БИЛИМДИ БААЛОО ЖАНА ОКУТУУ УСУЛДАРЫ БОРБОРУ
ЦЕНТР ОЦЕНКИ В ОБРАЗОВАНИИ И МЕТОДОВ ОБУЧЕНИЯ
CENTER FOR EDUCATIONAL ASSESSMENT AND TEACHING METHODS

National Sample-Based Assessment (NSBA) 2014

Report on the Results of the Survey

Bishkek
2014

Table of Contents

1. Introduction

The ***National Sample-Based Assessment (NSBA)*** survey was conducted in Kyrgyzstan for the third time. **The goal of NSBA** is *to gain an objective and scientifically grounded insight on* ***what the students know and can do*** *based on the country's existing educational standard and on which factors have significant impact on the educational outcomes*.

For the first time this survey was conducted in Kyrgyzstan in 2007 within the framework of the *Rural Education Project* and by the order of the Ministry of Education and Science of the Kyrgyz Republic; the implementing agency was the Center for Educational Assessment and Teaching Methods; the survey was funded by the World Bank's grant. The survey focused on 4th and 8th grades and covered three subject domains: Math, Reading Comprehension, and Science. *The second round of the survey* was held in 2009: again within the framework of the Rural Education Project, and using the same grade levels and subject domains. In 2014, *the third round of the survey* was conducted by the order of the Ministry of Education and Science of the KR and within the framework of the READ Project. The third round of the survey focused on the fourth grade only. The subject domains used in the third round were the same as in the preceding two rounds: Reading Comprehension, Math, and Homeland Studies (basic natural sciences). The results of the survey identify the strengths and weaknesses of the contemporary secondary education, its most urgent needs, and the improvements that have occurred since the previous rounds of the survey. The results of the survey are presented in the form of report. This report is addressed to the Ministry of Education and Science, the workers of the rayon and town departments of education, school administrations, teachers, parents, as well as other interested parties and the general public. The results of the survey are meant to be used as reference and the source of data in the undertaking of any political and practical actions in the course of reforming the country's education. Such surveys are widely used in all the industrially developed countries, as well as in many developing countries, in the capacity of an efficient tool for monitoring the state of education. They serve as a supporting basis for making informed and organized efforts to improve the educational systems and for developing strategic plans in education. If conducted regularly, the national assessments of students' academic achievements allow to track the changes and improvements in the results of the students' learning, and to correlate them with the measures undertaken in the system of education, thus reflecting their effectiveness.

As in both previous rounds, the survey of 2014 was conducted based on a *stratified sample* of students throughout the Kyrgyz Republic. The following strata were used for selecting the student sample: school category (Bishkek, regional centers and small towns, rural schools), language of instruction (Kyrgyz, Russian, and Uzbek), and administrative regions of the Kyrgyz Republic.

The instruments used in the National Sample-Based Assessment (NSBA) survey included *tests* and *questionnaires* for students, school administrators, and teachers.

2. Students' achievements in Reading Comprehension, Math, and Homeland Studies across the country

The sample for the third round of the NSBA survey in 2014 included 204 secondary schools. The total number of students participating in the survey was 5 871.

Table 1. Number of Schools

Grade level	Total schools	Schools with Kyrgyz language of instruction	Schools with Russian language of instruction	Schools with Uzbek language of instruction
4	**204**	**130**	**55**	**19**

Table 2. Number of students participating in the survey

Language of instruction	4th grade	
	Number of students planned	Number of students that participated in the survey
Kyrgyz	**3 783**	**3 606**
Russian	**1 816**	**1 692**
Uzbek	**599**	**573**
Total	**6 198**	**5 871**

The usual practice in the national studies of students' academic achievements is to correlate the results with a set of pre-defined *levels of student achievements*. For the purposes of this survey, four levels of student achievements had been defined as follows: *below basic level (Level 1), basic level (Level 2), above basic level (Level 3) and advanced level (Level 4)*. Level 2 (basic level) had been defined as the minimal acceptable level.

The levels of student achievements, both general and specific for each of the subject domains, were defined in 2007 and described the students' knowledge, skills and abilities according to the existing educational standards and programs. The characteristics of each level in each of the subject domains are given in Chapter 3. The table below contains such characteristics in the generalized form.

Table 3. Characteristics of student achievements in each level

Levels of student achievements	Description
Below basic level (Level 1)	The students have some fragmentary, often incoherent knowledge in different topics of the curriculum. They may have some partial procedural abilities and practical skills, but they do not demonstrate any understanding of the basic concepts of the subject matter and make mistakes even in simple, standard procedures when solving problems or following instructions. The students cannot use knowledge and skills gained in school in solving simple real-life items. The students in the below basic level do not possess sufficient knowledge and skills for further successful mastering of the school program and need additional assistance in their learning.
Basic level (Level 2)	The students have the general understanding of the subject matter. They know the basic concepts of the subject and can operate with them to reproduce information. They can also follow the standard problem-solving procedures and understand simple graphs and diagrams. The students can, albeit shortly, express

Levels of student achievements	Description
	their thoughts in writing and find some supporting information. They are able to define the main idea of what they had read. They apply knowledge and skills gained in school to solve simple real-life problems. The students in the basic level possess basic knowledge, skills and abilities necessary for further learning.
Above basic level (Level 3)	The students in this level have all the necessary conceptual knowledge; they can logically apply their integrated procedural knowledge to solve problems. They are able to analyze information and make logical conclusions, to express their thoughts clearly, supporting them with appropriate information and argumentation. The students in the above basic level actively apply school knowledge, skills and abilities in real-life situations.
Advanced level (Level 4)	The students in the advanced level have all the conceptual knowledge, skills and abilities necessary for successful learning. They can effectively apply their integrated knowledge and skills to solve complex, non-standard problems in the context of all the subject domains included in the NSBA survey. The students analyze information and make logical conclusions, they are able to provide step-by-step explanations of the problem solving process. In their reasoning, they go beyond the scope of the provided information and make well-grounded assumptions. The students in this level can express their thoughts clearly and coherently, providing appropriate and well-grounded arguments to support them.

The survey methodology allows making comparisons of the student results of the three rounds of the survey in each of the subject domains.
All three rounds of the survey showed that ***more than 60%*** *of the fourth-graders could not reach the minimal acceptable level in all three subject domains (Reading Comprehension, Math, Homeland Studies).* Further in this report, the general description of the overall results in all the three subject domains is presented.

Reading and Comprehension of the text
It is evident that the ability to read and understand different age-appropriate texts lies in the base of learning all subject disciplines. It is not possible to successfully learn Math or science without being able to read and understand the texts in the textbooks. The importance of the students' abilities to read and comprehend information makes these abilities the focus of a number of national and international studies such as PIRLS, PISA etc. In Kyrgyzstan, these abilities are also the focus of several nation-wide studies: the National Sample-Based Assessment, the international study of functional literacy of the 15-year-old students (PISA), the study of reading abilities of the elementary school students conducted within the framework of a USAID project in grade level 1 through 4, and the National Scholarship Testing for secondary school graduates. These studies show that the educational system of the Kyrgyz Republic faces serious problems with teaching the students to read and comprehend texts; these problems begin right from the first grade of elementary school. All three rounds of the National Sample-Based Assessment of the academic achievement of students that completed their primary education (the surveys were conducted at the end of the academic year) demonstrated that over 60% of students do not perform even the minimal acceptable reading and comprehension skills when dealing with texts similar to those they read in classrooms daily.

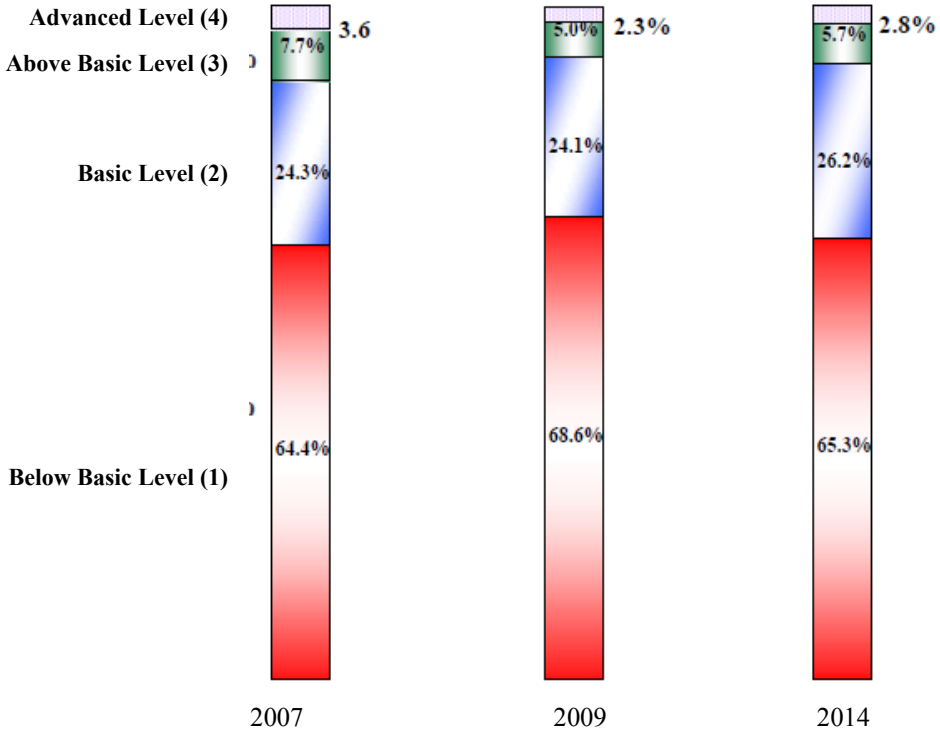
The results of the Reading Comprehension section of all three rounds are presented in Diagram 1, which shows the distribution of students' results by the levels of academic achievements in 2007, 2009, and 2014 across the country.

The diagrams show the percentage of students in each level of students' academic achievements across the three rounds of the survey. For instance, **in 2007**, when the survey was conducted for the first time, the results of students in Reading Comprehension were the highest of all three rounds. But even then, only 35.6% of participating students performed in the levels 2 and above, while 64.4% were not able to achieve the minimal acceptable level. Table 3 contains the general description of the skills and abilities of students in Level 1, in which the majority of students fell. These students do not possess the knowledge and skills sufficient for successful mastering of the school academic program. They require additional assistance in their learning. Only about 8% of the students performed in the above basic level (Level 3), and only 3% achieved the advanced level (Level 4).

The results of the survey conducted two years after the first rounds, in 2009, showed a decrease in students' abilities to read and comprehend texts. The percentage of students who did not achieve the basic level (2) increased by 4.2% and reached the value of 68.6%. There was also a decrease of the percentage of students in levels 3 and 4.

The results of the third round showed that in 2014, a slight improvement of the reading comprehension abilities occurred, compared to the results of the second round. The percentage of students in the below basic level (1) decreased by 3.3% and almost matched the results of the first round of 2007. Levels 3 and 4 (above basic and advanced) did not change significantly. 34.7% of participating students achieved in the Level 2 and above. However, the total percentage of students in Levels 3 and 4 (the strongest students) constituted together only 8.5% of all participating students.

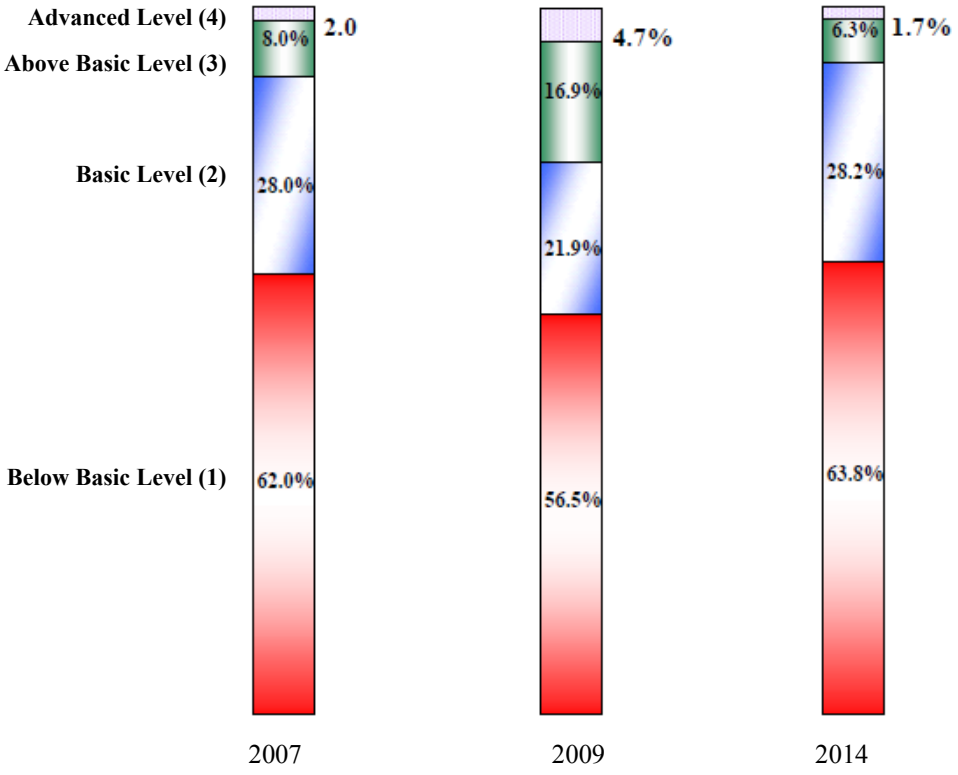
Diagram 1. Reading Comprehension. Distribution (in %) of the students of all schools participating in the NSBA survey in 2007, 2009 and 2014 by levels of academic achievements.



Math

The results of the students in Math across all three rounds of the survey are presented in the Diagram 2 below. It shows that in 2009, a noticeable improvement of results in Math was achieved compared to the results of the first round of 2007. The below basic level decreased by 5.5%. Simultaneously, there was a significant increase of the percentage of students in Level 3 (above basic level): it grew by 8.9%, which is more than twice. The advanced level (4) increased by 2.7%. However, in 2014, the results of the fourth-graders in Math decreased again and, basically, went back to the level of 2007, with a slight tendency to decline further. The decrease of the results is especially noticeable in levels 3 and 4. Level 3 (above basic level) included only 6.3% of students, which is less than in the second round of survey by 10.6%. Only 1.7% of students reached Level 4. At the same time, the percentage of students in Level 1 increased by 7.3%. These are the students that, after completing their primary education, will require special attention from the teachers of secondary education grades, because the multiple gaps in their knowledge of basic Math is likely to impede successful mastering of further curriculum. There is a risk that this situation may place the students who perform in levels 3 and 4 in disadvantageous position since the teachers will be forced to spend more time and effort working with the students who perform in levels 1 and 2. The current situation in teaching Math in primary grades can have a negative impact not only on the students' further Math education, but on their mastering the disciplines of the natural sciences domain.

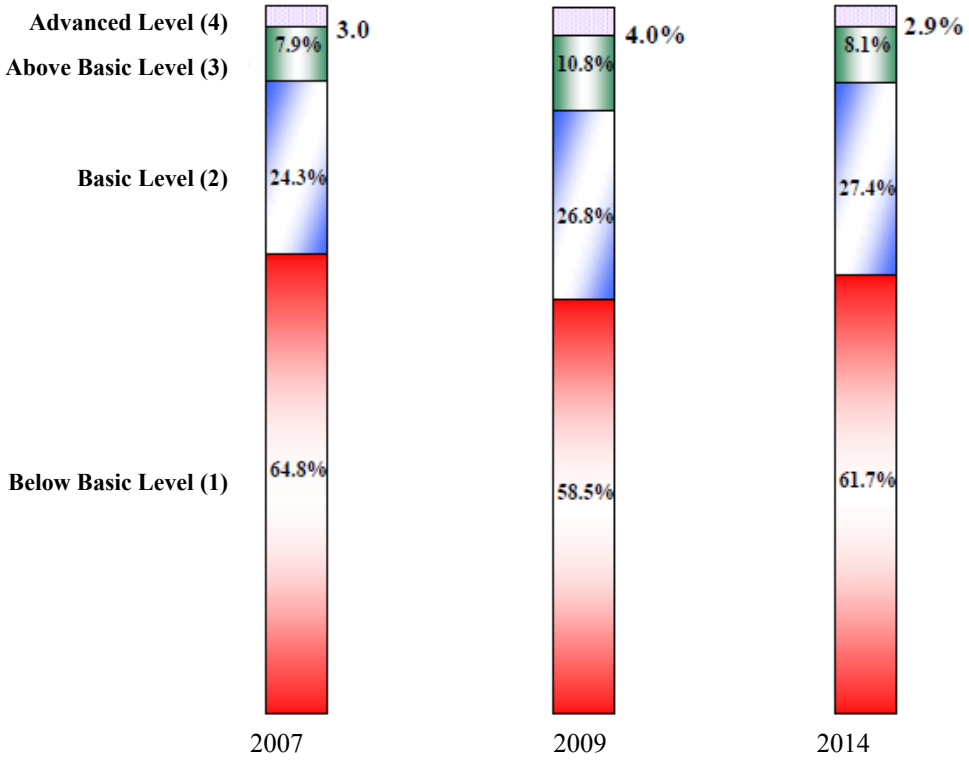
Diagram 2. Math. Distribution (in %) of the students of all schools participating in the NSBA survey in 2007, 2009 and 2014 by levels of academic achievements.



Homeland Studies

The analysis of the students' results in Homeland Studies across the three rounds of the survey, which are presented in Diagram 3 below, shows that the situation in this subject domain is somewhat similar to the situation in the Math domain. That is, in the round of 2014, the improvement of results that had been detected in the second round (2009) against the first round (2007) was replaced by a tendency towards declination, although this tendency is significantly weaker for this subject domain. The percentage of students in Level 1 increased by 3.2%, accompanied by a decrease of the percentage of students in levels 3 and 4. Like in the other two subject domains, the percentage of students in levels 3 and 4, which include the most successful learners, is very low. The subject domain of Homeland Studies includes the disciplines that, firstly, prepare a child for the life in the modern environment and, secondly, give him basic skills and knowledge for further learning of the natural sciences in secondary and higher grades (Chemistry, Biology, Physics, Astronomy, and Geography).

Diagram 3. Homeland Studies. Distribution (in %) of the students of all schools participating in the NSBA survey in 2007, 2009 and 2014 by levels of academic achievements.



