Inconsistency between educational attainment and literacy: The case of Russia

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ABSTRACT

From the moment when wide spread of large scale assessments in sociology and economics began, the most commonly used indicators of peoples’ qualifications are the number of years spent in education and the possession of a high school/college/university diploma. But what if these formal indicators are unreliable under certain conditions and do not reflect actual literacy and competency of people? This article, drawing on data from the Programme for the International Assessment of Adult Competencies (PIAAC), questions accuracy of the basic educational indicators in Russia. There is a linear relationship between the possession of a formal graduation diploma and the measurement of PIAAC literacy of the able-bodied population in OECD countries, including the Eastern European ones. However, the analysis shows that in Russia there is an inconsistency between literacy and formal educational status. This fact in itself casts doubt on the effectiveness of formal education indicators in Russia. The social implications resulting from this inconsistency become apparent through an international comparison of research results. These ill effects have been documented in the areas of employment, education and social reproduction and in the social self-awareness of the Russian people.

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1. Introduction

Researchers have begun to pay more attention to Russia’s education system, and their studies have revealed a number of tensions and crises. It has been shown that educational returns in Russia are already low and are continuing to decline consistently (Cheidvasser and Benitez-Silva, 2007; Lukiyanova, 2010). Based on both Russian and international studies, we can observe trends towards a contradictory influence of stratification variables, such as income, occupation and cultural capital, on education (Carnoy et al., 2015; Vanke et al., 2017). There is, however, a serious lack of explanation for the aforementioned empirical evidence. In this article, we intend not only to contribute to a series of robust empirical studies on Russian education but also to offer, on the basis of those studies, new interpretations and clarifications of previously obtained results.

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Today, education and human capital are recognized as crucial components of the development of countries across the world. Yet, the adequacy of the education indicators used in social science research continues to be debated. As a rule, the two most commonly used indicators are the number of years spent on education and the availability of a high school/college/university diploma. However, do these indicators always provide an accurate picture?

In this article, through the example of Russia, we suggest that we should consider a situation of discrepancy between the formal indicator, which is used to measure the level of education (availability of graduation diploma), and the literacy level, which is the actual measured individual level of knowledge. We also suggest to consider the implications resulting from such a discrepancy. The significance of this approach lies not only in the obvious disagreement between the formal indicators and actual literacy levels but also in the “content” inconsistency that is hidden behind these formal indicators. We assume that in the case of inconsistency between a formal education indicator (availability of graduation diploma) and a measured indicator, we may observe notable differences in the interrelationships between measured literacy and socio-economic indicators in the areas of employment, income, and current education, as well as in the assessment of social well-being.

Due to the lack of valid and representative data, it appears difficult to conduct comprehensive studies of Russian education. However, this situation is beginning to change thanks to Russia’s participation in international literacy measurement projects. Among these projects are the Programme for International Student Assessment (PISA), Trends in International Mathematics and Science Study (TIMSS), the Progress in International Reading Literacy Study (PIRLS) and others. With the release in 2013 of the data obtained through the Programme for the International Assessment of Adult Competencies (PIAAC), information on the literacy of secondary and high school students was supplemented by data on the competences of working-age people. The PIAAC was Russia’s first experience participating in a large-scale adult literacy measurement effort, an effort that is capable of evaluating the performance of education systems on the macro level and in an international context. In this article, we address the adult literacy measurement results obtained under the PIAAC.

The main advantage of an adult literacy measurement program like the PIAAC is that, along with the formal educational status of respondents, we can also assess their real literacy levels. The PIAAC data make it possible to assess the distribution of competencies among the adult population in Russia and in the Organisation for Economic Co-operation and Development (OECD) countries. Having access to such information enables us to extend our analysis beyond what has traditionally been called “school.”

Therefore, this article aims to address several issues. We aim to show that there is some inconsistency in Russia between formal education indicators and measured literacy rates. If this is true, what are the implications of this inconsistency? Furthermore, do these implications apply to the whole of Russia’s society, including its institutions and social fabric? How does measured literacy affect either the “success” or “failure” of people in society where education indicators reveal inconsistency? Are there any implications for schools and social reproduction?

The article proceeds as follows. The literature review provides the theoretical background for the study in order to identify the social consequences of educational inconsistency. The methodological section offers the necessary information about the PIAAC study and the empirical research description. The next section shows the empirical results which were obtained. The last part clarifies the analysis and contains a discussion of the results.

2. Theoretical background and earlier research

In this section we start with a general question: what is an education indicator from the standpoint of sociological theory and why such an indicator is important? Sociological theory suggests at least two perspectives that, following John Meyer, can be called the socialization view and the allocation theory (Meyer, 1977). Rooted in functionalism, the socialization perspective assumes that knowledge acquisition and an increased number of educated people make society more complicated and lead to the development of social institutions. Mostly on the basis of this idea, large-scale international literacy and skill research studies, such as the PIAAC (OECD, 2013b), are being initiated and developed, and this article draws on the materials of the PIAAC. Neo-institutional studies in the area of education also apply this perspective (Powell et al., 1991; Wiseman et al., 2014). According to the logic of this approach, the efficiency of an educational institution is determined by the increment of knowledge. Therefore, we can expect a linear relationship between the number of years spent on education (or the level of the formal graduation diploma) and the amount of knowledge acquired. If such dependence is not observed, it would be appropriate to consider whether there is an institutional failure that should be closely examined by researchers.

