of applicants and their parents about mathematics USE and higher education affordability with changes in USE process, education system in the country, economic and socio-demographic situation in the region. These conclusions are confirmed by results of similar studies. There are studies of Polish scientists devoted to people's points of view and their knowledge about the consequences of reforms introduced, about using computer technologies in studying process, about present and future of schoolchildren and students. The results of these studies evidence that education affordability increase due to introduction of mandatory exam Matura on mathematics, its development and improvement [25].

Mathematics exam for school graduates and applicants of HEI is mandatory in all countries of the Bologna process. If exam presents independent estimation of knowledge, by its results we can make conclusions about readiness of country education system to integration. The results of our social research and methods of these results processing enable to measure the degree of readiness of society to the process of integration education in the region.

Discussion and Conclusions

In developing countries, similar social-economic processes take place and consequently, problems in education space are nearly the same[5]. To compare situation we chose Poland. This country has recently got rid of Soviet past as Russia, but economically integrated into uniform European space. A person can enter a state or private HEI in Poland only after successful passing of Polish equivalent of USE called Matura on basic or advanced level. As in most universities of Russia, the admission does not require additional tests. However, in private Polish HEI the state does not finance the education. Students pay for studies. Here we observe the serious difference with Russia where in the same HEI there are students on budget financing and students paying for studies. One can enter the payable course in Russia easier, because usually the lower USE scores admitted.

Both in Poland and in Russia problem of education quality and affordability were widely discussed in relation with introduction of essential mathematics exam. Either in Poland or in Russia the demand on education services in private HEI decreases therefore decreases the number of the last; and in state HEIs there is a shortfall of applicants because of so-called "demographic pit" [26]. Reform of 2011 changed the system of Polish higher education. Now, the internationalization became a possibility for development of Polish universities. Along with increasing competition of universities for prospective students, the government takes measures on improving quality and attractiveness of Polish education for foreign students. They extend budget investments for higher education development directing them mainly to the best universities. They support innovative research in collaboration with scientists from prestigious world universities. Another measure of Polish government is assigning scholarships for students from foreign universities with which Poland develop collaboration. Because number of foreigners grows in Polish universities, the last compete to Russian higher education, for prospective students.

The trends of educational reforms, being a part of world globalization along with priorities of unique educational space creation influence national features of education system and its quality [27]. The level of education is a factor of stable development and economic growth. The last economic crisis in the USA induced increase of state education support that was a way of crisis overcoming[6]. The report of OECD says that economic growth is determined by support and improvement of knowledge base. The advantages of countries depend to a lesser extent on natural resources and cheap workforce but more on technical innovations and knowledge use[7]. That's why it is impossible not to mention the importance of mathematics and its applications, mathematics education, mathematic culture for perspective increase of economic development of nations and science-driven

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growth of society. Mathematics, with no doubts is a miracle of international culture in which the history of human thought and human achievement find their reflection [25].

The hallmark of new education system integrated into world education environment is the change of estimation of students' knowledge and skills. The USE introduction in Russia, Matura in Poland and similar exams in other countries, providing selection of applicants for HEI admission, is such inevitable sign of our times. Gradually a biased attitude to USE and its similarities abroad strongly imposed by the media, gives way to common sense. Our research demonstrates that such estimation of school graduates' knowledge improves the affordability of higher education.

But it is impossible to put all the applicants in equal footing. The level of youth social support in the region influences greatly at higher education affordability; in developing countries, this support level is much lower than that in developed states [28]. As this research shows, the negative attitude of society to a new format of admission tests in HEI is also result of social non-mobility of applicants and students. Therefore, in Russia, the family supports a student financially. As a result, a misconception takes place – the parents of school graduates lack funds for future education of children but still suppose that without USE the situation would have been better relying on their memories, experience, messages in media, etc.

An example of such phenomena is that a fifth part of survey participants thinks universities should admit everyone and only 4 % of respondents suppose that a minimum passing score on mathematics should exceed 50. The respondents consider a reason of non-admission the excessively high requirements or scores, not bad knowledge of mathematics. This suggests the dominance of the worldview developed in adulthood explaining social inequality by the fault of external circumstances. TSU is a university of average "selectiveness" and among the respondents prevail the students with average USE results and their parents. Well known, that students in groups with mixed abilities incline to blame the teachers and bad lack in their marks while the best students usually blame themselves in not very good results [29].

It is not surprising that dissatisfaction with mathematics USE scores very often occurs. In 2016, 74 % students participating in our research considered their scores at mathematics USE fair. Such contradictory results cause concern. Of course, each child has its own natural abilities, and mathematical thinking really is to learn using these abilities in mathematical methods, exploring mathematical problems[8]. However, for comprehension of university mathematics program an applicant should have both skills developed in school and certain knowledge base, generated concepts and skills. Developmental psychology of human intelligence bases on traditions and culture of the society [30]. Admission of everyone including applicants with minimum scores associates with a certain deception; after all such student will not be able to comprehend the program of a university giving qualified training.

Mathematics USE introduction someway improved the whole situation in education. The PISA 2012 rating mathematics results testify to it[9]. In the rating 65 countries participated, the leaders being China, Taiwan, Japan, South Korea, and Singapore, all countries actively developing high technologies and striving to change their place in the world. Russia is on the 34th place on quantitative literacy, average results improved comparing to the previous study cycle in 2009. Similarly, in Poland, according to PISA rating, the level of quantitative literacy of schoolchildren has improved since mandatory mathematics Matura introduction. The experts suppose the favorable trend will continue.

Thus, a competitive selection at universities basing on USE results is an important

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component of Russian education integration in other countries, enabling to keep education traditions by modern ways and simultaneously making it more affordable. Our study showed fully enough that even in Russian provincial towns people gradually begin to understand benefits of USE. As for public dissatisfaction with USE strictness and impossibility to enter a HEI for applicants with low marks on mathematics USE, it needs to understand the extent to which it reflects the real problem of access to education or based on position of blaming surrounding world in one's own failures and mistakes. This research proves that USE and the education system in our region reflect both positive and negative processes going in society.

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Nataliya N. Kosheleva – data collection and systematisation; research results processing and description; results quantitative and qualitative analysis; tables, graphs and charts composition; summary composition.

Antoni Ya. Pardala – theoretical analysis of world literature; description of European countries experience in survey questions; consulting assistance.

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