3.1 The results of the 4th-graders in Reading Comprehension (by school categories, languages of instruction, gender and regions of the Kyrgyz Republic)

Reading comprehension has not been taught at schools as a separate subject. One should not confuse it with the classes of literature or native language. Reading comprehension includes basic abilities necessary for working with text of different kind. These abilities are developed in all disciplines where a student needs to work with the written text, either this is a Math, chemistry, history or literature. For example, Math requires comprehension of a special Mathematical language, Mathematical equations, symbols, item conditions, definitions, rules, special notation etc. One cannot do well in biology, physics, chemistry without comprehension of term content, without ability to use them; it is always necessary to comprehend cause and effect relations, to be able to mark out the essential thing in what one has read, to conclude on the base of a text, to

separate the main from the minor etc. Whether a student reads a paragraph of a textbook in a class, answers the questions after the paragraph or teacher's questions, works with additional literature or does the practical item on the base of a text, he must be able to work with the written information. Thus, the ability to comprehend what has been read, has been developed not during the classes of some subject, but during the classes of all school subjects, and the requirements to comprehend what has been read are included in the programs and standards of each subject at school. There is a direct relation between students doing well at schools and their ability to read and comprehend what has been read. A child, whose abilities to read are insufficiently developed, who read slowly and hardly, who hardly comprehends what has been read, experiences considerable difficulties while doing items related with reading and comprehension of a text, either this is a literary work, item condition or information of a textbook paragraph.

As was said earlier, the students' results are compared in this survey to the levels of achievements. There are four of them: a level below the basic (level #1), basic level (level #2) level above the basic (3) and advanced level (4).
In table 4 below, are shown the characteristics of 4 graders achievements in reading and comprehension on each level.

Table 4. Levels of academic achievements. Reading Comprehension. 4th grade.

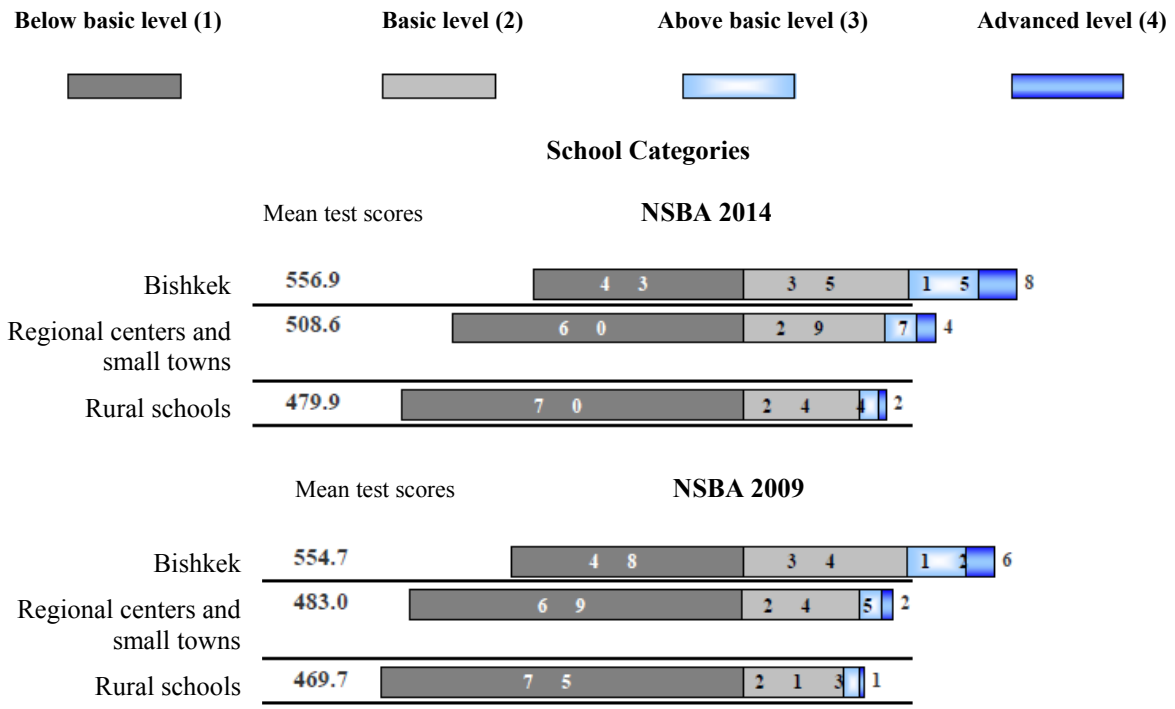
Level	Description
Below basic level (level 1)	A fourth-grader of this level, in general, does not have knowledge, skills and abilities listed in the basic level (see next section of this table). He partially has the skills to read and comprehend literary or informational text (to define what this text is about, who the main character is, etc.) but makes mistakes even while doing easy items. This prevents from mastering of all school subjects.
Basic level (level 2)	A fourth-grader of this level must show his ability to comprehend text as a whole. He must be able to find necessary information in text, define relatively obvious relations of this text with his own concept of what has been read and continue the idea of text by having made simple conclusion. Having read **literary** text, a fourth-grader must be able to explain in general terms, what the story is about, find the facts supporting his comprehension of a text and connect the content of a text with his reading impression. Having read **informational** text, a fourth-graders must be able to explain what this text is about and why one needs to read it, select examples in the text for supporting his opinion and connect text content with the knowledge received earlier as well as with life experience.
Above basic level (level 3)	A fourth-grader of this level must be able to show a complete and (all-round) comprehension of a text, based not only on literary, but on non-literary (scientific) information. He must be able to continue the idea of this text by linking with other texts or life, conclude, to link with his own life impressions (experience). Link between text and conclusion (or assumption) of a student must be clear and well-founded. Having read **literary** text, a fourth-grader of this level must be able to summarize it, make a conclusion on text as a whole or on the content of an excerpt, find cause and effect relations, explain deeds and words of main characters. Having read **informational** text, a fourth-grader of this level must be able to sum-

Level	Description
	marize the information and select the goal and item of an author. He must be able to make logical conclusions based on a text, find cause and effect relations, explain on what account (select the key feature) any of the conclusions have been done in the text.
Advanced level (level 4)	The fourth-graders in advanced level should be able to generalize what they had read and explain how and with what purpose the author of the text uses different literary devices. They should be able to critically evaluate a text appropriate to their level and provide insightful answers to the text as a whole. After having read a **literary** text, the fourth-graders in the advanced level should be able to make general judgments about the content of the text and support their opinion using their real life experience. They should also be able to use other texts they had read earlier that are connected to this text by topic. The students should be able to identify some literary genres, such as fairy tale, fables, short stories, poems, and to define literary devices, such as circumlocution. After having read an **informational** text, the fourth-graders in the advanced level should be able to explain the purpose of using different devices or materials in the text. They should be able to express their own critical judgment about the form and content of the text, supporting their opinion with logical argumentation.

The following school categories were defined for the purposes of this survey: Bishkek schools, schools of regional centers and small towns, and rural schools. The analysis of the results with the breakdown by school categories, languages of instruction, gender and regions of Kyrgyz Republic is presented in Diagrams 4-7.

The most notable thing is the unevenness of distribution of the results depending on school location. The Diagrams show that the students of Bishkek schools achieved the highest results. In Bishkek, 58% of the fourth-graders achieved levels 2, 3 and 4. Moreover, 23% of students in these schools are in levels 3 and 4 (above basic). This is the highest percentage across the country. The percentage of students in the below basic level in Bishkek is notably lower than in other school categories. The most difficult situation is seen in rural schools, where 70% of students did not achieve the minimal acceptable level (level 2). Only 24% of students achieved basic level, and virtually only a few have performed above basic level. The schools of regional centers and small towns performed worse than Bishkek schools, but better than rural schools. 40% of the fourth-graders from this school category achieved basic level of academic achievement; 11% performed above basic level.
The comparison to the results of the second round of this survey conducted in 2009 shows that the insignificant improvement of results that was tracked in 2014 embraces all school categories. In fact, the schools of regional centers and small towns demonstrated the largest increase of results: the percentage of students in level 2 increased by 9%, in levels 3 and 4 the common in

Diagram[1] 4. Distribution of the students of all schools of the KR participating in the NSBA rounds of 2009 and 2014 across the levels of academic achievement. Reading Comprehension. Grade 4.
School Categories

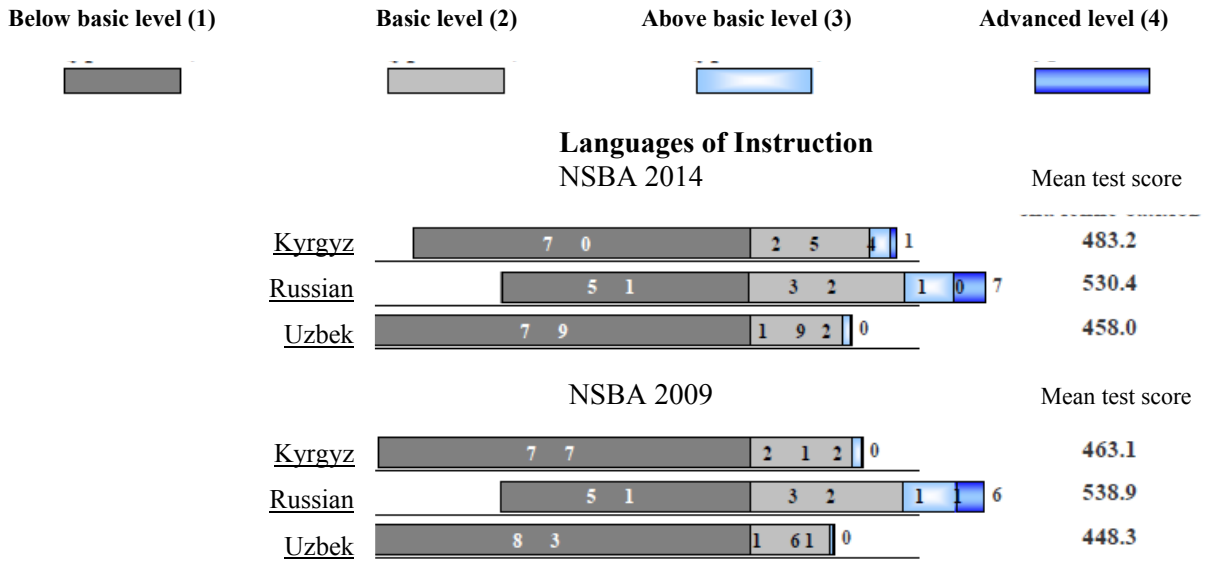


The NSBA survey is conducted in three languages: Kyrgyz, Russian and Uzbek. The distribution of the results across levels of academic achievement with the breakdown by language of instruction is presented in Diagram 5.

The analysis of the Diagrams shows that, like in the previous rounds of the survey, the schools with Russian as a language of instruction performed better than other schools. About a half of the students from Russian language schools achieved the minimal acceptable level (2). The results of 2009 and 2014 were almost identical in all levels of academic achievement. In the schools with Kyrgyz as a level of instructions only 30% of students have reached level 2 in reading, while only 5% of fourth-graders are in level 3 and 4. However, one thing is noticeable of attention is that in comparison with the previous round of survey, the results of students, of a Kyrgyz as a language of instructions, have improved aloud. If in 2009 77% of students have not reached minimal acceptable level in reading, then in 2014 such amount of students decreased by 7%. The results of students from schools with Uzbek as a language of instruction turned out to be the lowest ones. The percentage of the fourth-graders who have not reached level 2, in Uzbek schools is 79%, however it is still a higher result than in 2009, when the percentage of students who did not reached basic level was 83%.

[1] The total percentage of students, in diagrams of this kind, in all levels of academic achievements may be equal to 100 due to rounding of figured by the calculating program.

Diagram 5. Distribution of the students of all schools of the KR participating in the NSBA rounds of 2009 and 2014 across the levels of academic achievement. Reading Comprehension. Grade 4.
Languages of instruction



*The language of instruction does not necessarily mean students' ethnicity

The results of girls in reading comprehension are traditionally higher than the results of boys (Diagram 6). 40% of girls achieved levels 2 and above, and only 30% of boys achieved these levels. In addition, compared to the previous round of the survey, girls have shown some improvement of results, while boys have stayed at the same level.

Diagram 6. Distribution of the students of all schools of the KR participating in the NSBA rounds of 2009 and 2014 across the levels of academic achievement. Reading Comprehension. Grade 4.
Boys and girls

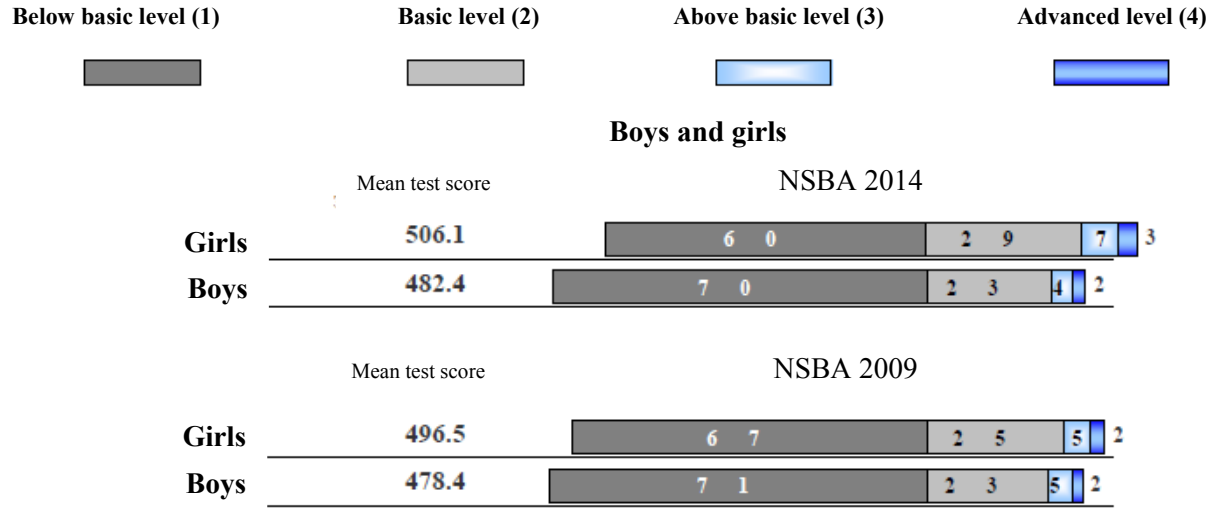
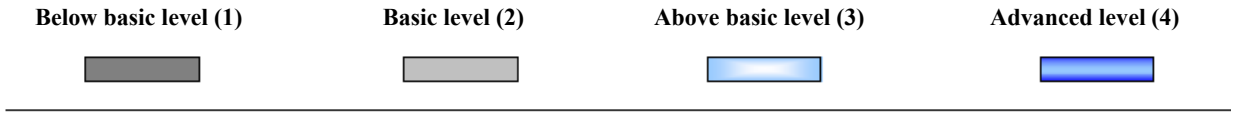
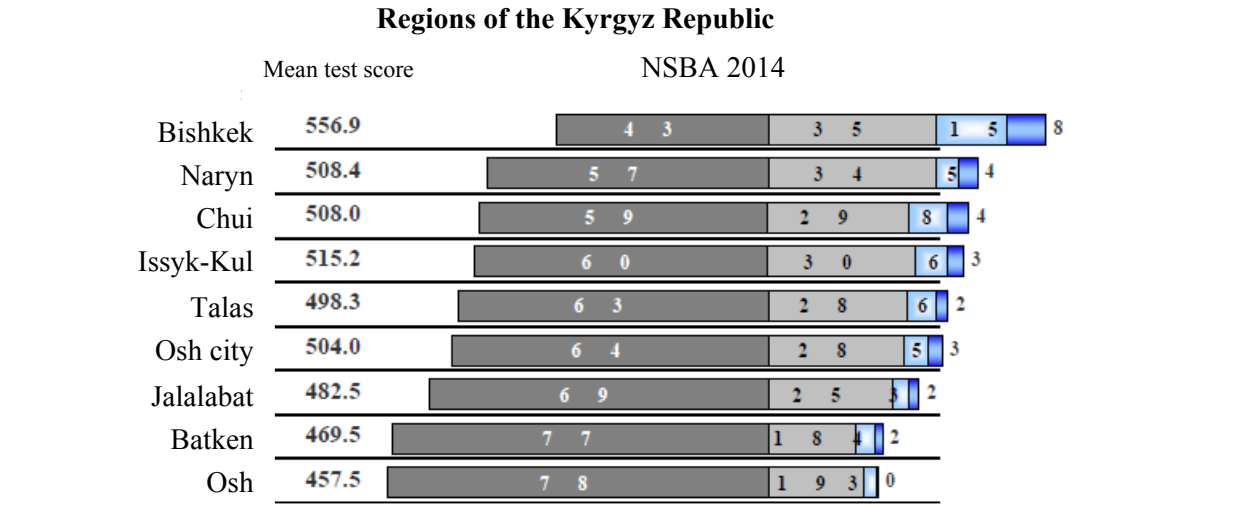


Diagram 7 shows the breakdown of students results by the **administrative regions of the Kyrgyz Republic.**
Notably, many regions have shown significant improvement of results in levels 1 and 2, compared to the round of 2009. This means the decrease of the percentage of students who did not reach the minimal acceptable level (2). The highest improvements occurred not in Bishkek,

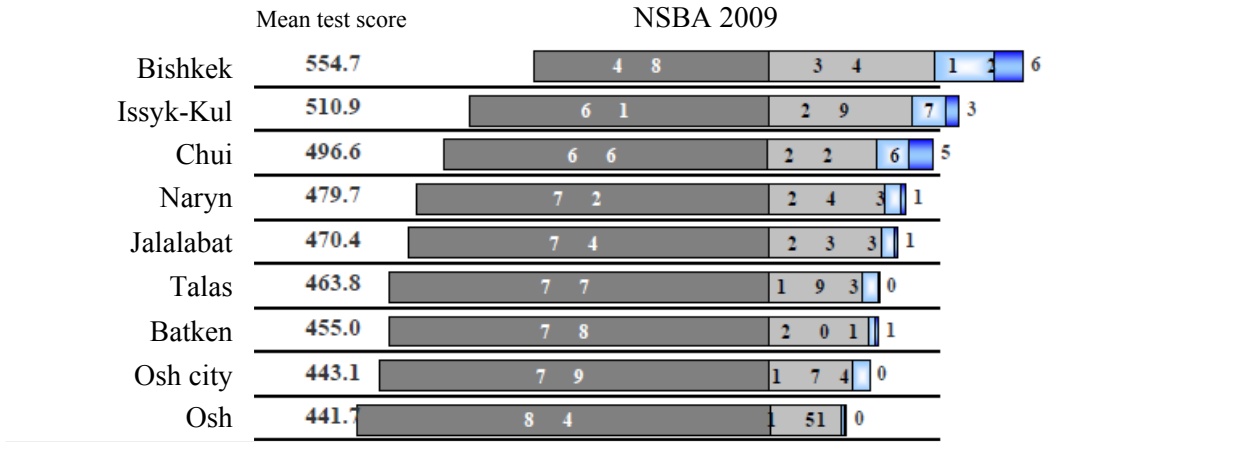
where the results grew only by 5%, but in Naryn region, where the situation improved by 15%, in the city of Osh (15%), and Talas region (14%). In Chui oblast, the percentage of students in the below basic level decreased slightly less, by 7%. A 6% improvement occurred in Osh oblast and a 5% in Jalal-Abat oblast. Batken and Issyk-Kul oblasts performed the same results as in the previous round of the survey. As we have seen, in 2009 the survey revealed general significant decline of the results in reading comprehension all across the country except Issyk-Kul oblast, where there had been even a slight increase (3%). Nevertheless we can see that, despite some improvement, the results of 2014 in some regions like Osh and Batken remain very low (77% and 78%). Generally across the country, as had been said earlier, more than 60% of students fall in the below basic level.