The idea of allocation, which is linked to critical theory in sociology, states that education is related to the structure of society and that it “distributes” people in society (Bourdieu and Passeron, 1977; Collins, 1979). According to this perspective, the outcome of education is “authoritative knowledge”, which opens doors to certain segments of society. The efficiency of such distribution within society — as well as the reproduction of society — depends on formal certification procedures (the granting of graduation diplomas) and on the knowledge that the education system is capable of relaying. In situations where formal diplomas are not supported by knowledge, one has to question the efficiency of formal education as an allocative system. In such cases, alternative distribution mechanisms are likely to be involved.

Therefore, the disagreement between formal indicators (availability of graduation diplomas) and measured literacy levels must have serious social implications with regard to the two perspectives considered above. It can be suggested that the presence of educational inconsistency will have impacts on employment, education, social reproduction, and social well-being, as well as on the structure of society.
An important hypothesis has been developed that links measured adult literacy levels and the socio-economic success and accomplishments of adults. This hypothesis is being tested as part of the implementation of international adult literacy measurement programs (including PIAAC). In particular, the linkage between literacy and a wide range of socio-economic characteristics has been demonstrated in a number of developed countries during the course of two international studies of adult competencies (OECD, 1997; OECD, 2000). According to some studies (Hanushek and Woessman, 2008; Hanushek et al., 2015), higher literacy levels, at least in developed countries, are linked to higher labour market returns. Let us note that in all countries studied by Hanushek and his colleagues, there is high agreement between formal and measured indicators of education level. At the same time, Russian researchers persistently use the availability of graduation diplomas as the standard education indicator in their studies of educational returns (Lukiyanova, 2010; Roschchin and Rudakov, 2015).

According to its developers, the international PIAAC testing system aims to take into account the extent to which different groups of citizens are integrated into modern society (Schleicher, 2008). Under this approach, people who are not at a certain basic level of literacy find themselves at-risk and are actually excluded from social relations (Thomson and Hillman, 2010).

In our opinion, the two hypotheses proposed by Hanushek and Schleicher are perfectly sound in a situation where the formal education indicator (diploma) is linearly related to the level of measured literacy. However, what happens if there is no such linear relationship? Will adults’ low competency levels continue to result in their exclusion from society and eventual failure? And what will happen if competency levels are high? We aim to address these issues in this article. To do so, we will compare the social characteristics of highly educated groups and poorly educated groups in Russia and the OECD countries.

In addition, the inconsistency we have discussed may affect the education system, as well as the results of international literacy studies of secondary school students. These results are widely used by policymakers in Russia and other countries. Using the results of a nationwide survey of 600,000 schoolchildren, 60,000 teachers and 4000 schools in the United States in the mid-1960s, J. Coleman showed that educational results are less related to the characteristics of the schools (including the quality of infrastructure, programs and teachers) than to the family experience of the schoolchildren and the cultural capital of their families/parents (Coleman et al., 1966). Later, these findings were confirmed by data from a longitudinal survey of 28,000 schoolchildren (Coleman et al., 1982).

According to an analysis of the Trends in International Mathematics and Science Study (TIMSS) and the Programme for International Student Assessment (PISA) data, schoolchildren from socially and economically advantaged groups in Russia score significantly lower than similar groups of schoolchildren in other countries, such as Poland, Latvia, Sweden and the Czech Republic. However, Russian students from the least advantaged families show better results than their age-mates in other countries (Carnoy et al., 2015). It is likely that the reasons for this imbalance lie not only in the children’s schooling but also result from some structural inconsistency in Russian society. Based on the above, one can suggest that the problems of Russian schoolchildren with high socioeconomic status are not accidental and instead are related to their families’ cultural capital or to the level of education and competency of their parents. Thus, a possible explanation for the “abnormal” scores of Russian schoolchildren could be that their parents’ education was measured incorrectly, and their diplomas do not match their actual competency levels. Data provided by the PIAAC make it possible to prove, albeit partially, this hypothesis.

3. Data and research design

This article uses data from the Programme for the International Assessment of Adult Competencies (PIAAC), conducted on request of the OECD. The PIAAC is a program that evaluates the skills and competences of adults taking into consideration all age groups from 16 to 65, that is, people of “working age”, while some other projects (TIMSS, PIRLS, and others) focused on evaluation of college students and/or schoolchildren. In this regard, we should note that international studies have taken two main approaches to measuring educational results. The first approach, used under the TIMSS and PIRLS programs, focuses on examining the subject knowledge gained in school. The other approach, however, is more universal. It is known as the competency-based approach, and it is used in the PISA and PIAAC programs. The notions of “authoritative knowledge” and “competencies” do not focus on the precise content of skills, such as vocabulary or knowledge of arithmetic operations. To a larger extent, these notions seek to capture the ability to orientate oneself in a certain context and to choose sound information processing and problem-solving strategies (OECD, 2013b). In other words, they focus on the ability to apply knowledge in circumstances as close to real life situations as possible. Although the term “competency” has been used by researchers for decades, it has become particularly popular in the area of education since the early 2000s (Weinert, 2001; Csapo, 2004; Rychen and Salganik, 2001, 2003; Sternberg and Grigorenko, 2003).