Diagram 7. Distribution of the students of all schools of the KR participating in the NSBA rounds of 2009 and 2014 across the levels of academic achievement. Reading Comprehension. Grade 4.
Regions of the Kyrgyz Republic





The regions are listed in the descending order depending on the percentage of students in the below basic level



The regions are listed in the descending order depending on the percentage of students in the below basic level

3.2 The results of the 4th-graders in Math (by school category, language of instruction, gender and regions of the Kyrgyz Republic)

Below in Table 5 the characteristics of achievements of the fourth-graders in Math in each level are shown.

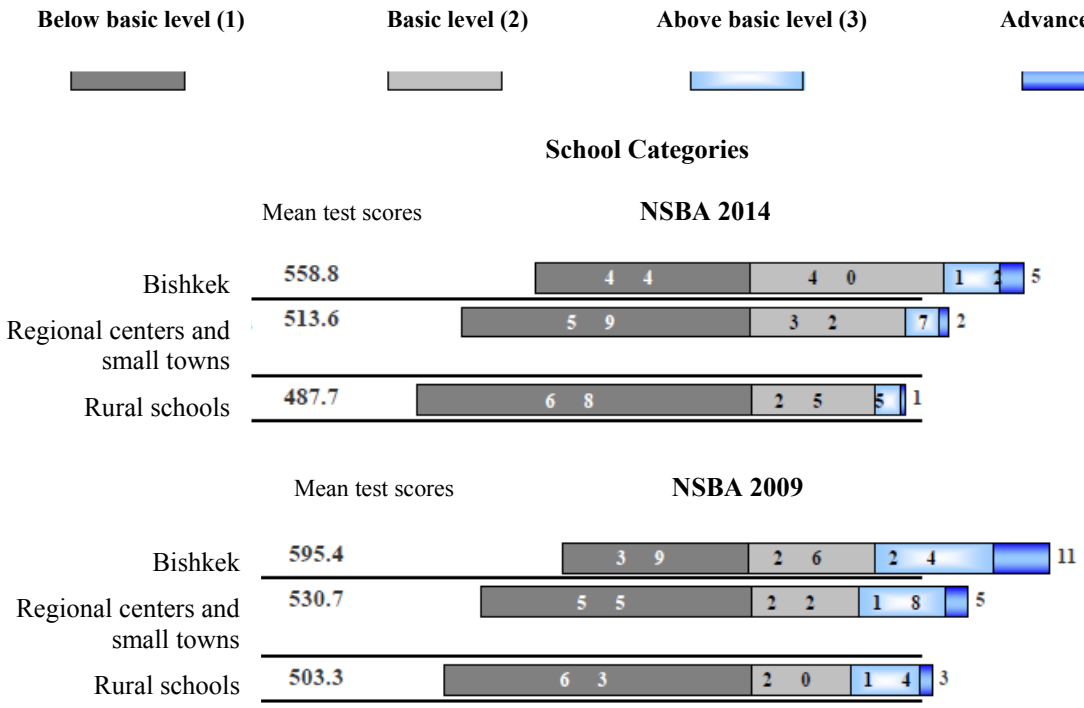
Table 5. Levels of academic achievements. Math. 4th grade.

Level	Description
Below basic level (level 1)	fourth-grader of this academic level knows special terms, rules, definitions and ways of action; some measuring units. fourth-grader of this level can accomplish one-step items by following example, but makes mistakes even while doing easy items. He does not have knowledge and skills, sufficient enough for further studying at school.
Basic level (level 2)	fourth-grader showing basic level of knowledge, should be able to: reproduce rules and definitions; identify different geometry shapes among ready images; use drawing tools (ruler and triangle) for measuring and building simplest geometry shapes; know units of some measurement systems and basic correlation between them; select and use necessary procedures (measuring, calculating, comparing Mathematical objects and values); accomplish one-step items, read information, presented in the picture, text, table; accomplish two-step items by following example, and resolve items in particular. fourth-grader who achieved basic level should comprehend the material and use it in typical situations, however still can make grave mistakes while doing them. The course of item solution is written in short manner, without establishment.
Above the basic level (level 3)	fourth-grader who achieved this level, besides managing the abovementioned knowledge, abilities and skills should be able to: make calculations for solving easy items; write down simplest literal expressions; draw with tools (rulers, triangle and compasses) and draw basic flat figures by using squared paper; analyze data, presented in the picture, text, table and conclude; use learnt rules; definitions; features of Mathematical objects, algorithms, principles of arithmetical, algebraic, geometric nature while doing multistep items and Mathematical expressions; a fourth-grader who achieved this level, should be able to know Mathematical facts and principles and use them in typical items, however it is acceptable that he may not be able to write his solution well and completely enough. Such a student should know well Mathematical facts and principles and use them in typical situations
Advanced level (level 4)	fourth-grader, showing advanced level, besides having knowledge, abilities and skills, listed in two previous levels should be able to: use integrated knowledge and abilities, as well as conceptual understanding of real or new, unusual situations (build a Mathematical model of a suggested situation; solve the item by using familiar or specially developed procedures); solve items with excessive data etc. a fourth-grader who achieved advanced level of academic achievements should be able to establish and write the course of the item solution and control the accuracy of execution of intermediate activity, which lead to its correct eventual result.

Diagrams 8-11 show the results of the fourth-graders in Math depending on the category of school, where they study (schools of Bishkek, schools of regional centers and small towns, rural schools) language of instruction, gender and regions of the Kyrgyz Republic.

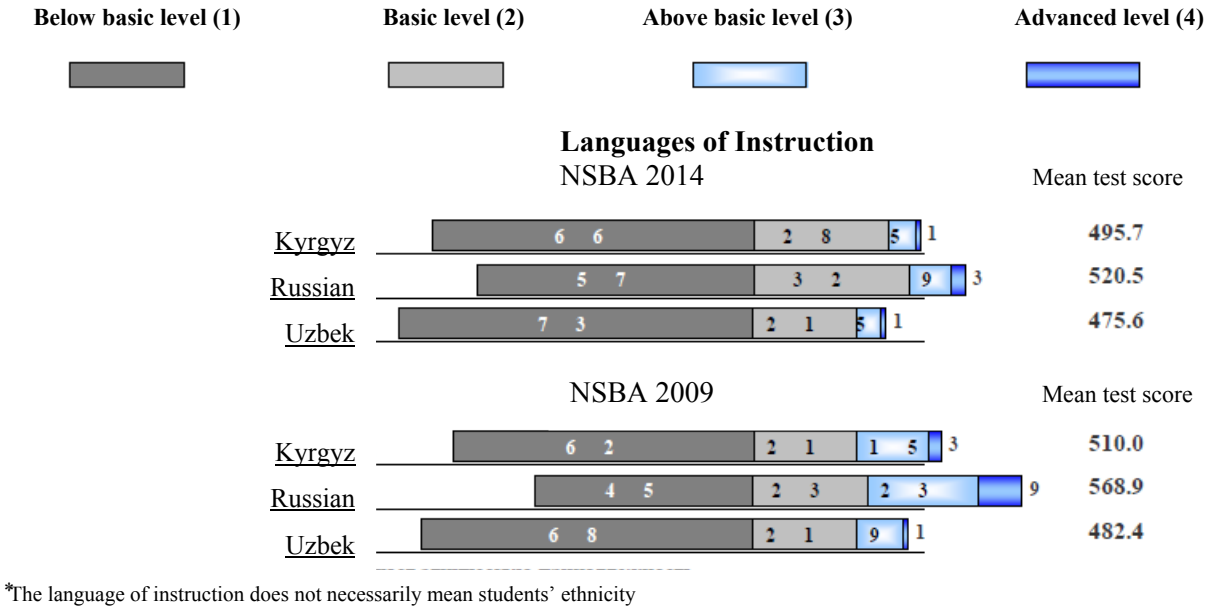
One can see the decline of the situation occurred in level 1, 3 and 4. It concerns all categories of schools. Most losses occurred in Bishkek schools. Level 1 students increased by 5%. Notably that levels 3 and 4 have been decreased by 18% and reached 17% in 2014 comparing to 35% in 2009. Which means that for the last 5 years, Bishkek has increased the percentage of students who did not reach minimal acceptable level, but lost more than a half of its strong students doing well in Math. Similar situation can be seen in other school categories. An alarm situation can be seen especially in rural schools, where 68% of students showed mismatch to the minimal requirements in Math. The percentage of students showing good and excellent results has decreased as well both in rural schools and regional centers, as well as in small towns.

Diagram 8. Distribution of the students of all schools of the KR participating in the NSBA rounds of 2009 and 2014 across the levels of academic achievement. Math. Grade 4. School Categories



The analysis of the fourth-graders' results by languages of instructions (Diagram 9) shows that the most negative changes can be seen in schools with Russian as a language of instructions, where level 1 has increased by 12% while levels 3 and 4 in the aggregate have decreased by 20% (by 2.7 times). In schools where Kyrgyz is a language of instructions, this happens less often, however one still can see similar trends. Things are in a bad way in Uzbek schools as well, where 27% of students have reached minimal level 2.

Diagram 9. Distribution of the students of all schools of the KR participating in the NSBA rounds of 2009 and 2014 across the levels of academic achievement. Math. Grade 4. Languages of instruction



*The language of instruction does not necessarily mean students' ethnicity

Boys have shown worse results than girls (Diagram 10). Almost equally, both of them have lost their strong students (levels 3 and 4). The difference between girls and boys in level 1 has slightly increased. The percentage of boys who have not reached level 2 is 5% more.

Diagram 10. Distribution of the students of all schools of the KR participating in the NSBA rounds of 2009 and 2014 across the levels of academic achievement. Math. Grade 4. Boys and girls

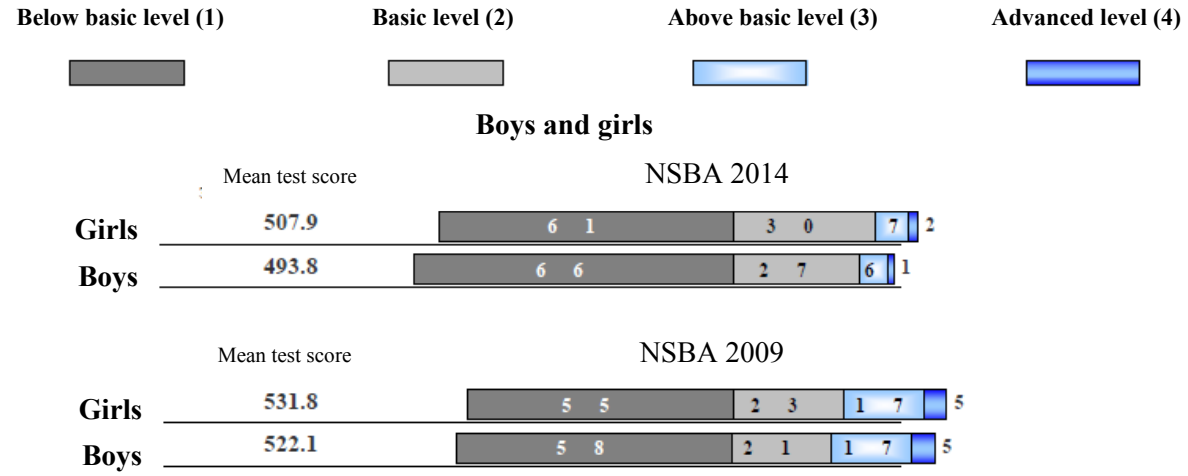
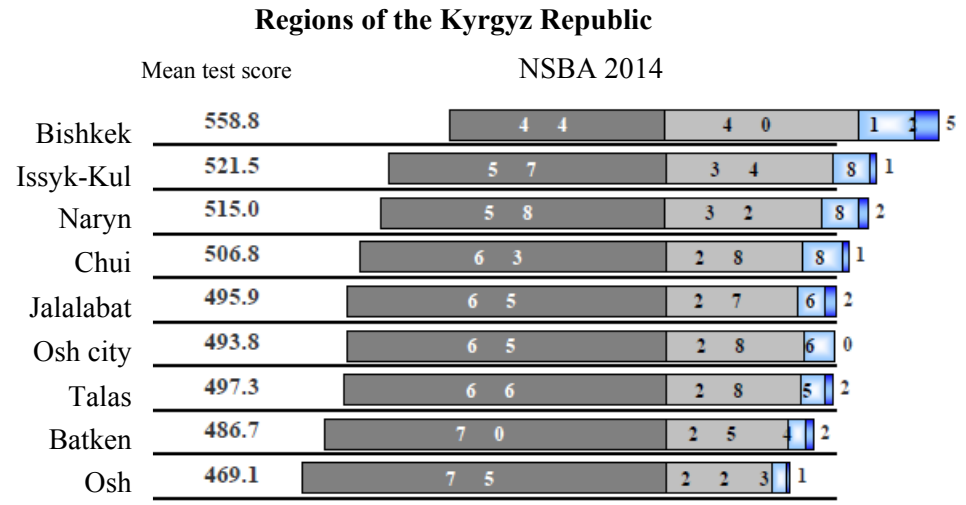


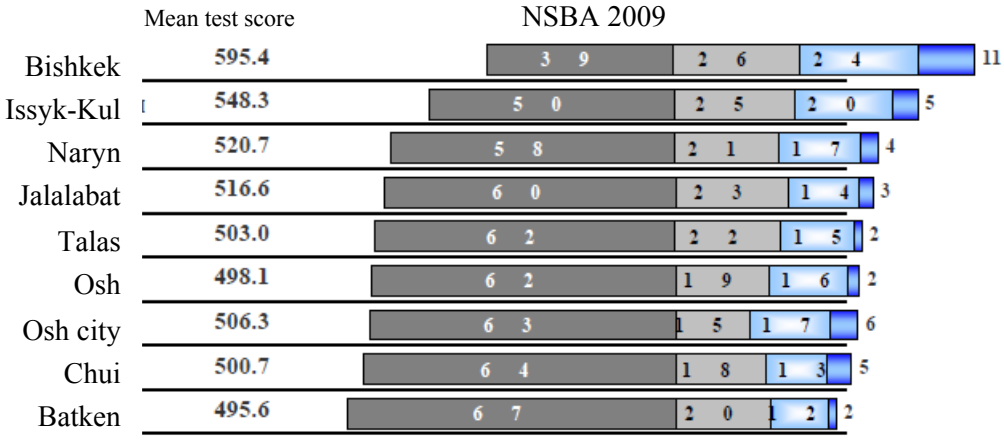
Diagram 11 below shows the distribution of student achievements by administrative oblasts in the Kyrgyz Republic. One can see from the presented data, that all Kyrgyz Republic oblasts have a results decline in Math. Most decline can be seen in Osh oblast, where schools have lost almost all students at levels 3 and 4. Level 1 has increased by 13% and reached 75%. Which means that only 25% of students in Osh oblast have reached the minimal level 2, there are no students of a higher levels. Issyk-Kul oblast comes after Osh oblast, showing earlier a good growth of student results. In 2014 level 1 in these schools has increased by 7%, when levels 3 and 4 have left with 9% of students instead of 25% as in 2009. Then comes Bishkek, the losses of which are de-

scribed above. Traditionally Bishkek has the highest results. It is still so in 2013, however when it comes to losses, Bishkek has the most significant ones, as most of the losses occurred in levels 3 and 4, which means that amount of students who go to secondary school with good or excellent knowledge become three times less than five years ago.
All oblast have lost students in level 3 and 4, however growth of student percentage who have not reached basic level is not registered in Naryn oblast schools, when in Chui oblast it is within 1%
Knowledge and skills received by students after finishing 4 grade are the bundle with which they start a secondary school .

Diagram 11. Distribution of the students of all schools of the KR participating in the NSBA rounds of 2009 and 2014 across the levels of academic achievement. Math. Grade 4. Regions of the Kyrgyz Republic



The regions are listed in the descending order depending on the percentage of students in the below basic level



The regions are listed in the descending order depending on the percentage of students in the below basic level

3.3 The results of the fourth-graders in Homeland Studies (by school categories, languages of instruction, gender and regions of the Kyrgyz Republic)

As well as in the first two rounds, a test has been developed for checking achievements of the fourth-graders in the Homeland Studies, which includes questions about wildlife and inorganic nature, according to the government standards which shows readiness of the fourth-graders for further learning of natural sciences in the secondary school.