Here, we use the results of the first round of PIAAC (2012), during which measurements were obtained from 24 countries around the world. A fairly detailed description of the sampling procedures and field work is available in the PIAAC international project technical report (OECD, 2013a). Two main instruments were developed for the program: a set of tests and a questionnaire. The set of tests was intended to evaluate respondents’ levels of reading literacy, mathematical literacy, and

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1 The number of respondents in Russia was 3892 persons. The sample was representative for the whole territory of Russia, except for the City of Moscow and the Moscow Region. The study did encompass Moscow and the Moscow Region; however, malfunctions in a number of computer-aided tests were revealed in both these regions. Reviewing the results of the survey, the ad hoc committee came to the conclusion that the data obtained for Moscow and the Moscow Region had to be disregarded and removed from the international data base. Data representativeness for the rest of Russia has been confirmed.
problem solving in technology-rich environments, which, according to the program developers, form a basis for personal and professional growth (OECD, 2013a).

The questionnaire was intended to collect baseline data on the demographic characteristics and education of the respondents; it also collected retrospective information on employment, breaks in service, job changes, participation in social welfare programs and formal and informal training programs.

The PIAAC highlights the key competencies (synonymous with "basic skills") that, according to the developers of the program, enable an adult to function efficiently in today's world and to cope with most real-life situations. These key competencies are reading literacy, mathematical literacy, and the ability to solve problems in technology-rich environments.

For instance, reading literacy is not similar to basic ability to read but includes correct usage of given text information to participate in society.

The PIAAC proficiency scales range from 0 to 500 score-points and represent degrees of proficiency, which includes accessing and identifying, integrating, interpreting, reflecting on and evaluating of the information. For classification purposes these degrees are divided into 5 proficiency levels used to measure each competence: from Level 1, the lowest level, which is characterized by a lack of familiarity with even the basic skills, to Level 5, the highest level, which is characterized by the fluent and creative use of skills (OECD, 2012). Recent OECD reports often use a dichotomous division of "strong" and "weak" groups of respondents, whereby strong respondents are those whose competency level corresponds to Levels 4 and 5, and weak respondents are those whose competency level is Level 1 and below (OECD, 2012; OECD, 2013b).

In our analysis we also use this dichotomy ("weak" and "strong") for grouping people with the lowest literacy level (PIAAC Level 1 and below) and the highest literacy level (PIAAC Levels 4 and 5). A detailed description of PIAAC literacy levels is available in the Technical Report of the Survey of Adult Skills (OECD, 2013a).

Our working methods uses quantitative data and includes data grouping, frequency calculation, statistical comparison of averages, variance analysis with post-test criteria calculations, and calculation of multi-way tables. To compare levels of education (see Fig. 1), a three-tier classification system, proposed by the PIAAC developers based on the International Standard Classification of Education, ISCED, was used. The first of these tiers corresponds to secondary schooling (or lower), the second tier corresponds to secondary (vocational) education, and, finally, the third tier corresponds to higher education and further degrees (OECD, 2013b).

In the course of our analysis, we used comparisons between Russia and the OECD countries, as well as comparisons between Russia and the post-communist countries that participated in the PIAAC simultaneously with Russia (the Czech Republic, Slovakia, Poland and Estonia).

In assessing the implications of inconsistency between the formal education indicator and measured literacy, we used the following variables:

1. Labour market position:

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2 The indicator «problem solving in technology-rich environments» is only available for a portion of the sample, that is, for those who are confident computer users. Due to this limitation, we do not use this indicator in this article.

3 The score boundaries for each level of proficiency were statistically counted according to empirical data distribution (OECD, 2013a).
a. Whether the respondent has had a paid job or work (in the past year, preceding the interview, and over the past 5 years);
b. Qualification degree (for those who have a job or work);
2. Participation in formal and informal supplementary education programs;
3. Subjective awareness of inclusion in society:
a. Satisfaction with the job or work;
b. Self-assessment of own health;
c. Value judgments: degree of trust/distrust toward people, attitude toward the government.

4. Results: inconsistency and its implications

4.1. Measured literacy and the inconsistency paradox

Because our strategy in this analysis is related to the groups that showed both the lowest and the highest literacy rates in the PIAAC test, let us begin with the overall distribution of test scores — by group — for all countries that participated in the first round of testing.

On the whole, the distribution by proficiency levels for the Russian Federation is closer to the average for the OECD as well as for the post-communist countries that participated in the PIAAC (see Fig. 2). We can note that 13.04% - a significant portion of the adult population in Russia - experiences serious problems when taking PIAAC tests (“weak” group, Level 1 and below in literacy). These problems include a limited ability to understand information in the native language and to use basic analytical skills. We also would like to note that all participating countries have sufficiently large groups of people who failed the tests, as well as large groups of people who passed the tests with high scores.