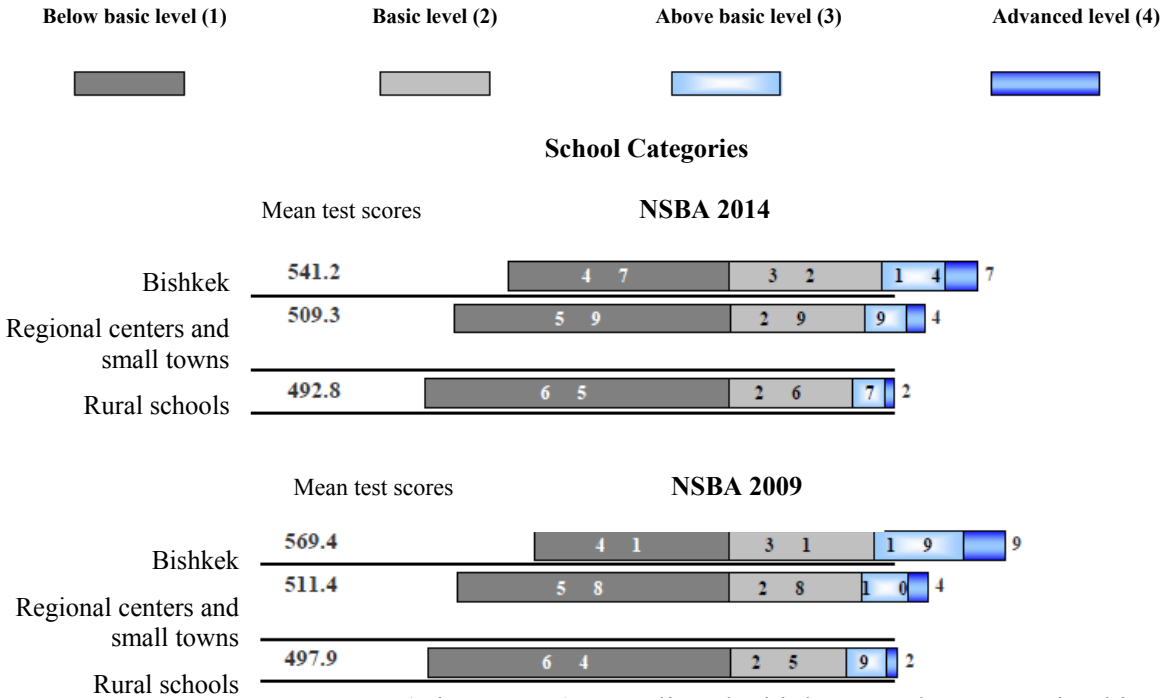
In table 6 below the characteristics of the fourth-graders achievements in the Homeland Studies in each of the levels are shown.

Table 6. Levels of academic achievements. Homeland Studies. Grade 4.

Level	Description
Below basic level (level 1)	A fourth-grader who is in the below basic leve in Homeland Studies, has only fragmentary knowledge and partial practical abilities, however does not show the comprehension of basic notions taught at Homeland Studies classes, cannot solve easy items in real life. Thus, a student does not have knowledge and abilities, sufficient for further successful schooling.
Basic level (level 2)	A fourth-grader who reached basic level in Homeland Studies must show knowledge necessary for comprehension of such scientific fields as Earth, physical world and wildlife and use them on reproductive level. He should be able to read not difficult schemes and diagrams, compare and have an idea about systematization of objects of wildlife and inanimate nature. He should be able to work with natural materials, conclude, however still can't explain received results clear enough. He should be able to use maps and plans. He should know about geographical location, mineral resources, nature, animal and plant kingdom of the Kyrgyz Republic. He should know about features and meanings of air and water in the human life. He should know main organs of plants and their function. He should know about seasonal changes in life of plants and animals. He should have elementary notions about constitution and location of main organs of human body. He should be able to use observation as a method of learning wild nature, decide simplest items from real life. Thus, a fourth-grader, who reached this level, should have main knowledge, abilities and skills necessary for continuing his study at school.
Above basic level (level 3)	A fourth-grader who reached this level in Homeland Studies, should have all necessary conceptual knowledge, listed in the basic level of evaluation, use this knowledge for solving real-life items and problems. He should be able to analyze data and conclude from the information analysis. A student should actively use received knowledge for solving real-life items. Besides that, he should be able to establish his notion of received information about Earth, physical world and animate nature and formulate simple conclusions on the base of studied matters. Additionally, in his arguments, he shows ability to use graphically and schematically presented information (maps, plan, scheme, drawing, diagram etc.). A fourth-grader of this level should be able to link human organism structure, objects' features and ways of its use by human. He should be able to do established assumptions and explain his opinion.
Advanced level (level 4)	A fourth-grader who reached this level in Homeland Studies should be able to show developed and stable knowledge in Homeland Studies matters, which described in details in basic level evaluation of Homeland Studies achievements of students. Besides that, he should be able to use this knowledge in any new life situation. He should be able to conduct simplest experiments (measurements), plan, forecast and briefly characterize the received results, let alone to establish them by his own life experience and received earlier knowledge. He should be able to link objects and natural phenomenon, classify them, give consecutive explanations of reasons of natural phenomenon origins based on received knowledge Students of this level should be able to think outside the box in their argumentation and do established assumptions.

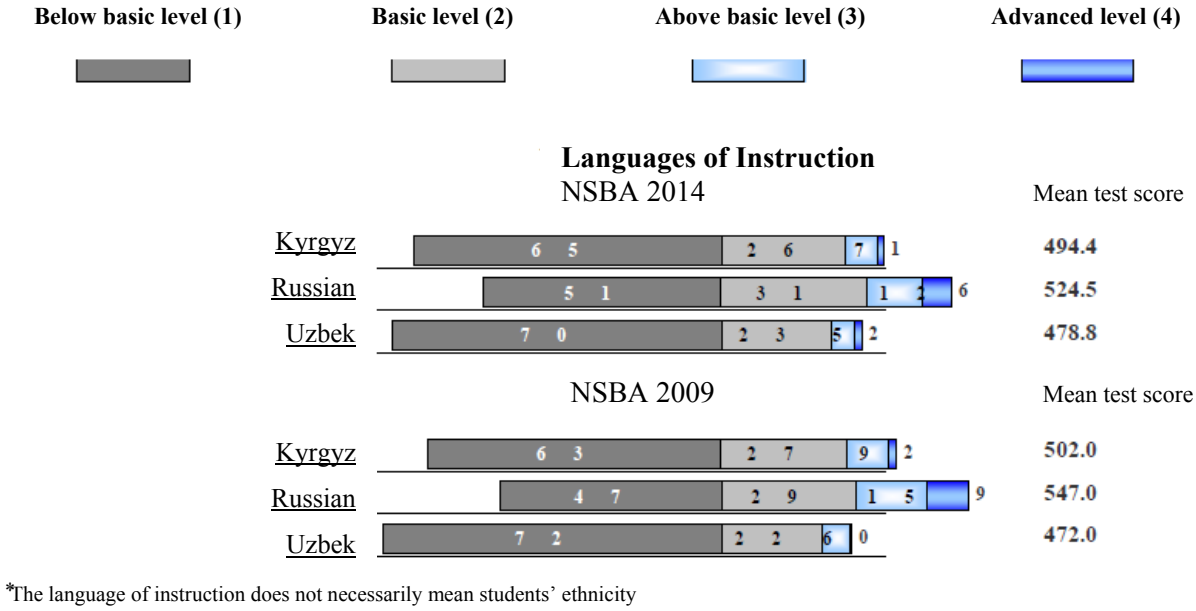
The analysis of results in Homeland Studies field by school categories (Diagram 12) shows that the highest loss in results of students can be seen in Bishkek. While in rural schools and schools of regional centers as well as in small towns, the situation aggravated by 1-2%, in Bishkek schools the decline registered at 6%. The results decline occurred at levels 3 and 4. These are the levels where the results of strong students are. Losses at these two levels are 7% in total. Thus, despite the fact that results of students in Bishkek remain the highest, still the negative changes in there are profound as well.

Diagram 12. Distribution of the students of all schools of the KR participating in the NSBA rounds of 2009 and 2014 across the levels of academic achievement. Homeland Studies. Grade 4.
School Categories



V **structions** (Diagram 13) as earlier, the highest results are received in schools, teaching in Russian language, however, the most notable decline of results in Homeland Studies is in these schools as well. Thus, the students of the level 1 in schools with Russian language become 4% more, while percentage of students in higher levels 3 and 4 declined to 6%. The decline occurred in Kyrgyz schools as well, but it is limited to 2-3%. However, there is a high percentage of students who have not reached minimal acceptable level 3 (65%), and only 8% of students who have reached level 3 and 4. In Uzbek schools, the percentage of students who have not reached level 2 is the highest across the country. It reaches 70%, while the results in these schools have not declined. Students at level 1 become 2% less than in 2009.

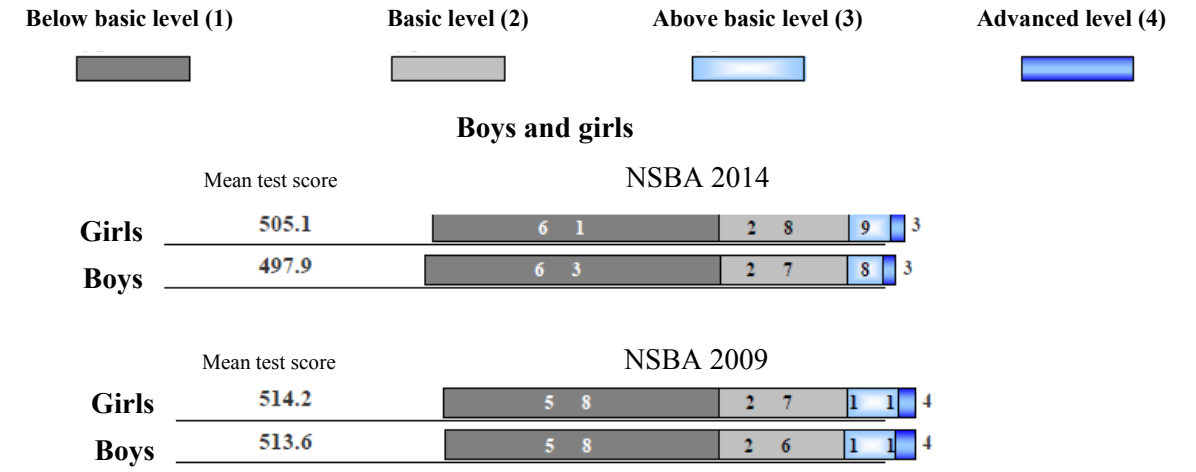
Diagram 13. Distribution of the students of all schools of the KR participating in the NSBA rounds of 2009 and 2014 across the levels of academic achievement. Homeland Studies. Grade 4. Languages of instruction



*The language of instruction does not necessarily mean students' ethnicity

Difference in results between boys and girls (Diagram 14) is not big, there was no difference in previous surveys. There is a slight decline of results in both groups, however boys have worse results than girls. There are 2% of girls more at level 1 than in 2009, they have lost 3% at higher levels. There are 5% of boys more at level 1 and 4% of boys less than in 2009 at levels 3 and 4

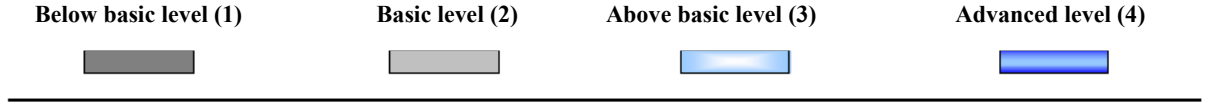
Diagram 14. Distribution of the students of all schools of the KR participating in the NSBA rounds of 2009 and 2014 across the levels of academic achievement. Homeland Studies. Grade 4.
Boys and girls

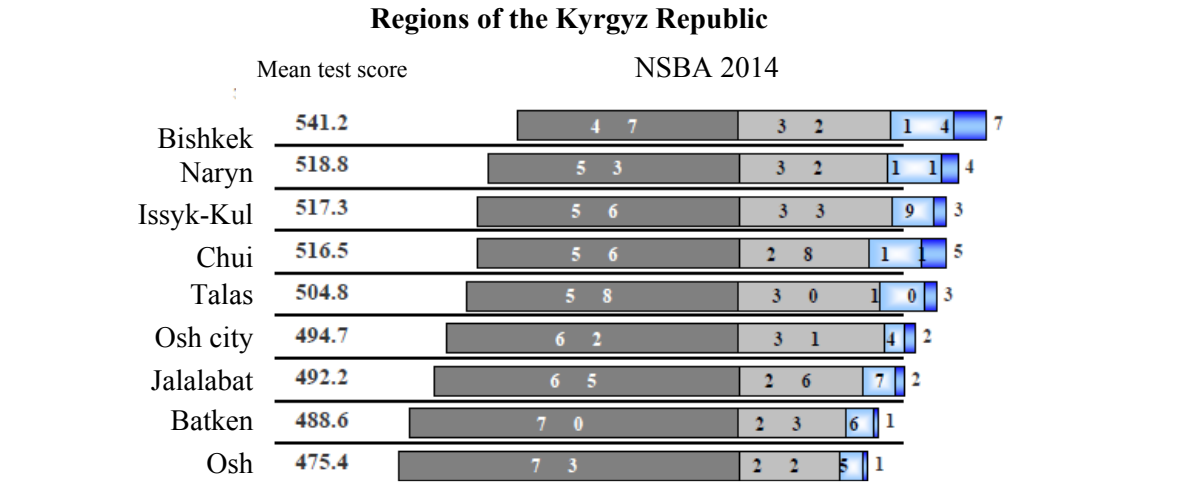


The results of students by **administrative regions** of Kyrgyz Republic (Diagram 15) are very dissimilar. Even though as a whole, the tendency of percentage growth of students who have not reached basic level 2 can be seen, more detailed analysis shows dissimilar situation in different regions. One can mark out regions, where students showed significant decline of achievements? Regions where negative changes not so noticeable, and oblasts where the levels 1 and 2 showed some improvement for the past time. Decline of results in Bishkek has been spoke about above. One should note, that it is the most significant one over all regions of Kyrgyz Republic. However, results in Bishkek remain the highest in the country. Percentage of students of level 1 in-

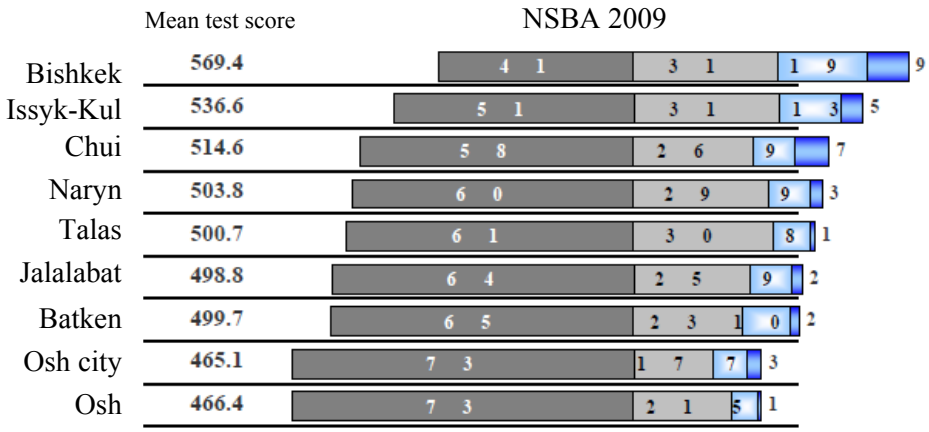
creased by 5%. Only 30% of students have achieved level 2 here. There are 7% of students on higher levels. Also, percentage of students of level 1 in Issyk-Kul oblast increased by 5%. Jalal-Abat and Osh oblast remain at practically the same level of 2009. However Osh oblast stands out due to highest percentage of students who have not reached basic level in Homeland Studies. Only 28% of children who graduated from elementary school in Osh oblast passed into 2 level. There are only 6% of fourth-graders at level 3 and 4. However there are regions that showed significant improvement of results in Homeland Studies. First of all, it is worth of noting about schools of Osh. Abrupt aggravation of situation has occurred in schools of Osh in 2009, students from Osh took one from the bottom result in the country (73% of the fourth-graders found themselves at level 1). This time, level 1 has 11% of students less. Now there are 62% of students on level 1 of Osh, what is significantly less than in other southern regions. However it is worth of noting, that higher levels 3 and 4 has loss of 4% after all.
Noticeable improvement of results occurred in Naryn oblast. Level 1 has decreased by 7%. Naryn oblast and Osh showed significant decrease of students' percentage who have not reached level 2, as well as in reading and comprehension; weak Math students amount did not increased comparing to the level of 2009.

Diagram 15. Distribution of the students of all schools of the KR participating in the NSBA rounds of 2009 and 2014 across the levels of academic achievement. Homeland Studies. Grade 4. Regions of the Kyrgyz Republic





The regions are listed in the descending order depending on the percentage of students in the below basic level



The regions are listed in the descending order depending on the percentage of students in the below basic level

4.1 What the students of the fourth grade know and can do in Reading Comprehension

The types of test items that presented the most difficulty for the students.

The test on Reading Comprehension, like the tests in other subject domains, included three types of test items:

- **Multiple choice items,** in which the students were asked to mark one of the several answer options;
- **Short constructed response items,** in which the students were expected to provide a written response in the form of a few words or a sentence;
- **Extended constructed response items,** in which the students were expected to provide a comprehensive reasoning, describe an example that they thought of themselves, make a generalization, an independent conclusion, etc.

The analysis of test results in Reading Comprehension (Table 7) shows that the fourth-graders encountered the most difficulties dealing with the constructed response items, where they were asked to come up with an answer and write it down. The percentage of students that did not attempt to answer the short constructed response items and the extended constructed response items is approximately the same. The percentage of correct answers for both types of items has been received approximately similar as well: as can be seen in the table, 35.9% of students skipped the short constructed response items and 37% of students – the extended constructed response items. At the same time, correct answers were given by 18.8% and 20% of students accordingly.
The rest 43% and 45.3% of students gave incorrect answers. The difficulty of such items is connected to, on one hand, comprehension of a text, on the other hand, comprehension of what needs to be done in the item. Lack of writing abilities presents additional difficulties for weak students. High percentage of students who did not accomplish the constructed response items points at the necessity of including similar items in the school practice, where students are offered to express the opinion in writing, make a conclusion about what they have read, give examples or evidences etc.