Let us take a closer look at the relationship between measured literacy and the level of education (see Table 1). S. Cheidvasser and H. Benitez-Silva (2007) were the first to describe the paradox of low educational returns in Russian society in the 1990s; however, no explanation for this paradox was found. Our data analysis makes it possible not only to see this...
Comparing means of PIAAC test results (score-points) in the groups based on levels of education.

A variance analysis showed that in Russia and in East European countries, as well as in the OECD countries as a whole, the level of formal education is a significant factor influencing the differences in average scores on measured competencies in reading and mathematics (in all cases, Fisher statistics are significant at a level of 0.000). It is paradoxical, however, that Russians with secondary education (general secondary education, secondary vocational education) demonstrate almost the same test scores as their better-educated peers with college/university graduation diplomas. In other words, Russians with different levels of formal education have lower within-group variances in literacy test results. Further analysis of this paradox using the Scheffe criterion showed that as far as Russia is concerned, we cannot speak of differences in education-related mean test scores with regard to all education groups. The difference in mean scores on mathematical literacy among Russians with secondary and higher education was as low as 2.4, and it appeared to be negligible at a level of 0.05, and at 0.01 for reading literacy. This means that formally high educational status (in this case, a college/university graduation diploma) does not guarantee any additional competencies for such diploma holders compared to those with general secondary and secondary vocational education.

The comparison of means in test scores for respondents with different levels of education show that agreement between the scale of competencies and the scale of education is evident in the competency results for OECD countries but not for Russia. For example, increments in reading literacy and mathematical literacy among Russians with high levels of education, compared to those with low levels of education, are 23.3 and 26.5 score-points, respectively, whereas such increments are twice as large in the OECD countries on average — 51.7 and 58.6 score-points, respectively. As the literacy scale in PIAAC is measured from 0 to 500 score-points, so higher points mean a better implementation of competencies.

Note that in the East European countries that participated in the PIAAC test with Russia, the competency gap between people with different levels of education is also weaker than in the OECD countries as a whole, but the gap is larger than in Russia. Therefore, the position of these countries corresponds to their movement away from the post-communist heritage of their education systems.

Because the competencies of the Russians appeared to be “unstable” with regard to any particular education group, in our subsequent analysis, we will use the grouping method to identify the “weak” and “strong” groups in terms of their competency levels. We have also found that reading literacy strongly correlates with mathematical literacy (correlation coefficient of 0.87 for the OECD countries); therefore, we will consider literacy as the key indicator of competence.

Let us consider the revealed inconsistency from the standpoint of the key socioeconomic indicators available in the PIAAC questionnaire: employment and type of employment, income, and participation in education programs. In addition, we will consider the subjective awareness of the two groups, including their job satisfaction rates, self-assessments of their own health, and their levels of social trust.

Table 2 shows that the number of unemployed respondents in the group with low literacy rates does not differ significantly in Russia compared to the OECD countries, whereas in the “strong” group, the number of unemployed respondents in Russia is higher than in the OECD countries — 12.1% and 4%, respectively. Unlike most countries, the difference in the level of employment between the “weak” and the “strong” groups in Russia is not significant.

Russia is also different from the OECD countries in terms of the distribution of respondents by type of employment. The PIAAC distinguishes four types of employment: skilled, semi-skilled “white collar”, semi-skilled “blue collar”, and elementary. On the whole, the percentages of people engaged in high-skilled work appeared to be almost the same in the Russian and

<table>
<thead>
<tr>
<th>Table 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Comparing means of PIAAC test results (score-points) in the groups based on levels of education.</td>
</tr>
<tr>
<td>Level of education</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Low: ISCED 3 and below</td>
</tr>
<tr>
<td>Medium: ISCED 4</td>
</tr>
<tr>
<td>High: ISCED 5 and above</td>
</tr>
</tbody>
</table>

Analysis of variances: F-statistic with significance level (p-value) in parentheses. Significance level (p-value) is a statistical indicator which shows if the criteria are significant or not; in this case the F-statistic with p-value <0.01 shows that the variances between groups statistically differs from each other.

F-statistic and p-value:
- Russian Federation: 48.4 (0.000) vs. 66.1 (0.000)
- Post-communist countries: 1555 (0.000) vs. 1962 (0.000)
- OECD countries: 15472.4 (0.000) vs. 16206.7 (0.000)

Group-by-group differences: Sheffe criteria (in this case: score-points differences) with standard deviation and significance level (p-value) in parentheses.
- Russian Federation: 37 (0.7; 0.000) vs. 46 (0.8; 0.000) vs. 51.7 (0.3; 0.000) vs. 58.6 (0.3; 0.000)
- Post-communist countries: 22 (0.5; 0.000) vs. 23 (0.6; 0.000) vs. 22.8 (0.2; 0.000) vs. 24.1 (0.3; 0.000)
- OECD countries: 15 (0.6; 0.000) vs. 23 (0.7; 0.000) vs. 28.9 (0.3; 0.000) vs. 34.5 (0.3; 0.000)

Note: The grouping corresponds to the International Standard Classification of Education (ISCED), 2011.
Source: calculations made by the authors based on PIAAC dataset.
supplementary education programs in the previous year. In Russia, only 21.1% of the respondents had been engaged in formal education, which contrasts with the corresponding results for the OECD countries. Closest to Russia is Estonia, a former Soviet Republic, where 18.5% of people with low literacy test results have higher education. On the one hand, such a result does not allow us to speak of the “exclusion” of citizens with low literacy levels from society, as they have managed to obtain formal higher education. On the other hand, however, it is important to acknowledge that a large number of college/university graduates in Russia are actually semi-literate.