The multiple choice items seem less difficult to the students, and they attempt at answering them more often. Only 16.7% of the fourth-graders skipped such items. This is about half the percentage of skipping the items which require constructed response. However, the percentage of correct answers to the multiple choice items is rather low (35.3%). This means that the largest percentage of incorrect answers (48.4%) was found in the multiple choice items. The underachieving students willingly try to complete such items, thinking that they are easier, which is not true. Any type of item requires, first of all, the ability to understand the question or item correctly, but the students who have poor reading comprehension abilities face serious difficulties understanding them. The "blind" picking of answer options leads to the high percentage of incorrect answers.

Table 7. Students' results (in %) with the breakdown by types of items. Reading comprehension. Grade 4

All schools that participated in NSBA		Percentage of students who	
Type of items	**Number of items**	**completed the items**	**did not attempt to complete the items**
Multiple choice	46	35.3%	16.7%
Short constructed response	13	20.0%	37.0%
Extended constructed response	14	18.8%	35.9%

What is the purpose of reading? The analysis of the results of the fourth-graders with the breakdown by purposes of reading.
At all stages, school education is closely connected to the ability to read and understand what was read. All knowledge that a student receives is represented in words: what's written down in the textbooks, passed on from the teacher to the student, is always perceived and operated by the student as information organized in words and sentences. Without the ability to read and comprehend texts, it is impossible to gain knowledge and to succeed in education. The latest psychological researches show that there is a close link between the age at which a child becomes interested in reading and his further intellectual development. These researches deal with reading abilities at the pre-school age. The students of the fourth grade are at the stage of completing their primary education. Their success in secondary grades directly depends on the abilities that

they acquired in elementary school and, mostly, on the ability to read and comprehend information.

In the process of learning, children deal, mainly, with two types of reading: informational texts (school textbooks, children's encyclopedia, children's educational periodicals etc.) and literary texts (texts studied in the reading classes, out of class reading sessions, and books that the students read on their own). With this taken into account, the survey focused on two basic purposes of reading:

1. **Reading for literary education**. It includes literary texts, similar to those which students read at reading classes at 4th grade, as well as on their own at home. Reading for literary education involves reader in learning of literary work, it's specifics, themes, ideas, events, characters, figural-expressive devices of languages. A reader analyzes writing on the base of his own reading and life experience. He evaluates main characters and their deeds, thinks about a possible development of the action etc. A literary text impels readers to form moral and ethical conclusions.
2. **Reading for receiving information**. It involves informational texts, educational texts, such as articles from the textbooks or scientific articles. This type of reading, as a rule< is related to textbooks, work-books and additional editions, articles in the newspapers, magazines, reference books, encyclopedias. Texts are read for receiving and understanding information. Reading implies ability to mark out main thought, find necessary information in the text, distinguish main from the minor, understand which information can be received from this text and which cannot, to understand logic of arguments and evidences. Going through the text a read can work with the text as a whole or with its excerpts.

Diagrams below show how fourth-graders did their items as a whole, related to each of the named reading items.
Diagram 16 shows how students did their items related to the reading of the literary education, Diagram 17 — items related to the reading for receiving information. One can see from the show data below that reading for literary education turned out to be easier for students than reading for receiving information. Less percentage of students passed through the items for literary texts than for informational (19.6% against 28.6%). More percentage of students (by 8.7%) completed the items for literary texts than for informational one. However that does not mean that fourth-graders did well with the items of literary texts, only 33.7% of the fourth-graders did well with such items at level 2 and higher. The percentage of students, who did well in items with informational texts, turned out to be a little lower than percentage of students who did not even attempt to answer. The reason why fourth-graders do better in items of literary reading, most probably, is that there's a special time and attention in school for learning literary writings. There is a separate reading class, where students learn to analyze literary writing such as poems stories, excerpts from novelettes, novels, folk compositions etc., according to the approved standards and programs in the country on the base of recommended textbooks. At the same time, informational texts, despite the fact that students have to deal with them while studying, are not analyzed during the classes, are just retold (mainly close to the text) which helps child a little to understand the content of informational texts and learn to work with it.
Questionnaire of teachers showed that additional literature (besides textbooks) is used by teachers during reading classes and rarely at Homeland Studies, even though encyclopedias or any other scientific and educational literature may come in handy. This is why there are dissimilar achievements of the fourth-graders in reading of literary and informational texts.

Diagram 16

Reading purpose:
Reading for literary education

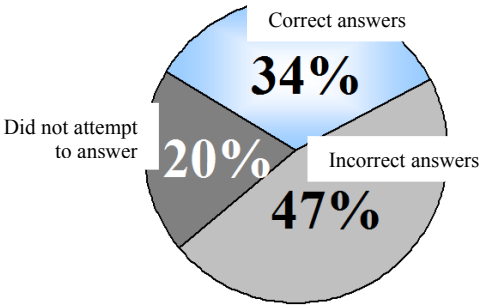
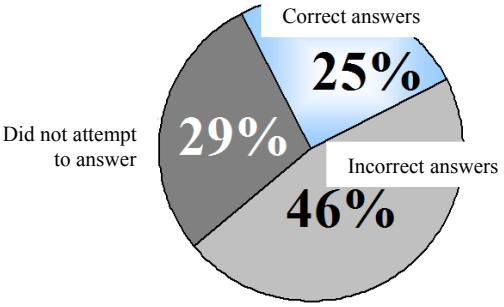


Diagram 17

Reading purpose:
Reading for information



More detailed analysis (Tables 8-9) shows that reading and comprehension of informational texts turned out to be more complicated for the fourth-graders both by school categories and language of instruction.

The highest percentage of successfully completed items has been received in reading literary texts in Bishkek (48.1%), as well as in schools with Russian language as a language of instructions (42.6%). The lowest percentage of correct answered has been received for items for informational texts in rural schools (22.1%), as well as in schools with Uzbek language as a language of instructions (17%). Presence of big difference between results in reading and comprehension of students of different categories and schools of different languages of instruction shows big inequality of primary education across the country. In all considered parameters, schools of Bishkek have the highest results of all, and rural schools have the lowest. Schools of regional centers and small towns take intermediate position. By languages, students of schools with Russian language as a language of instructions take first place, followed far behind by students from schools with Kyrgyz as a language of instructions, and students of schools with Uzbek as a language of instruction have the weakest rates.

These tables show that both girls and boys completed with items of reading for literary education better. However boys showed lower results in both items of reading. Girls more rarely passed through the items.

Comparison of the received results with the results of the survey of 2009 shows that in 2009, the results in items of reading were slightly different. As a whole, the percentage of students across the country, who completed the items in reading for literary education was lower by 2.2% than percentage of students who completed the items in reading for receiving information (22.6% and 24.8 accordingly). Additionally there was no such difference in Bishkek schools: both items of reading have been done there. Schools with Russian language of instruction handled the items o reading o literary works better then, than with reading of informational texts. Nevertheless, schools in rural areas, schools of regional centers, schools with Kyrgyz and Uzbek language of instructions handled the literary text worse than with the informational ones. Change of the situation in 2014, probably is related to the fact that in 2010 a redistribution of academic hours in primary classes took place. Reading classes started to be conducted 3 times a week. At the same time Homeland Studies classes, where fourth-graders ran into informational texts started to be conducted only one time instead of two academic hours since 2009, second hour has been given to the Ethics class, a textbook of which is missing in schools. These changes could affect the results of 2014.

Table 8. The results of students (in %) in different purposes of reading with the breakdown by school category, language of instruction, and gender. Reading Comprehension. Grade 4

Reading for literary education

Groups of schools	Percentage of students who	
	answered correctly	did not attempt to answer
All schools participating in the NSBA survey	33.7%	19.6%
School categories		
Schools of Bishkek	48.1%	9.3%
Schools of regional centers and small towns	36.4%	17.1%
Rural schools	30.5%	22.0%
Languages of instruction		
Kyrgyz	30.9%	20.2%
Russian	42.6%	15.0%
Uzbek	25.3%	29.2%
Gender		
Girls	36.7%	17.5%
Boys	30.6%	21.7%

Table 9. The results of students (in %) in different purposes of reading with the breakdown by school category, language of instruction, and gender. Reading Comprehension. Grade 4

Reading for information

Groups of schools	Percentage of students who	
	answered correctly	did not attempt to answer
All schools participating in the NSBA survey	25.0%%	28.6%
School categories		
Schools of Bishkek	38.3%	13.7%
Schools of regional centers and small towns	27.7%	25.1%
Rural schools	22.1%	32.1%
Languages of instruction		
Kyrgyz	22.9%	29.4%
Russian	32.3%	22.7%
Uzbek	17.0%	40.6%
Gender		
Girls	27.1%	26.9%
Boys	22.9%	30.2%

What the 4th-graders can do better? The analysis of results by aspects and by standards of reading

Within each of mentioned above items, reading of literary education and reading for receiving information — aspects of reading have been evaluated:

- general understanding of a text;

- interpretation of a text;
- connection between a reader and a text;
- understanding a text's form and content .

Every aspect, in its turn, includes a number of evaluation standards. Each evaluation standard is one evaluated ability, which is stipulated in governmental standards in reading and comprehension of a text. This is how it looks like (Table 10)

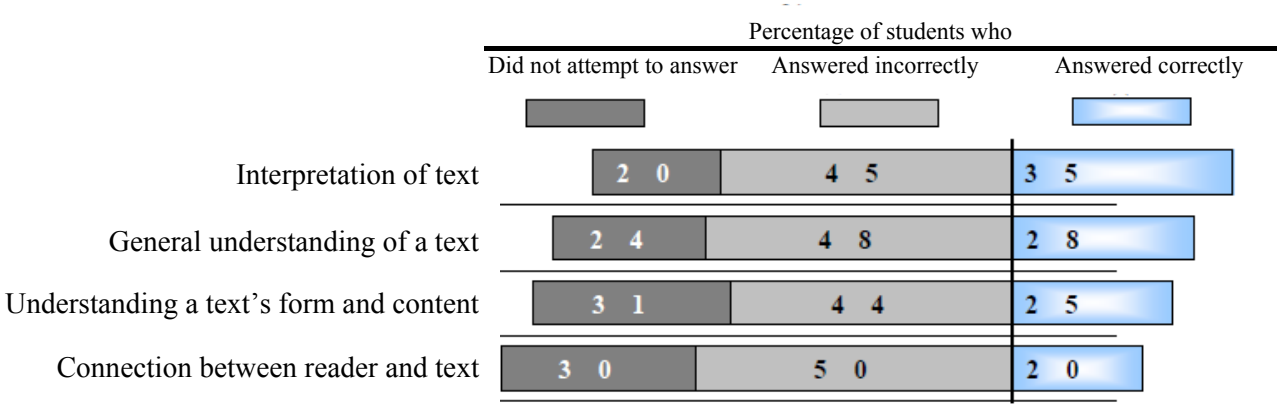
Table 10. Evaluation of the fourth-graders abilities of reading and comprehension

Aspects of reading	1.General comprehension of a text	2. Interpretation of a text	3. Link between a reader and a text	4. Thoroughness of a text form
Reading for literary education	1.1. A student is able to identify the main though/text theme.* 1.2. A students is able to find necessary information in text * 1.3. A student is able to work with text title*	2.1. A students is able to identify reasons of described events, occurrences* 2.2. A students is able to explain deeds and works of a main character* 2.3. A student is able ot identify main features of a character nature* 2.4. A students is able to identify meaning of a word or an expression according to the context. *	3.1. A students is able to extract the informative marrow of the text. 3.2. A student is able to provide evidences *	4.1 A students is able to distinguish types and genres of texts
Reading for information	1.4.A student is able to identify which information can/cannot be received from this text	2.5. A student is able to conclude from the received information. 2.6. A students is able to systematize received information *	3.3. A student is able to link content of a text with the knowledge he has about the world.*	4.2. A students is able to understand constructive features of a text*

Standards marked with* are related both to text for literary education and to text for receiving information

Let's take a look at the results of the fourth-graders across the country in each of the mentioned above aspects of reading (Diagram 18)

Diagram 18. The results of students with the breakdown by aspects of reading



As one can see, across the country, fourth-graders did best in items with text interpretation. However this best result is 35% only of all tested students who completed the item. 45% of students who did not manage the items with interpretation and 20% of students more who did not take them. Meanwhile, interpretation of text is allocated with the most important place at reading classes starting from the first grade. A kid should learn *to understand and explain deed of main characters, identify main features of their nature, understand reasons of ongoing events, conclude from what has been read etc.*

General understanding of text is on the second place by the success of accomplishment. This aspect of reading involves consideration of a text as a whole and is supposed to evaluate the following abilities: *identify main thought in text, work with the text title, find necessary information in text, identify which information can and which not be received from this text.* During reading classes, general comprehension of a text takes an important place and addressed with a lot of attention at elementary school. However according to the results of a test one can see that only 28% of the fourth-graders could manage the items of this aspect, 48% did not manage and 28% have not even taken the items of this aspect.

The penult place by the success of accomplishment is taken by the aspect of thoroughness of the text form. In this aspect of reading, an ability to identity text type, genre of fairy tale or story, structural features of a text have been evaluated. This aspect of reading is also addressed with a lot of time during reading and language classes. At the end of the fourth-grader children are familiar with such genres as story, fairy tale, proverb, riddle and with their genre features. fourth-graders should know that text can be broken down into conceptual parts, comprehend what underlies in such a division, make up plans, give titles to the parts of text etc. However the results received by the fourth-graders in this aspect are very low and show insignificant work about that aspect during reading and language classes. Only a quarter of the tested students have completed the items of this aspect. Additionally the highest percentage (31%) of students who did not take these items was also in this aspect.

The most difficult aspect of reading for students is *a link between a reader and a text*. Items of this aspect are aimed, first of all, at identification of how far a student can go beyond the limits of text and think on his own, relying on his life and reader experience, whether he can link his knowledge, received in the process of reading with his routine life and life of surrounding people with the real events.
Items have been made for this part of text, which required doing accomplishment of the following standards: *should be able to extract received point of a text, provide evidences, is able to link text content with the knowledge he has about the world.* Only 20% of the fourth-graders completed the items of this aspect. A half of the fourth-graders could not accomplish them and 30% did not try to take them.
Received results show that students' ability to link school knowledge with real life is weak. This aspect has been worked with significantly less at schools that other aspects of reading.

Among students of Bishkek (Tables 11-14) only 49.2% of students successfully completed the items with interpretation. In rural schools the amount of such students is 31.5% only. However 22.6% of students of rural schools did not even try to take the items. fourth-graders, studying in Russian language, did the items significantly better (43.2% of correct answers) than in Kyrgyz schools (32.2%) even lesser in Uzbek schools (25.2%). Girls completed to do better than boys.

The same tendencies remain in the results by all other aspects of reading: things going better in Bishkek, worst – in rural schools; schools of regional centers and small towns take intermediate position; by language of instructions, schools with Russian language show higher results than

schools with Kyrgyz language, schools with Uzbek language give the weakest results; girls manage better than boys and miss less items, trying not to take them.

The percentage of correctly accomplished items by all aspects of reading is extremely low in the schools with Uzbek language of instruction. Only quarter of the fourth-graders completed the items with interpretation, as for the other aspects, the percentage of accomplished items does not reach 20%, meanwhile the percentage of missed items is extremely high and keeps at the level of 40%.

Tables 11-14. The results of students (in %) in different aspects of reading with the breakdown by school categories, languages of instruction, and gender. Reading Comprehension. Grade 4

Aspect of reading: Interpretation of a text

	Percentage of students who	
Groups of schools	**answered correctly**	**did not attempt to answer**
All schools participating in the NSBA survey	34.7%	20.1%
School categories		
Schools of Bishkek	49.2%	9.4%
Schools of regional centers and small towns	37.3%	17.4%
Rural schools	31.5%	22.6%
Languages of instruction		
Kyrgyz	32.2%	20.5%
Russian	43.2%	15.9%
Uzbek	25.2%	29.9%
Gender		
Girls	37.3%	18.6%
Boys	32.0%	21.5%

Aspect of reading: General understanding of a text

	Percentage of students who	
Groups of schools	**answered correctly**	**did not attempt to answer**
All schools participating in the NSBA survey	28.3%%	23.9%
School categories		
Schools of Bishkek	42.9%	10.4%
Schools of regional centers and small towns	31.4%	21.2%
Rural schools	25.1%	26.9%
Languages of instruction		
Kyrgyz	25.7%	24.5%
Russian	36.7%	18.7%
Uzbek	20.2%	35.1%
Gender		
Girls	30.8%	22.6%
Boys	25.8%	25.2%

Aspect of reading: Understanding a text's form and content

Groups of schools	Percentage of students who	
	answered correctly	did not attempt to answer
All schools participating in the NSBA survey	25.1%	31.1%
School categories		
Schools of Bishkek	36.0%	16.7%
Schools of regional centers and small towns	28.5%	26.6%
Rural schools	22.2%	34.8%
Languages of instruction		
Kyrgyz	22.8%	32.5%
Russian	32.0%	24.0%
Uzbek	18.9%	43.5%
Gender		
Girls	27.3%	28.6%
Boys	22.9%	33.5%

Aspect of reading: Connection between reader and text

Groups of schools	Percentage of students who	
	answered correctly	did not attempt to answer
All schools participating in the NSBA survey	20.2%	30.3%
School categories		
Schools of Bishkek	32.8%	15.3%
Schools of regional centers and small towns	22.0%	27.0%
Rural schools	17.6%	33.7%
Languages of instruction		
Kyrgyz	17.8%	31.6%
Russian	27.5%	23.4%
Uzbek	13.9%	42.3%
Gender		
Girls	22.8%	27.2%
Boys	17.6%	33.5%

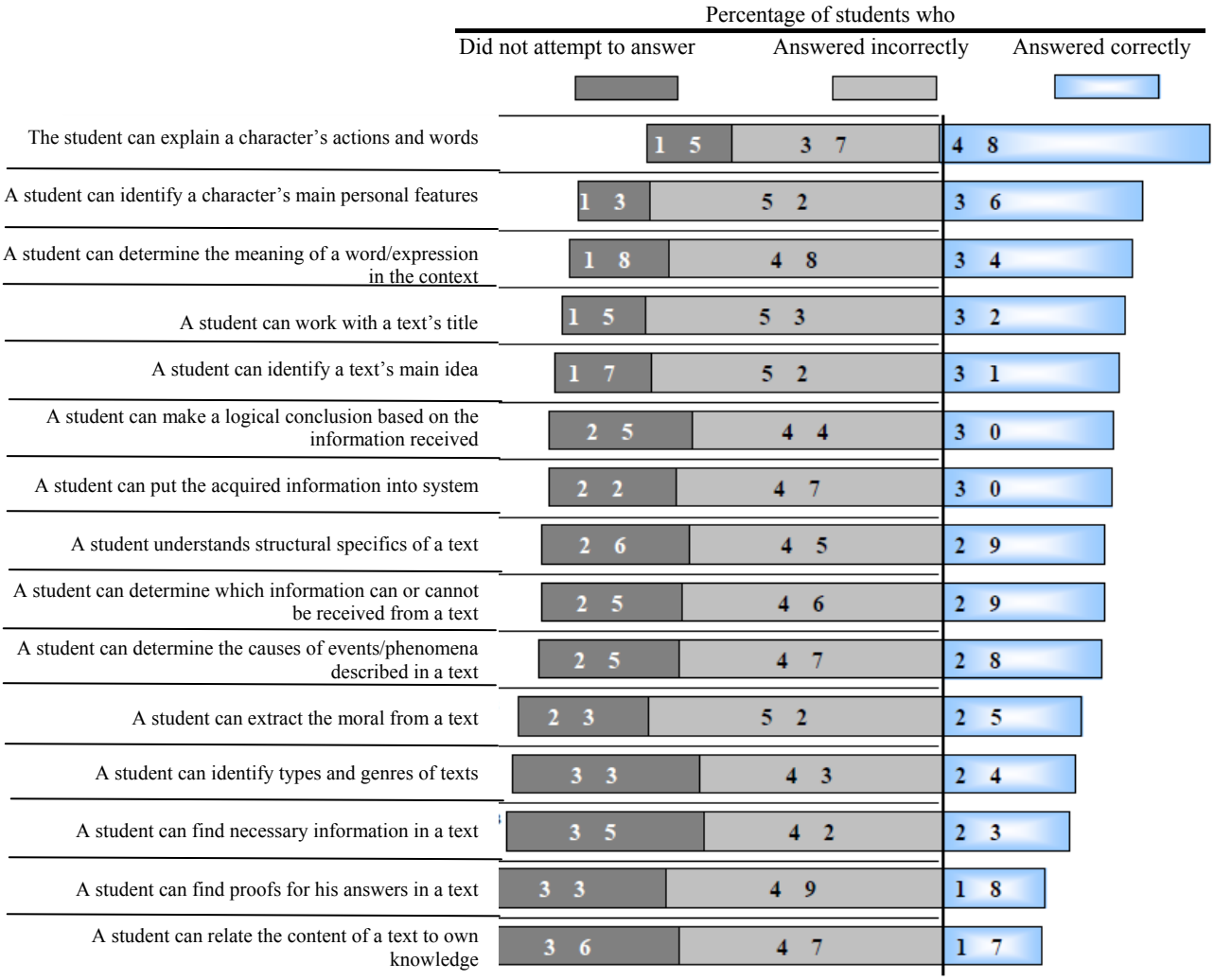
What do the received results tell us? The results of the fourth-graders by standards of evaluation.

As was mentioned above, the structure of a text by reading has been developed the way, so that every of the 4 aspects of reading can be concretized in the form of 3-6 different abilities which, within current survey, are called standards of evaluation[2] (see Table 10 above).

Which abilities fourth-graders have showed to a greater extent and which ones have presented difficulties for them? The answer to this question is given in the Diagram 19 showing distribution of the fourth-graders results by standards of evaluations across the country.

[2] Standards of evaluation are based on the currently valid governmental standards and programs.

Diagram 19. The results of students according to the evaluation standards



First of all, it is worth of noting, that none of the standards has not been accomplished completely even at the highest level. Also, two first standards, with which the fourth-graders completed best, these are the standards related to the most familiar for the students' abilities. Best of all children completed the items where they should show comprehension of deeds and words of a main character of texts. The ability to comprehend deeds and words of a character is formed before the school. Using books, which are read to them from their first years of life, kids learn to comprehend what good is and what bad is – why they like one character and treat damnatory to another. How they should behave and how shouldn't. Later, the development of this ability is addressed with a lot of time during reading classes. Now a child learns to comprehend the relation of character deeds with described in the writing circumstanced and correlations with other characters, which in its turn, closely related to the comprehension of logics of characters' nature development, and finally the main point of a text. One can see in the diagram, that items of this standard has been successfully completed by 48% of the fourth-graders, 37% answered incorrectly and 15% did not take the items. The percentage of incorrect answers is significantly high, which shows that the high percentage of children do not have sufficient reading experience by the end of the elementary school, in order to understand why characters behave this or that way. They second, by success of accomplishment, standard is also related to the evaluation of the character in the writing. However, the ability to identify main features of his nature is checked here. It is required to summarize deeds and words of a character and basing on that to conclude about his nature. Students run into the necessity to identify main traits of a character during reading classes. In elementary schools, students, as a rule, read a lot of fairy tales, where main characters usually have one explicitly described trait of a character. Characters of fairy tales usually

are kind, evil, cunning, smart, greedy and etc. Main characters from the short stories, the fourth-graders run into during reading classes may have more complicated traits. Even though reading experience of the fourth-graders is not big, a student should be able to distinguish the most explicit character traits of the main characters. From this diagram one can see that this standard was much more complicated for the fourth-graders than a previous one. Only 36% of students completed these items. Besides, it is worth of noting that even though the percentage of missed answers was low here than in the previous standard, (13%) the percentage of mistakes is still high – 52%. This means that students did not consider such items as complicated, however they did not have enough ability to evaluate main character's nature.
It is necessary to have the ability to identify meanings of a word or expressions according to the context in order to comprehend a text correctly. While learning of reading it is important to enlarge students' vocabulary. The depth of comprehension in the greater extent depends on how well a reader comprehends words and expressions used in the text. Each language has words of many meanings, set expressions which have meanings different from the direct one, there are obsolete words and words used by groups of people (industry word, dialectics and etc.) Besides that, languages have imagery, irony and indirectness in particular, when what has been told, has a different from the initial or even opposite sense. Kids run into all these peculiarities of language from early age and learn to comprehend point of what have been told or read. Which is why it is important to conduct lexical work at schools at native language and reading classes. Students are helped to understand meaning of words, are taught to work with dictionaries, and try to develop linguistic feeling. Correctly organized linguistic work helps students to comprehend what has been read. Survey shows, that there are serious problems with this ability at school. Only 34% of students completed the items checking their ability to identify meaning of the words or expression according to the context, almost half (48%) of tested students was not able to manage these items and 18% did not even try to take them

Such necessary abilities for comprehension of any text or work with information *as to identify main point/theme of a text, ability to conclude from the received information, to systematize received information, to identify reasons of described events or occurrences* on the base of a text are weak Items of these standards have been accomplished by 29-31% of students. Additionally, it is disturbing that from 17% to 25% of students did not even try to take the items. Indicated abilities are necessary for work with any kind of texts. It includes abilities to analyze received information, mark out what is important, identify what thought the author tried to bring across to a reader, an ability to select and summarize the information quoted in different parts of the text and etc.

One of the three most difficult abilities for the fourth-graders are: ability to find necessary information in a text, ability to provide evidence and ability to link text content with the present knowledge of a child about life. Only 23% of children could manage the items on searching information in the text. Despite that these items did not require neither to interpret the text nor summarize it, but to find what was stated in the item and write it down to the exercise-book (moreover, grammar mistakes have been neglected), 42% of children did not manage these items, and 35% did not even try to take the item. The items where one needs to come up with appropriate evidence were able to manage by 18% of students, 49% were not and 33% did not even try to answer. The most complicate items are the ones where student is required to link data mentioned in the text with his own experience in order to get an answer. Only 17% of children could do that. 36% did not try to answer. There is a huge gap, which does exist for majority of children, between what they learn at school and the life they have outside of the school. Children often does not understand how apply those knowledge and abilities in life, which the get at classes, which is why knowledge remains scholastic, separated from real-life. Teachers pay little attention to showing students practical benefit and application of what being learned at classes, do not help to see how children can use what they have studied in their routine life. Level of appli-

cation – the most necessary one, without which, knowledge remains as burden, until it completely lets itself out of student minds – is neglected by teachers.

It is worth of noting that according to the results of international comparative research PISA, 15 years old teenagers of Kyrgyz Republic showed similar results. Abilities related to the searching and extracting of information as well as abilities requiring reflection and evaluation turned out to be the most complicated for students; and items for interpretation and summarization turned out to be more comprehensive. This shows that issue disclosed in 8 and 9 grades of Kyrgyz Republic schools are completely formed to the moment of kids leaving elementary school.
Several conclusions:

- One can notice a certain progress in reading and comprehension of fourth-graders in 2014 comparing to the results of 2009.
- Students showed higher results in reading for literary education. Reading for receiving information creates more problems for them. However students who finished elementary school did not manage any of items of reading on appropriate level. It is noted that in 2009 survey, students completed reading of informational text more successfully. Possible reason of change of the situation may be the change of amount of academic hours for reading and Homeland Studies at elementary school.
- The most difficult items for students by type were the ones with constructive answer. The percentage of passing such items through is the highest. Students rarely passed items with multiple answer, however the higher percentage rate of incorrect answers have been registered there.
- Students completed better with aspect of interpretation of text from four aspects of reading, most difficulty are related to the aspect of Linking between the reader and a text. Neither of aspects had students who showed good level of comprehension of what he have read.
- The most developed abilities are to explain deeds and words of a character using information from the text, to identify character's trait, as well as to determining a meaning of the word or expressions according to the context. Least developed abilities are to find necessary information in the text, provide evidences and ability to link content of a text with present knowledge of the student about the world.
- Conclusions of International literacy research of 15 years old students in the field of reading (PISA 2009) showed that the most complicate for students of 8/9 grades of Kyrgyz Republic schools is to search and extract information as well ability requiring reflection and evaluation. Students achieved higher results in items on interpretation and summarization. Current survey shows similar situation of student abilities development at elementary school, which means that problem disclosed in senior classes, are already formed in the top class of a elementary school.
- Despite that abilities of the fourth-graders are developed to different extents, one can conclude that none of them is developed to the adequate extent. Items on reading and comprehension caused serious difficulties for the fourth-graders, disregard which abilities they require.
- The highest results in all tested aspects of reading showed the fourth-graders from Bishkek of three categories of schools. Students of schools of regional centers and small towns showed lower results, students of rural schools showed the lowest results from three categories of schools, which participated in the test.
- The fourth-graders from schools with Russian language of instruction manager the items on reading better than students of schools with Kyrgyz language of instruction, the lowest results showed students with Uzbek language of instruction. However it is worth of noting, that growth of results across the country occurred at schools with Kyrgyz language

of instructions, however situation in Russian schools remained as of 2009 level; Uzbek schools situation became worse a little.
- Girls showed higher results in reading and comprehension than boys.

4.2 What fourth-graders know and can do in Math

The analysis of students results by types of items.
During the test, students of 4th grade should accomplish 42 items with multiple answer and 33 items of an open type, where students had to formulate their answers on their own. For 23 questions of an open type, students should give short answer (number, a set of numbers, expression) without explanation. There were 10 items among items of an open type, which require extended answer (detailed note of the item solution, establishment of the conclusion and etc.). These items allow to evaluate complicated academic achievements in the field of Math, besides that, ability to create Mathematical model of the item, create algorithm of its solution, evaluate received result as well as correctly provide their reflections.

Results of the survey showed that percentage of accomplishment of the items by fourth-graders is quite low as a whole. Additionally, items of a closed type have been done (which means students could chose correct answer from 4 of the suggested options) by 42.1% of tested students that is less than a half. Approximately quarter of the fourth-graders (25.7%) completed the items with open type with short constructive answer. Only 9.8% of students completed the items which require extended answer. It is worth of noting that according to the results of 2009 survey fourth-graders showed ability to write down the course of the item solution only in 17.5% of the case. While analyzing results, not only indicator of student amount has been considered (in percentage from the total), who completed the items, but a percentage of student who did not try to answer the question. Items with multiple choice answer missed 12.9% of students. Quarter (28.4%) of students did not take items with short constructive answers. That is only two thirds of fourth-graders who try to give short answer on their own to the presented question. Extended constructed response items have been even taken by 41.3% of the fourth-graders.
The analysis of solutions suggested by the test participants for the extended constructed response items allows to detect that students manage badly with items of such a type. Many students do not have necessary explanations, establishment of the key moments of the solution while formulating solution for the extended constructed response items, they have only calculations and transformations. The reason is insufficient development of abilities of writing Mathematical argumentation, inability to provide conclusive arguments.
Besides that, results of the test one more time prove existing state of things with students bad comprehension of the item point written by extended sentences, inability to translate presented situation in the text into Mathematical operations. Accordingly, vast majority of students is not able to write detailed established solution of the item. All abovementioned allows us to say that elementary school, in the process of learning needs to pay more attention to the development of independent thinking of students, teaching of such form of Mathematical activity as plausible arguments, suggestion and checking of hypothesis, proof and disproof. All abovementioned abilities are necessary for successful continuation of education.

Analysis of the fourth-graders' results by sections of Math
The foundation of Math knowledge is built in the elementary school.
Main content of the Math program in elementary school is whole numbers and operations with them. During Math classes, dependencies between data and results of arithmetic operations are studied as well as fractions. Along with that, the program suggests to learn metrical measures and measures of weight, learn the ability to use them for measurement, knowledge of some elements of graphic geometry – recognition of geometric shapes, development of measuring and drawing abilities (drawing of a rectangle and square, measuring of sections, area of flat shapes).

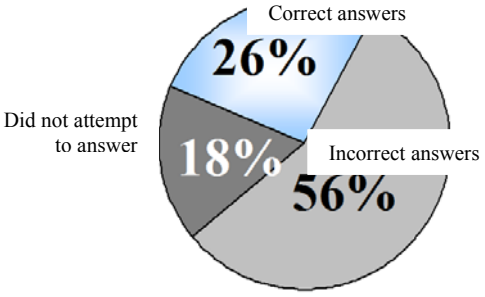
Received knowledge and abilities should be applied by students for solving items and for simple calculations. Items solution helps students to understand certain point of operations, learn different cases of their application, establish dependency between the values, receive elementary skills of analysis and synthesis. While solving the items, children run into different types of values dependencies.

Besides that, only during Math classed in elementary schools, students receive knowledge about dimensions and shapes, learn how to properly orient themselves in space, accomplish logic and analytical operations; Math teaches children to think and develops their intellect. A child can fully learn surrounding world in case of having these abilities only.

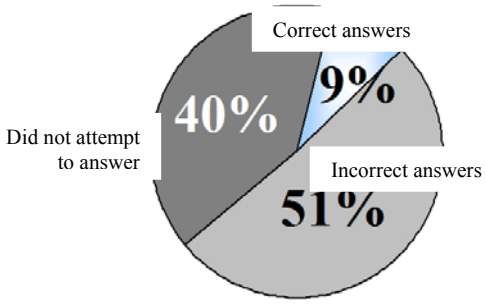
There are following sections for evaluation of Math literacy of elementary school students: "Figures and calculations", "Values and their measuring", "Elements of algebra", "Elements of geometry", "Elements of data analysis".
The most important ability, at the initial stages of Math learning is to formulate and solve academic items and items from surrounding life, describe Mathematical situation, compare and interpret actual results with expected ones. "Use of Mathematical knowledge from different themes and sections of real situation" standard of evaluation is introduced in order to analyze how well the fourth-graders ready to apply Mathematical knowledge, received in school, in routine life, and use Mathematics for solving practical and cognitive problems.
Each section, in its turn, includes a set of evaluation standards. Evaluation standard – is some evaluated ability, which registered in the governmental standards and programs in Math for elementary school.
Six diagrams below show how fourth-graders accomplished the items related to the 6 sections of standards of evaluation elementary school students' achievements in Math.

Diagrams 20-25.
The results of students (in %) by sections of Math

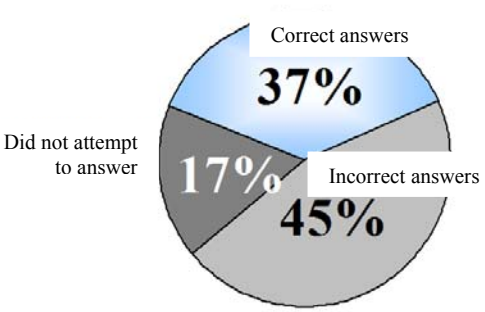
Math Section:
Quantities and Measurements



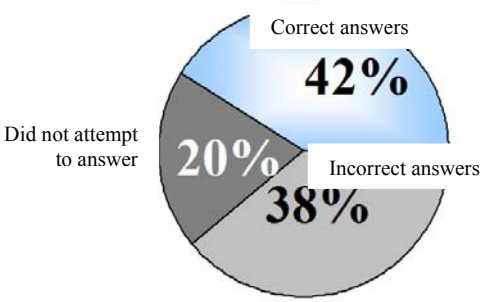
Math Section:
Application of Math knowledge from different sections of the subject



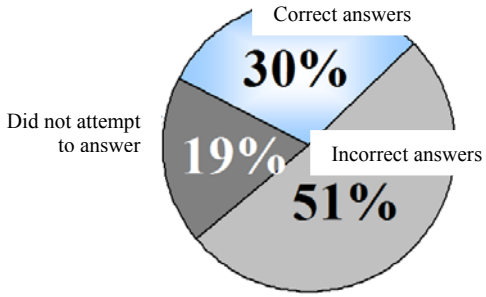
Math Section:
Figures and calculations



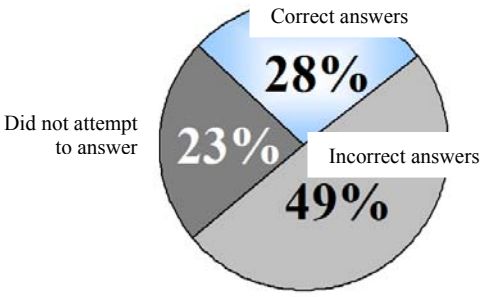
Math Section:
Elements of Algebra



Math Section:
Elements of Data Analysis



Math Section:
Elements of Geometry



From the provided data one can see that students completed better the items from sections "Figures and calculations" and "Elements of algebra". However less than a half of students completed with the items from these sections (Only 37% completed with the items of the "Figures and calculations" section and 42% with the items of the "Elements of algebra" section). Less than one third of the fourth-graders completed with the items of "Elements of data analysis", "Elements of geometry" and "Values and their measuring" sections (30%, 28% and 26 accordingly). Moreover, 19%, 23% and 18% of students accordingly did not try to answer the questions.
Geometrical propaedeutic is important part of initial Mathematical education. It promotes not only development of spatial thinking and imagination, but development of logical thinking, as well as preparation of elementary grade for studying not only of systematic geometry course in secondary school (since 7th grade) but studying elements of geometry in 5-6 grades already.
To this moment, an actual base for forming abstract concept should be built. Thus, the fact, that one third of tested students completed the items of the "Elements of geometry" section, shows insufficient attention is paid to the preliminary studies of geometry in elementary school.