As expected, the percentage of persons with higher education among Russian respondents with high reading literacy levels is greater (75.8%) than among respondents with low literacy rates. A significant portion of Russian respondents (46.6%) with low PIAC test results have only incomplete secondary education or even lower education and training levels. In Russia, respondents with high competency levels do not differ significantly from similar groups in the OECD countries in terms of their levels of formal education (75.8% of college/university diploma holders in Russia compared to 75.6% in the OECD countries, on average).

Another important indicator — participation in education programs in the previous year — also significantly differs across respondents with high and low literacy (see Table 4). In all countries, representatives of the “weak” groups participated much less frequently in formal and informal education programs than those of the “strong” groups. In the OECD countries, an average of 32.5% of respondents from the “weak” groups and 77.4% from the “strong” groups said they had participated in supplementary education programs in the previous year. In Russia, only 21.1% of the respondents had been engaged in formal education, which is far lower compared to other countries. Compared to the remaining countries participating in the PIAC program, Russia has the lowest literacy level (Level 1 or lower), and the percentage engaged in high-skilled work is greater (75.8%) than among respondents with low literacy rates. A significant portion of Russian respondents (46.6%) with low PIAC test results have only incomplete secondary education or even lower education and training levels. In Russia, respondents with high competency levels do not differ significantly from similar groups in the OECD countries in terms of their levels of formal education (75.8% of college/university diploma holders in Russia compared to 75.6% in the OECD countries, on average).

Table 2
Differences in unemployment status between respondents with low and high literacy levels (in %).

<table>
<thead>
<tr>
<th>Countries</th>
<th>Unemployed at the moment of the survey</th>
<th>Unemployed during the previous year</th>
<th>Unemployed during the previous 5 years</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>low</td>
<td>high</td>
<td>total</td>
</tr>
<tr>
<td>Czech Republic</td>
<td>8.7%</td>
<td>2.7%</td>
<td>5.7%</td>
</tr>
<tr>
<td>Estonia</td>
<td>10.9%</td>
<td>1.1%</td>
<td>1.8%</td>
</tr>
<tr>
<td>Poland</td>
<td>16.1%</td>
<td>1.8%</td>
<td>5.5%</td>
</tr>
<tr>
<td>Russian Federation</td>
<td>16%</td>
<td>4%</td>
<td>12.1%</td>
</tr>
<tr>
<td>Slovak Republic</td>
<td>31.6%</td>
<td>2.6%</td>
<td>8.3%</td>
</tr>
<tr>
<td>OECD mean</td>
<td>14%</td>
<td>4%</td>
<td>8%</td>
</tr>
</tbody>
</table>

Note: The standard error (S.E. — in parentheses) is the deviation of its sampling distribution.
Source: calculations made by the authors based on OECD Skills Outlook 2013 (OECD, 2013b) and PIAC dataset.

Table 3
Differences in professional group between respondents with low and high literacy levels (for respondents who have held a job in the last year; in %).