Elementary school students familiarize themselves with basic values, length of segment, area of shapes, mass of a body, time and several derived quantity (speed of uniform motion) as well as with different correlations between values. Additionally, primary students received an image about values, more than often, in the process of practical items (price, quantity, cost, speed, time, and distance). Graduates of elementary school should have real concepts about units of measurement, as well as to know conventional signs of units of measurements.

The most complicated items for the fourth-graders are the ones from "Use of Mathematical items from different themes, sections of real-life situations" section. There is the highest percentage of students who did not try to answer the questions of the section here (40%) which is about twice as much as in any other section. More than a half did not manage the items (51%) and 9% of the fourth-graders only gave correct answers.
It is required to have the ability to interpret situation, which students probably run into, but did not practice, in order to accomplish items from this section. It is required to build a chain of arguments or do easy calculations, provide explanations of the actions in order to solve such items.

Comparative analysis of the results for schools of Bishkek, schools of regional centers and small towns in all abovementioned aspects shows that percentage of students of Bishkek schools who completed the items is more than corresponding indicator for schools of regional centers and small towns. Difference is fluctuated between 8 and 11%. Difference in percentage of items accomplishment of regional centers schools and small towns schools as well as rural schools is fluctuated between 3 and 7%.

Students who receive education in Russian language, completed the items better. Difference in percentage for students who completed the items who study in Russian or Kyrgyz languages is on the average 5-6%. Students of Kyrgyz language of instructions only (difference is about 3%) completed the items of the "Elements of geometry" section Students of Kyrgyz and Uzbek languages of instructions have slight difference (from 2% to 4%). The difference of rates of items accomplishment is 8.2% in favor of students of Kyrgyz language of instructions, only in the accomplishment of the "Elements of geometry" section.
More detailed results of the survey in the Math section are presented in tables (see addendum 2 at www.testing.kg).

The analysis of results by groups of evaluation standards, related to the sections of Math (intentional lines)

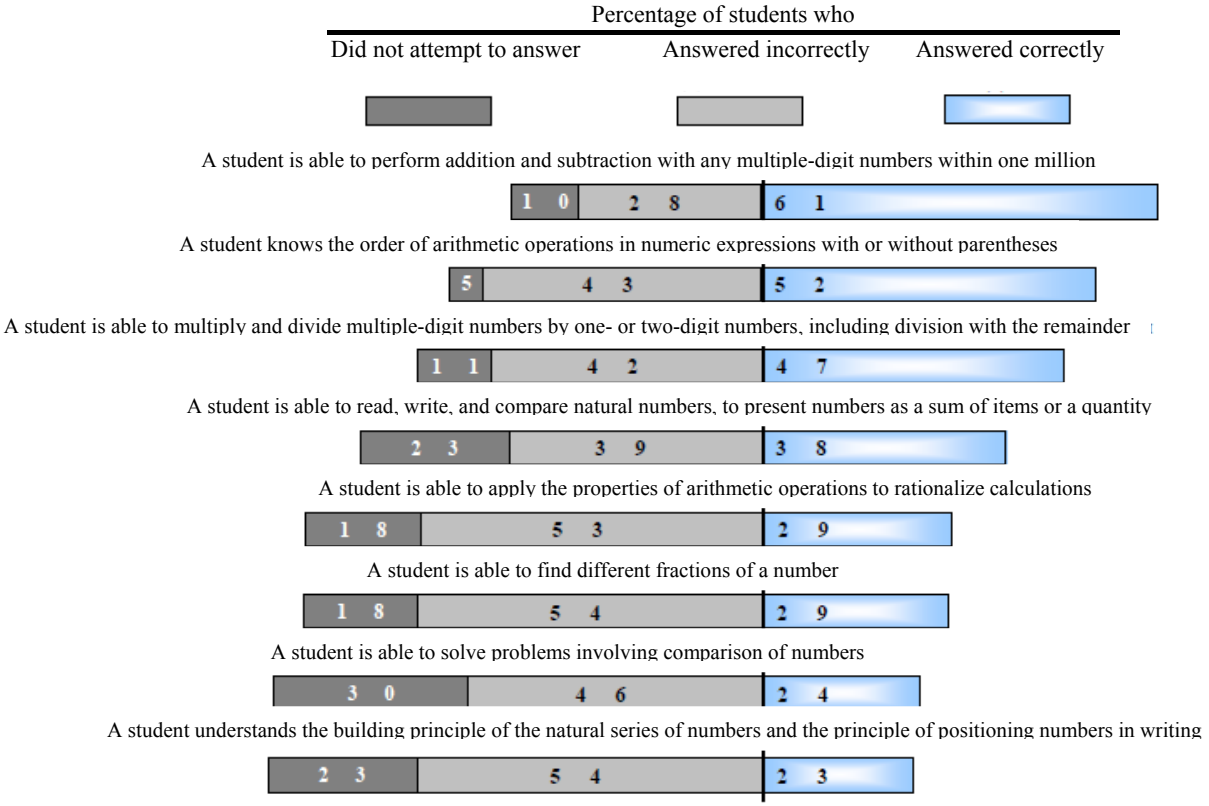
Diagrams 26-31 allow to judge with what and how well students of the 4th grade manage according to the evaluation standards.
One should note, there is no 100% accomplishment in any of the evaluation standards.
Let's see more detailed how evaluation of standards is accomplished in each of the sections.
How did students manage the items of the "Figures and calculations" section?
The following standards of evaluation have been created for evaluating fourth-graders in mastering this section:

- *A student comprehends principles of constructing positive integers and principle of positional numeral.*
- *A student is able to read, write, compare natural numbers within a million, present numbers as a sum of category item.*
- *A student knows the order of performing arithmetic operations in numerical expressions with brackets and without them.*
- *A student is able to apply properties of arithmetic operations for rationalization of calculations.*
- *A student is able to add and subtract with any multiple-digit numbers within a million*
- *A student is able to multiply, divide into simple number and double digit number, including division with remainder.*
- *A student is able to find different parts of a number fraction.*
- *A student is able to solve items containing concepts: more by/less by, as much as/as little as*

The fourth-graders completed the best the items with adding and subtracting numbers within a million. However we still can see only 61% of accomplishment, 10% of schoolchildren did not take the items and 28% made mistakes.
Less than a half of students (47%) answered correctly the items with multiplying and dividing one-digit and double digit numbers including division with remainder, 11% did not take the items and 42% made mistakes in these items.
Only 52% of tested students showed knowledge in order of performing arithmetic operations and expressions with and without brackets. 5% of students missed these items, however 43% did the order of operations incorrectly. Only 38% of the fourth-graders completed the items checking ability to read, write, compare natural numbers, present numbers as a sum of category items, 39% made mistakes in these items and 23% did not even try to take these items.
Less than a third of all tested students (29%) showed ability to apply properties of arithmetic operations for rationalization of calculations. Probably, this matter is paid less attention during Math classes in elementary school.
The items requiring to find different fractions of a number (29% of accomplishment) turned out to be complicated for the fourth-graders, as well as the items containing concepts *more by/less*

by, as much as/as little as. Less than a quarter of the fourth-graders (24%) completed these items, 30% did not even take them and 46% made mistakes in the solution. |
Only 23% of the fourth-graders showed comprehension of the principle of positive integer, principle of positional representation of numbers. 23% of students did not try to take these items, and 54% did them incorrectly. The knowledge of properties of numerical series and construction of a number are the most important for comprehension and further successful mastering of Math.

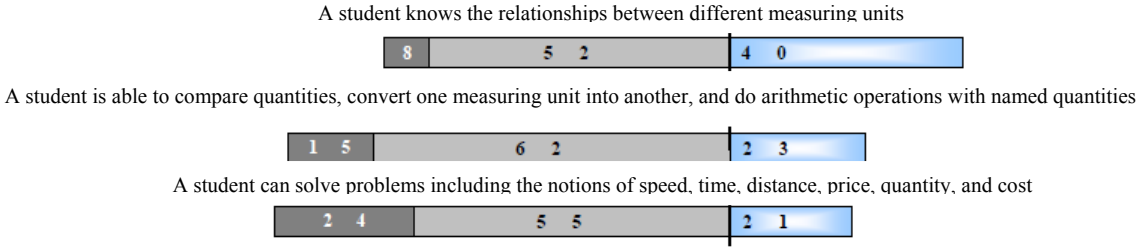
Diagram 26. The results of the students (in %) by sections of Math and evaluation standards. Section: Figures and calculations



One should note, that knowledge and abilities checked in the above mentioned standards are included in the list of minimal requirements in Math preparation of elementary schoolchildren, stipulated in the Math program for 1-4 grades (authored by Bekboev I, Ibraeva N.) approved by the Ministry of education and science of the Kyrgyz Republic. Besides that, Math textbooks which are used in the schools of the country contain sufficient amount of items aimed at forming stable abilities of written and oral calculations, as well as learning the concept of a number and comprehension of Mathematical signs (numbers, arithmetic symbols, letters) and knowledge of operations order in calculations and abilities to use them, knowledge of item structure
We included three standards of evaluation in the "Values and their measuring" section:

- *A student knows correlation between units of value measurement.*
- *A student is able to compare values, transfer from one units of measure to another one. Do arithmetic operations with the denominate values*
- *A student is able to solve items containing values: speed, time, distance, price, quantity amount, cost.*

Diagram 27. The results of the students (in %) by Sections of Math and evaluation standards. Section: Quantities and Measurements



Students completed the items on knowledge of correlation between units of values measurement the best in this section. Only 40% of the fourth-graders completed them. This partly explains the fact that only 23% is able to do different operations with denominate values and only 21% of students who participated in the test, completed the items containing values: speed, time, distance, price, quantity, and cost.
As shown in the survey results, the majority of students experience difficulties while transferring one digit values, presented in the units of some denomination into units of other denomination as well as with operations with homogenous values presented in the units of different denominations.
Here's an example of such a item:

Question 5: MASS ***4_M_308_Q02***

24 300 kg =

(А) 243 t

(Б) 24 t 3 c

(В) 24 t 30 c

(Г) 2 430 c

Less than a third (28%) of the fourth-graders who took part in the test completed this item. Mastering the following abilities is very important not only for further learning of Math. Without ability to work with denominate values it is impossible to move forward within the subject accordingly – Mathematical cycle, let alone that we use such concepts as time, distance, area, etc. in real life.

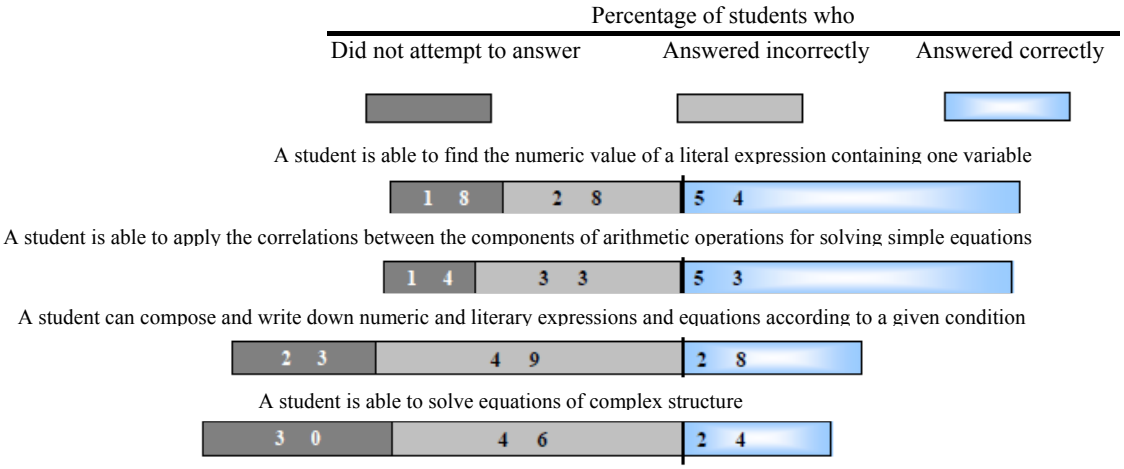
The following standards of evaluation were used for evaluation of the level of learning "Elements of algebra" section:

- *A student is able to find numerical value of any expressions in letters containing one variable.*
- *A student is able to construct and write numerical and literal expressions, equations by given condition.*
- *A student is able to apply correlations between components of arithmetic operation for solution of the simplest equations.*
- *A student is able to solve equations of complicated structure*

The fourth-graders, in the "Elements of algebra" section, accomplished best the items checking ability to find numerical value of literal expression. 54% of students completed the item, 28% made mistakes and 18% did not try to take it. Similar results are for the items with the ability to apply correlation between components of arithmetic operations for solution of an equation (53%

who completed the item). These items require accomplishment of usual procedures. However items with the ability to solve equations of complicated structure turned out to be complicated for the fourth-graders. Less than a quarter of students (24%) completed the item, 30% did not try to solve such equations and 46% accomplished the item with mistakes. These are the equations for solving of which is required to apply twice correlations between components of arithmetic operations, having identify previously the order of their execution (algorithm). The Math text-book of Bekboev and Ibraeva according to which, almost 70% of fourth-graders are taught, has a sufficient amount of equations of complicated structure.
The ability to construct and write down numerical or literal equations, equations by given condition is shown by 28% of all tested fourth-graders
Such results show that less than a third of the fourth-graders have the ability of semantic reading, and construct Mathematical model of the item

Diagram 28. The results of students (in %) by sections of Math and evaluation standards. Section: Elements of algebra

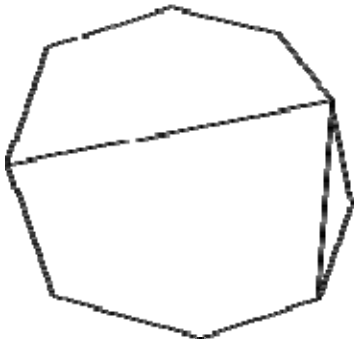


We used the following standards for evaluation of level of learning of "Elements of geometry" section:

- *A student is able to distinguish basic geometric shapes and their elements*
- *A student is able to solve simple items using rules of finding perimeter of a triangle, perimeter and area of a rectangle and square.*
- *A student is able to execute transformation and construction of geometric shapes*

The ability to apply rule of finding triangle perimeter, perimeter and area of a rectangle and square is represented better than others in the "Elements of geometry" section. However a little bit more than third (34%) completed these items. The ability to distinguish basic geometric shapes and their elements showed by 32% of the fourth-graders only.
Set of geometric concepts of elementary schoolchildren includes ability to recognize, distinguish and depict basic geometric shapes (such as triangle, square, circle) as well as ability to mark out simple geometric shapes in the complicated drawing.

QUESTION 7: GEOMETRIC SHAPES

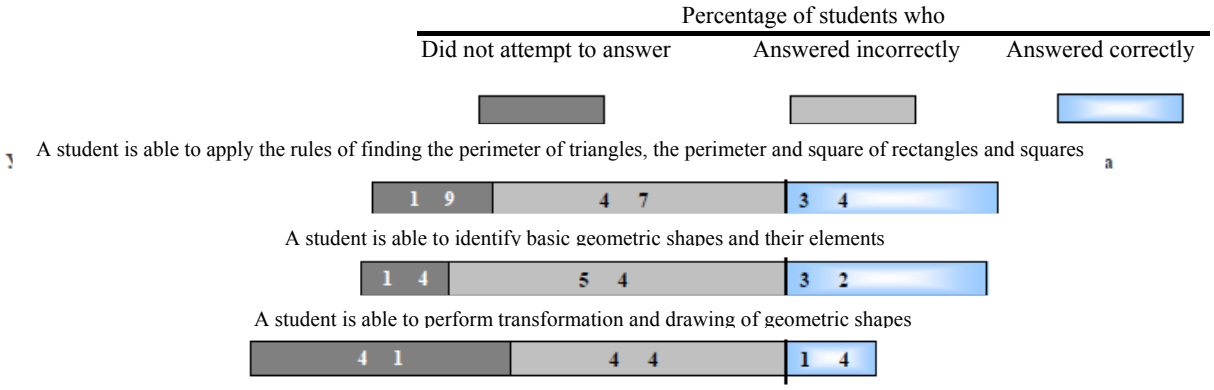


Write down how many triangles are there in the picture above.

30% of tested fourth-graders completed the abovementioned item. This shows that majority of schoolchildren will experience difficulties while learning geometry as the solution of any geometry items starts with the analysis of geometric situation given by its condition.

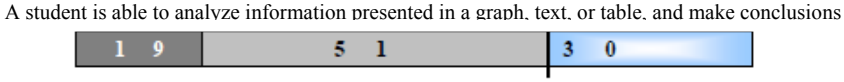
The most difficult items are the ones with construction and transformation of geometric shapes. Only 14% of the fourth-graders completed such items, 41% did not try to take the item and 44% did not manage the item.
Only a quarter of all fourth-graders could draw a square on a squared paper, lateral length of which is assigned. Twice as less of students completed the item of constructing rectangle with the perimeter in question.
The most difficult item are the ones which require transformation of initial shape (shape configuration) by doing different transformations such as removing or adding elements.

Diagram 29. The results of students (in %) by sections of Math and evaluation standards. Section: Elements of Geometry



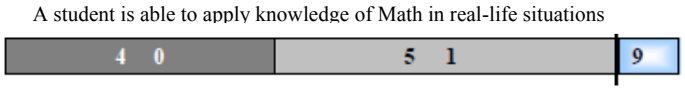
"Elements of data analysis" section checked ability to analyze information presented by picture, text, table and conclude. Which is why results of accomplishment of this standard are similar to the result of "Data analysis" section.

Diagram 30. The results of students (in %) by sections of Math and evaluation standards. Section: Elements of Data Analysis



Finally, the most difficult items of the "Use of Mathematic knowledge from different themes and sections" section are the ones which require ability to apply Mathematical knowledge in real situation. Only 10% of students could show this ability.