<table>
<thead>
<tr>
<th>Countries</th>
<th>Low literacy level</th>
<th>High literacy level</th>
<th>In the sample in general</th>
<th>Low literacy level</th>
<th>High literacy level</th>
<th>In the sample in general</th>
<th>Low literacy level</th>
<th>High literacy level</th>
<th>In the sample in general</th>
<th>Low literacy level</th>
<th>High literacy level</th>
<th>In the sample in general</th>
</tr>
</thead>
<tbody>
<tr>
<td>Czech Republic</td>
<td>20% (3.8)</td>
<td>71.6% (4.6)</td>
<td>37.9% (1.2)</td>
<td>17.5% (2.3)</td>
<td>19.5% (3.8)</td>
<td>22.9% (1.1)</td>
<td>41.6% (4.1)</td>
<td>7.5% (2.9)</td>
<td>32.5% (1.1)</td>
<td>20.9% (4.2)</td>
<td>1.4% (1.1)</td>
<td>6.7% (0.6)</td>
</tr>
<tr>
<td>Estonia</td>
<td>23.6% (1.9)</td>
<td>81.2% (2.1)</td>
<td>47.4% (0.7)</td>
<td>17.1% (2)</td>
<td>10% (1.7)</td>
<td>17.3% (0.6)</td>
<td>42.8% (2.4)</td>
<td>8.1% (1.2)</td>
<td>28% (0.7)</td>
<td>16.5% (1.9)</td>
<td>0.9% (0.4)</td>
<td>3.7% (0.4)</td>
</tr>
<tr>
<td>Poland</td>
<td>11.8% (1.7)</td>
<td>84.2% (2.4)</td>
<td>40.4% (0.8)</td>
<td>16.4% (2.3)</td>
<td>11.5% (2)</td>
<td>19.5% (0.7)</td>
<td>57.1% (2.5)</td>
<td>2.9% (1)</td>
<td>32.3% (5)</td>
<td>14.7% (1.8)</td>
<td>1.5% (1.1)</td>
<td>7.7% (0.5)</td>
</tr>
<tr>
<td>Russian Federation</td>
<td>38.7% (4.3)</td>
<td>51.8% (4.7)</td>
<td>44.9% (1.3)</td>
<td>21.8% (3)</td>
<td>22.8% (4.3)</td>
<td>21.3% (1)</td>
<td>36.1% (4.3)</td>
<td>24.3% (3.9)</td>
<td>61.4% (2)</td>
<td>31.5% (3.8)</td>
<td>1.2% (0.8)</td>
<td>4.1% (0.3)</td>
</tr>
<tr>
<td>Slovak Republic</td>
<td>21.6% (3.7)</td>
<td>61.7% (4.1)</td>
<td>43.8% (1)</td>
<td>15.9% (3.1)</td>
<td>21.7% (3.4)</td>
<td>20.9% (0.8)</td>
<td>41.3% (3.5)</td>
<td>13.4% (2.8)</td>
<td>28% (0.9)</td>
<td>21.2% (2.4)</td>
<td>3.3% (1.7)</td>
<td>7.4% (0.5)</td>
</tr>
<tr>
<td>OECD mean</td>
<td>15.9% (0.5)</td>
<td>75.8% (0.6)</td>
<td>44.2% (0.2)</td>
<td>27.7% (0.6)</td>
<td>16.6% (0.5)</td>
<td>26.3% (0.2)</td>
<td>35.4% (0.7)</td>
<td>6.2% (0.3)</td>
<td>21.8% (0.2)</td>
<td>21.1% (0.6)</td>
<td>1.4% (0.2)</td>
<td>7.7% (0.1)</td>
</tr>
</tbody>
</table>

Note: The standard error (S.E. — in parentheses) is the deviation of its sampling distribution.
Source: calculations made by the authors based on OECD Skills Outlook 2013 (OECD, 2013b) and PIAC dataset.
and non-formal supplementary education programs in the previous year. It should be noted that only 17.8% of Russians with low literacy rates participated in such programs, compared with 26.1% of the group with high literacy rates. In other words, we can say that with regard to this indicator, the “gap” between the “strong” and the “weak” groups is considerably lower than in the OECD countries, and the narrowing of this gap in Russia is due to the poorer indicators for the “strong” group. As far as the “weak” group is concerned, other countries are comparable to Russia in terms of the number of participants in supplementary education programs (Poland — 19.6%, Slovakia — 11.9%). However, the percentage of participants in such programs in the “strong” group in Russia is much smaller than in other countries (Poland — 69.5%, Slovakia — 68.1%).

These differences cannot be entirely attributed to the lack of opportunities in Russia to participate in such programs. Among those who had not participated in supplementary education programs in the previous year, there are far fewer people willing to do so in Russia than elsewhere. An analysis of answers to the question of whether the respondents wanted to participate in supplementary education programs (but could not do so for various reasons) shows that among the “strong” groups of the PIAAC participating countries, Russia ranks last — only 15.7% of the group members said they were willing. In the OECD countries, on average, the number of people who were willing to improve their education but unable to do so at present for one reason or another, is much greater: 26.5% for the total sample, with 16.8% for the low-literacy group and 40.3% for the high-literacy group.

4.2. Social implications of educational inconsistency

Job satisfaction is one of the most significant indicators of “inclusion” in socio-economic relations. According to our analysis of available data (see Table 5), among Russians with high literacy levels there are far fewer persons who are fully satisfied with their jobs than among similar groups in the OECD countries, on average. Russian respondents with low measured literacy rates are much more satisfied with their work than their more literate fellow citizens, with the job satisfaction index for this group being average by OECD measures. In the OECD countries, on average, 27.6% of people are fully satisfied with their work, while this figure is 17.5% for Russia. Yet, this indicator varies considerably from one OECD country to another and, like other subjective indicators, seems to depend on cultural traditions.

Among those who could only solve the test assignments of Level 1 or lower, 26.6 percent of Russians are fully satisfied with their work; for the OECD countries, on average, this figure is 25.8%. While, among Russian respondents with high literacy, the percentage of people fully satisfied with their work is only 13.5%, this indicator for the OECD countries is 28.8%, on average. If we consider the post-communist countries, where the total number of persons satisfied with their work is close to the corresponding figure for Russia, we see that the number of satisfied persons in their “strong” groups of respondents is significantly greater than in Russia: Estonia — 23%, the Czech Republic — 21.5%.

In Russia, more frequently than in the OECD countries, representatives of the “strong” group mention distrust towards others, whereas the respondents with low-level literacy trust others about as much as the representatives of the “strong” groups in the OECD, on average. A total of 72.2 percent of Russian respondents with high literacy levels do agree with the statement, “If you are not careful, others will start using you”, whereas in the OECD countries, only 48.3% agree with this statement. However, the percentage of Russian respondents in the “weak” group who agree with the above statement is similar to that in the OECD countries (78.1% in Russia and 78.7% in the OECD countries).

In Russia, there is practically no difference in how respondents from the high- and low-level literacy groups assess the state of their health, with the level of health assessment by Russian people with low literacy corresponding to the same indicator for persons in the OECD with low literacy, on average. However, among people in Russia with high literacy, this indicator is far lower than the OECD average. In Russia, 12.6% of respondents with high literacy rates assessed the state of their health as excellent, whereas in the OECD, this figure was 20.9%. Additionally, Russian representatives of the “weak” group assessed their state of health as excellent less frequently compared to similar groups in the OECD countries, but the differences are less pronounced (6.7% in Russia compared with 11.1% in the OECD countries).

So, how does educational inconsistency affect Russian society? We have analysed several critical areas, such as employment and pay, participation in education programs, as well as subjective assessment of social well-being. Significant differences from the OECD countries have been observed in all of these areas.

When there is disagreement between formal indicators and actual literacy levels in Russia, the hypothesis formulated by the PIAAC developers – of the exclusion from society of people with low competency levels – is not confirmed or, even if it is confirmed, some caveats should be noted. On the one hand, there is a noticeable difference between groups of Russians with low and high measured literacy. On the other hand, a considerable number of people with minimum competencies (Level 1 or lower on the PIAAC scale) do hold college/university diplomas as well as good positions in the labour market. Compared to the developed countries, a large portion (39%) of Russian respondents with low measured literacy rates nevertheless hold high-skilled jobs. However, in analysing the distribution of jobs held by those in Russia with formal graduation diplomas, we see a picture that is quite similar to that of the OECD countries. In other words, formal graduation diplomas do not, in this case, serve as a sound indicator of education level. Nor, in reality, are job positions marked as “high-skilled” actually held by highly skilled people.

The differences in income levels between respondents with high and low literacy rates are far lower in Russia than in the OECD countries. Among Russians with high literacy rates, the percentage of people who are fully satisfied with their jobs is much lower than among similar groups in the OECD countries. Russians with low literacy rates are much more frequently satisfied with their work compared with their literate fellow citizens, with their job satisfaction index being average by OECD
Table 5
Subjective criteria of social inclusion and educational level (in %).

<table>
<thead>
<tr>
<th>Countries</th>
<th>Completely satisfied by work</th>
<th>If you are not careful, other people will start using you</th>
<th>I can only trust several people</th>
<th>People like me do not have an influence on the government</th>
<th>Good health (self-evaluation)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Among people with low</td>
<td>Among people with high</td>
<td>In the sample in general</td>
<td>Among people with low</td>
<td>Among people with high</td>
</tr>
<tr>
<td></td>
<td>educational level</td>
<td>educational level</td>
<td></td>
<td>educational level</td>
<td>educational level</td>
</tr>
<tr>
<td>Czech Republic</td>
<td>15.8% (3.4)</td>
<td>21.5% (3.7)</td>
<td>93% (1.5)</td>
<td>66.3% (4.3)</td>
<td>85.8% (0.9)</td>
</tr>
<tr>
<td>Estonia</td>
<td>15.3% (1.6)</td>
<td>23% (1.8)</td>
<td>18.7% (0.5)</td>
<td>84.3% (1.3)</td>
<td>51% (2.3)</td>
</tr>
<tr>
<td>Poland</td>
<td>15.4% (2.1)</td>
<td>29% (3.3)</td>
<td>20.2% (1)</td>
<td>89.2% (1.4)</td>
<td>66.7% (2.8)</td>
</tr>
<tr>
<td>Russian Federation</td>
<td>26.6% (4.1)</td>
<td>13.5% (2.3)</td>
<td>17.5% (1.3)</td>
<td>78.1% (4.7)</td>
<td>72.2% (2.1)</td>
</tr>
<tr>
<td>Slovak Republic</td>
<td>10.3% (2.7)</td>
<td>16.3% (2.8)</td>
<td>21.7% (11.4)</td>
<td>85% (2.1)</td>
<td>76.8% (3.6)</td>
</tr>
<tr>
<td>OECD mean</td>
<td>25.8% (0.6)</td>
<td>28.8% (0.6)</td>
<td>27.6% (0.2)</td>
<td>78.7% (0.5)</td>
<td>48.3% (0.6)</td>
</tr>
</tbody>
</table>

Note: With standard error (S.E.) in parentheses.
Source: calculations made by the authors based on OECD Skills Outlook 2013 (OECD, 2013b) and PIAAC dataset.
measures. More than their counterparts in the OECD countries, Russian representatives of the “strong” group more frequently indicate their distrust of others, while respondents with low literacy rates trust others approximately as much as the representatives of similar groups in the OECD countries, on average. In Russia, there is practically no difference in the self-assessments of own health between the groups of respondents with high and low literacy.

Our analysis shows that when we compare Russia to the OECD countries and take a global perspective, Russians with low literacy are not at risk, rather, it is those with high test scores who are at risk. This, however, does not mean that these people have dropped out of or are excluded from society; rather, Russia lags behind the most developed economies in training its most capable people. In addition, compared with the OECD countries, our highly literate specialists appear to be “deprived” with regard to most of the indicators considered, including education and the willingness to study, employment and labour market position, pay level, job satisfaction and health indexes. In other words, “inclusion” and “success” in Russia, as measured according to the PIAAC logic through the individual achievements of respondents, are not always related to high competency levels. For example, we observe a high share of the least competent respondents who are “included” and “successful”, which distinguishes Russia from the developed economies with “agreeable” education indicators.

5. Conclusion

Based on the PIAAC results, we can conclude that, at present, there are various contradictions not only between the qualifications of specialists and real demand in the labour market but also between respondents’ levels of education and levels of knowledge (literacy). In particular, this has resulted in the fact that in today’s Russia, the illiterate may have graduation diplomas (including college/university diplomas) as well as good jobs and robust social well-being.

Our analysis has revealed that there is no linear relationship in Russia between the level of formal education and measured literacy. Moreover, equal access to education leads to inequalities in educational outcomes within one and the same social stratum. Note that we do not observe any inequalities between the formal education indicator and measured literacy in the East European countries that participated in the PIAAC. We did not seek to draw precise conclusions about these countries; however, we should note that they integrated into the European education system rather quickly. In addition, crisis periods in the Russian economy appeared to be far more serious and lengthy than in the aforementioned countries. It would be particularly interesting to compare Russia with the former Soviet republics that are closest to it — Ukraine and Belarus. However, those countries do not participate in adult literacy measurement programs.

There are multiple reasons for inconsistency. After the collapse of the Soviet Union, the Russian economy and Russian society went through deep transformations. This resulted in a significant depreciation of human capital, up to 40% of workers during this period were forced to change profession (Kapelyushnikov, 2005). Nowadays older generations are still experiencing serious difficulties in replenishing lost human capital, and the lack of this capital will persist for a long time. At the same time from the beginning of the 1990s Russian higher education has been undergoing a fundamental restructuring, responding to the changes in the economy and the rapid development of a new service sector. The higher education sector in Russia has undergone spectacular growth, especially in private universities. During the 1996–2005 period, private universities increased from 193 to 645, representing 334% growth [Zajda 2010]. Many of these newly appeared institutions of higher education, which were private or semi-private, had neither competencies, nor specialists to deliver quality education in a given area. In these circumstances the demand for diplomas has been commodified. It became a commonplace to buy university diplomas [Golunov, 2014]. Literacy scores obtained at a nationwide level are a relative indicator, but this indicator’s real value and significance are determined through comparisons with other countries. Comparing the PIAAC results for Russia and the OECD countries, we observe a repeatable pattern: the low-literacy group in Russia is at or slightly below the OECD level, whereas the medium-literacy and high-literacy groups are markedly below the OECD level. Studying literacy in the context of cultural capital, it was found that Russians with high levels of cultural capital lagged behind similar groups in the OECD countries. Obviously, the influence of the cultural capital available to the top segments of society, which encompasses people with the highest literacy levels, does not make it possible to catch up, in terms of competency, with similar segments of society in the OECD countries.

According to the results of an earlier analysis of the PISA and PIRLS international research project data, Russian schoolchildren from families with high socio-economic status displayed lower results than their age-mates from similar groups in other countries (Carnoy et al., 2015). Based on these results, we might conclude that Russia’s education system is more effective at educating the least literate people, as Russian respondents with poor results show fewer differences, in terms of literacy level, with the results for the OECD. This is seen most clearly in the PISA results, that is, during the course of education, when school still has its maximum influence. This is true in general; however, the reasons for such a situation require further analysis.

In light of our findings, we can assert that the high socio-economic status group is heterogeneous with regard to the real literacy of its members. This factor is extremely important in this context because it pertains to the transfer of skills from one generation to the next. Here, another important conclusion comes to mind: measurements of socio-economic status and human capital, obtained via traditional methods and based on formal education status, are not quite accurate, and the available data may be quite distorted.

What are the social implications caused by this revealed inconsistency, described at the beginning of this article in the context of the socialization and allocation views of education? We are faced with the fact that education does not adequately perform its distribution function in society. Acquisition of new knowledge does not appear to be compulsory because it is not
always related to obtaining new status markers. It is time to highlight a rather serious problem that is linked not only with the content of education programs (which is of course important) but also with the motivation to obtain content-rich qualitative education, both during one’s youth and throughout one’s lifetime.

Yet, the problem of the above-mentioned inconsistency — that is, with the unreliability of the main education indicator — may, in one way or another, disrupt the functioning of basic social institutions and hamper their sustained development. The key institutions of a society are forced to adapt to that society’s educational realities. Studies conducted by Russian economists in recent years (Lukiyanova, 2010; Roshchin and Rudakov, 2015) clearly show that the economic returns of obtaining a college/university graduation diploma have been steadily declining over the past fifteen years, with more than 80% of college/university graduates not working in their areas of study (Gimpelson et al., 2009). Additionally, the results of a longitudinal study have shown that educational returns in Russia are far lower than in other countries (Cheidvasser and Benitez-Silva, 2007). This finding highlights a point of social tension, and one possible way of overcoming it may be to create and maintain a flexible education system for adults that provides good opportunities for corporate sector workers, small businesses and self-employed persons.

References


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