Diagram 31. The results of students (in %) by sections of Math and evaluation standards. Section: Application of Math knowledge



Detailed information on hardships of executing such items can be found in the section on survey results analysis on the aspects of learning Math.

The analysis of the results on aspects of Math

Matters related to any of the section of Math evaluated one of the aspect of learning Math:

- Conceptual understanding,
- Procedural knowledge
- Solving items

Each aspect of learning Math represents a group of standards.
Conceptual understanding: reproduction of facts, definitions and features of concepts, setting of links between them; recognition of concepts among ready pictures; construction of objects by assigned features; interpretation of verbal material, pictures and schemes
Procedural knowledge: accomplishment of standard procedures; algorithm of certain situations; selection of correct method of solution; interpretation of information.
Solution of items: solution of Mathematical items; comparison of item with similar Mathematical items, transfer of Math knowledge into new non-standard situation.
Comparison of conceptual lines and aspects of Math learning is presented in the table below.

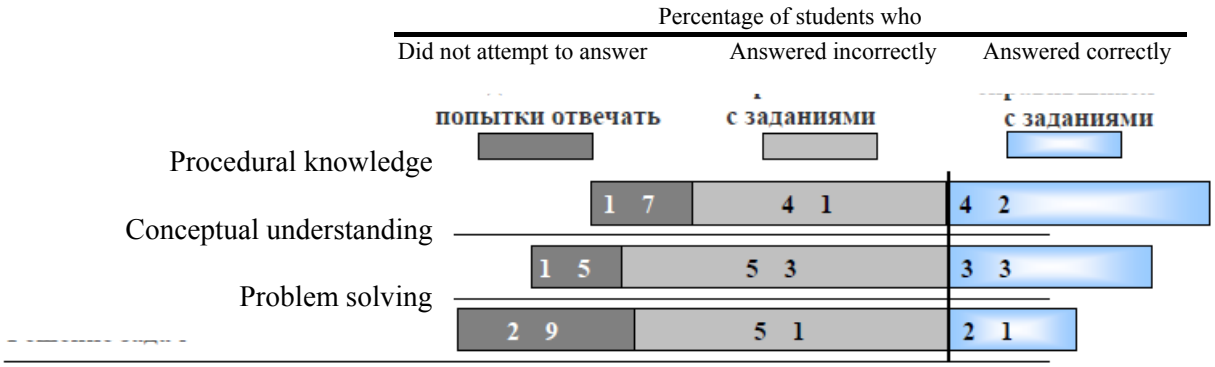
Table 15. Aspects of Math learning.

Conceptual lines	**Conceptual understanding** (reproduction of facts, definitions and features of concepts, setting the links between them; recognition of concepts among ready images; construction of objects, with given conditions; interpretation of verbal material, images, schemes)	**Procedural literacy** (accomplishment of standard procedures; algorithm of certain situations; interpretation of information; selection of correct method of solution)	**Solution of items** (solution of Math items; comparison of item with similar Math items; transfer of Math knowledge into non-standards situation)
1. Numbers and calculations	**1.1.** A students comprehends a principle of construction of a sequence of natural numbers, principle of positional notation of numbers **1.3.** A student knows the order of execution of arithmetic operations in numerical expressions with brackets and without them	**1.2.** A students is able to read, write down, compare natural numbers within a million, represent numbers as a sum of discharge items **1.4.** A student is able to apply features of arithmetic operations for rationalizing calculations **1.5.** A student is able to do adding and dividing with any multiple-digit number within a million **1.6.** A student is able to multiply and dividing of multiple-digit numbers into double-digit and one digit numbers including division with remainder **1.7.** A students is able to find different fractions of a number	**1.8.** A student is able to solve items containing concepts much by/less by, as much as/as little as
2. Values and their measurements	**2.1.** A student knows correlation between units of measurement of values	**2.2.** A student is able to compare values, move from one unit of measurement to another, do arithmetic operations with denominate values	**2.3.** A student is able to solve items containing values such as: time, speed, distance, cost, quantity, price
3. Elements of algebra		**3.1.** A student is able to find numerical value of any literal expression, containing one value **3.3. A** student is able to apply correlations between components of arithmetic actions for solving simplest equations **3.4.** A student is able to solve equations of complicated structure	**3.2.** A student is able to construct and write down numerical and literal expressions, equations by given condition

Conceptual lines	**Conceptual understanding** (reproduction of facts, definitions and features of concepts, setting the links between them; recognition of concepts among ready images; construction of objects, with given conditions; interpretation of verbal material, images, schemes)	**Procedural literacy** (accomplishment of standard procedures; algorithm of certain situations; interpretation of information; selection of correct method of solution)	**Solution of items** (solution of Math items; comparison of item with similar Math items; transfer of Math knowledge into non-standards situation)
4. Elements of geometry	**4.1.** A student is able to distinguish basic geometric shapes and their elements	**4.2.** A student is able to solve simple items using rules of finding perimeter of a triangle, perimeter and area of a rectangle (square)	**4.2.** A student is able to solve simple items using rules of finding perimeter of a triangle, perimeter and area of a rectangle (square) **4.3.** A student is able to execute transformation and construction of geometric shapes
5. Elements of data analysis	**5.1.** A student is able to analyze information present in image, text, table and conclude		**5.1.** A student is able to able to analyze information present in image, text, table and conclude
6. Use of Math knowledge from different themes and sections			**6.1.** A student is able to use knowledge in the real-life situtation

Diagram 32 below allows to analyze the results of the fourth-graders by aspects of Math

Diagram 32. The results of students (in %) by aspects of Math



Learning of procedural, algorithmic knowledge is significant characteristic of Mathematical preparedness.

As shown in the diagram, fourth-graders across the country completed best the items checking procedural knowledge: 42% of students completed the items, 41% gave incorrect answers and 17% of students did not take the items. Moreover, only 45% of tested students completed the items requiring a simple execution of standard procedures (addition, subtraction, multiplying, division, comparison of number). Thus, such results do not allow to speak about Mathematical

preparedness for further studying of elementary school graduates.
These indicators are little different from indicators of 2009. 41.3% of students showed procedural knowledge in 2009.
Comparative results of items accomplishment by school categories, languages of instruction and gender principle are shown in the Table 16.

Table 16. Math. Grade 4. The results of students (in %) by aspects of Math. Procedural knowledge

	Percentage of students who	
Groups of schools	**answered correctly**	**did not attempt to answer**
All schools participating in the NSBA survey	42.5%	16.7%
School categories		
Schools of Bishkek	55.4%	7.9%
Schools of regional centers and small towns	45.4%	13.3%
Rural schools	39.5%	19.1%
Languages of instruction		
Kyrgyz	41.7%	17.3%
Russian	46.0%	13.2%
Uzbek	37.4%	22.3%
Gender		
Girls	44.6%	15.8%
Boys	40.3%	17.6%

Weak spot in the education is conceptual understanding. It includes abilities which cannot be learnt, by following example.
About a third of the fourth-graders across the country (33%) showed conceptual understanding of Math. It is lower than corresponding indicator of 2009 when 38.5% of students completed the items checking conceptual understanding.
More detailed results of items accomplishment on conceptual understanding are shown in the table 17.

Table 17. Math. Grade 4. The results of students (in %) by aspects of Math. Conceptual understanding

Groups of schools	Percentage of students who	
	answered correctly	did not attempt to answer
All schools participating in the NSBA survey	32.9%	14.6%
School categories		
Schools of Bishkek	44.3%	5.8%
Schools of regional centers and small towns	35.6%	12.0%
Rural schools	30.3%	16.8%
Languages of instruction		
Kyrgyz	31.9%	14.9%
Russian	36.6%	11.8%
Uzbek	28.1%	20.7%
Gender		
Girls	33.3%	13.7%
Boys	32.5%	15.4%

Comparison of results by aspects of conceptual understanding and procedural literacy allows to conclude that schools of the country pay more attention to forming of procedural abilities. Lack of attention for the forming of conceptual understanding (it is measured by the ability to reproduce definitions of concepts and link between concepts, recognize and construct object by given conditions, interpret literal materials, images, schemes); which explains partially low results of the fourth-graders in solving items.

Problem solving is an important type of educational activities.
Process of problem solving develops different Mathematical concepts, different arithmetic operations are comprehended, abilities to analyze, argue, and establish are developed. Besides that, a work with the condition of an item helps to enrich and develop correct speech.
Only 21% of the fourth-graders showed this important ability. Only third of them (29%) did not take the item and 51% did not manage the item.
fourth-graders determine with difficulty features of quantity relations in the situation at hand.
80% of graduates of elementary school have not formed abilities related to the application of received knowledge

Table 18. Math. Grade 4. The results of students (in %) by aspects of Math. Problem solving

Groups of schools	Percentage of students who	
	answered correctly	did not attempt to answer
All schools participating in the NSBA survey	20.5%	28.6%
School categories		
Schools of Bishkek	30.8%	14.3%
Schools of regional centers and small towns	23.4%	24.0%
Rural schools	17.9%	32.4%
Languages of instruction		
Kyrgyz	18.6%	30.1%
Russian	26.1%	22.1%
Uzbek	15.2%	39.7%
Gender		
Girls	21.2%	27.8%
Boys	19.8%	29.5%

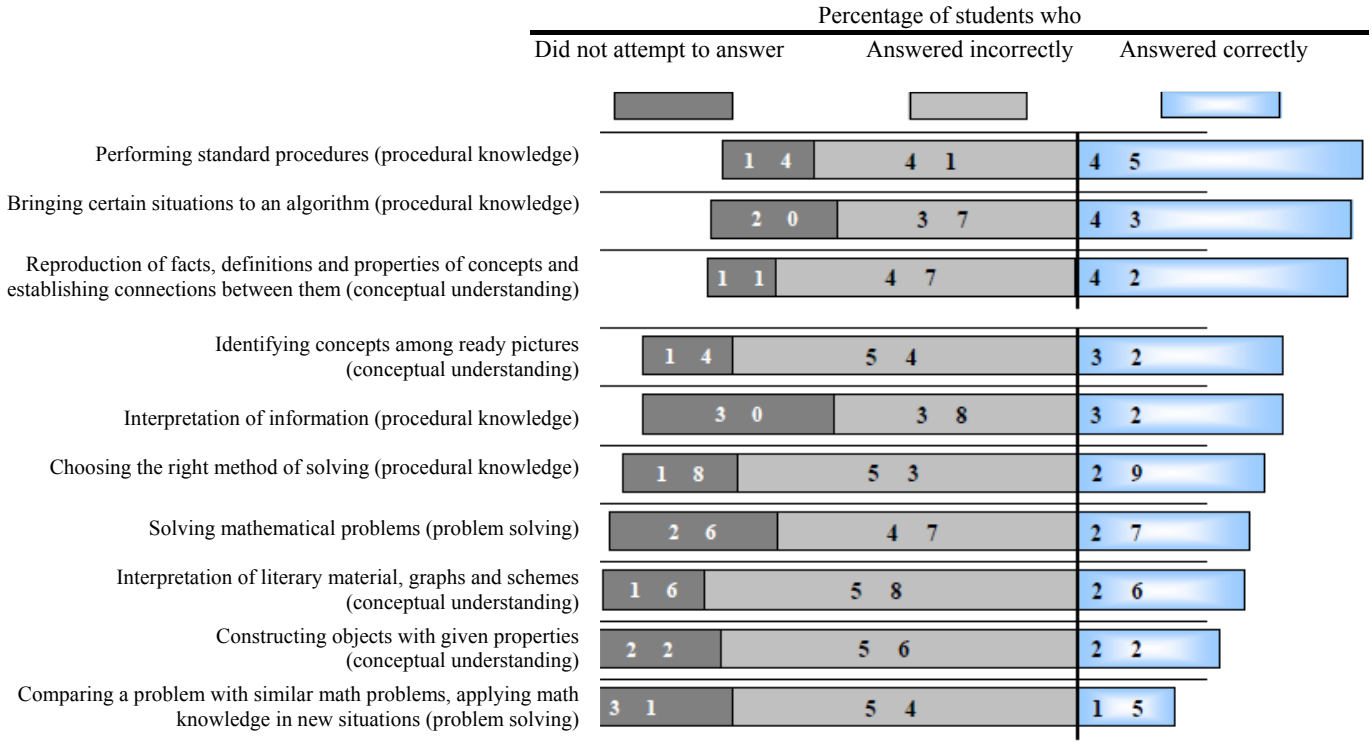
Comparative analysis of survey results presented in the Tables 16-18, by school categories, languages of instruction, gender principle, allows to conclude that the tendency of mastering aspect of Math as a whole keeps the same as by sections of Math. Students of Bishkek schools completed better the items related to any of the aspect of learning Math, rate in percentage of students from schools of small towns is lower by 7-10 % and it is lower by 56% for students from rural schools.

Best results are shown by students from schools with Russian language of instruction, students of schools with Kyrgyz language of instructions have lower results, Uzbek schools are much lower. This difference is being leveled out a little, however, the general tendency remains the same, but with less difference in rates. Girls accomplish procedures a little better (with the difference of 4.3%) The results of boys and girls are practically similar in other aspects.

The analysis of results by groups of evaluations standards related to the aspects of Math

Diagram 33 shows more detailed information on the results of students on mastering aspects of Math.

Diagram 33. The results of students (in %) by groups of standards related to aspects of Math. Grade 4



How did students manage the items with conceptual understanding exactly? They do best while reproducing facts, definitions and features of concepts, setting links between them (42% completed the item correctly, 47% made mistakes and 11% did no try to answer)
Only a third of tested students manage to distinguish concepts among prepared images.
Less than a third (26%) showed ability to interpret verbal material, images and schemes.
Only 22% could construct (give an example) an object by given conditions. For example, write down a number from given range of natural numbers, which does not include indicated numbers, less than 10% of students completed this item. Probably, such low results are related to the inability to interpret verbal material.

Let's take a detailed look how graduates of elementary school learned procedural knowledge? As one can see in the diagram, presenting results of students (in %) by groups of standards, related to the aspects of Math, only 45% of the fourth-graders manage the items with standard procedures. 43% can construct an algorithm. 32% interpret the information correctly, however 30% do not even try to answer. Only 29% of the fourth-graders can select correct method of solving (for example, for rationalization of calculations.

In order to analyze how graduates of elementary school can solve items, let's see the diagram presenting results of students (in %) by groups of standards related to the aspects of Math.
The items included in the test are divided into so called academic (Mathematical) items and plot-text items. We tested ability to solve Mathematical items and ability to solve plot-text items according to this, as well as comparison of the item with similar Mathematical items, transfer of Mathematical knowledge into new non-standard situation.

The examples of Mathematical items are different geometry items, items with numbers etc. The ability to solve Mathematical items showed only 27% of all fourth-graders, as many did not try to take them. The situation is worse with plot items. Only 15% of students completed them and 30.8% did not take them at all. Plot-text items take special place in learning of Math. Presented

text actually describes real-life situations and does not have any “hints” how to solve it.
The solution of such item can be divided into three stages:
1. Comprehension of item’s condition and definition of which Mathematical operation to apply (sequence of operations). Sometimes a student needs to construct numerical value or equation. This is the Mathematical model of the item.
2. Execution of planned Mathematical operations
3. Adaptation of the result, received at second stage, to the real-life situation described in the text.
Let’s see an example of such item

QUESTION 15: OX-EYE DAISIES

There are ox-eye daises beds in the school yard. One bed is in shape of a rectangle with the length of the side 6m and 4m, another one is in shape of a square. The perimeters of both beds are equal.

If each bed square meter has equal amount of ox-eye daisies, which bed has more?

Confirm your answer with the calculation

It necessary to comprehend that the more ox-eye daisies grow in the bed which has biggest area. It means students need to calculate area of a rectangle with given sides and area of a square, both of them have equal perimeter (geometric items, arisen in the process of analysis of condition). To compare values which have been found in the process of solving this geometric item and give established answer to the question related to the real life situation.

80% of graduates of elementary school do not have ability to apply received knowledge which lead to such low results. These results let us speak about formal digestion of Math course content. There is a necessity to reconsider approaches to learning of solving plot-text items in elementary school.

Tables in addendum 2 allow to compare results by group of standards related to the aspects of Math depending on language of instruction and school category. Addendums can be found at www.testing.kg

There the following indicators of graduates preparedness to learning in basic school:
- Mastering of Mathematical concepts, subject abilities and skills required for solving of curricular and practical items,
- Mastering of elements of algorithmic culture,
- Forming special ideas and special imagination,
- Ability to argue, provide and explain executed operations,
- Use of received knowledge in routine life,
- Ability to use Mathematical knowledge for modeling occurrences and processes of real-life world.

The results of survey of elementary school graduates achievements in Math show that about half of students did not reach level of Mathematical preparedness for learning Math course in basic school.
Less than a quarter of the fourth-graders mastered abilities included in the list of minimal requirements to the preparedness of elementary schoolchildren.

Majority of students experience difficulties with the work with units of measuring values, are not able to mark out simple geometric shapes in the complicated drawing, confuse concepts of perimeter and area, squared units and linear. Further learning of geometry and subjects of natural cycle becomes difficult without these abilities.

Weak spot in primary education is conceptual understanding of the subject. Mastering of the basics of Math is impossible without solving and analyzing item. Work on comprehension of course of solution of any Mathematical items gives impulse to the development of student intellection.
Solving of items includes such type of activity where one needs to work hard:

- Pay special attention to the development of gradual abilities of working with item text.
- Develop the skill to argue, provide and explain executed operations,
- Form ability to use received knowledge in new non-standard situations in routine life.

The fourth-graders experience difficulties with searching features of quantitative relations in certain situations. Less than a third of students are able to construct and write down numerical and literal expressions, equations by given condition. 80% of graduates of elementary school do not have ability related to the application of received knowledge. Majority of fourth-graders do not have skill of conceptual reading, are not able to create Mathematical model of the item. Such results say that work with the item should be paid due attention
As a result we can recommend a teacher to often consider items, during Math classes, aimed at forming of Mathematical concepts, ability to apply any of the operation in all possible situations. Math textbooks, which are used in the schools of our country, contain enough knowledge aimed at forming of these abilities. Significant amount of time and attention is paid to courseware with techniques of work on the item, however as teachers and school administration answers show, not every teacher and not every school is provided with courseware in due manner.
One can assume that one of the reasons of this juncture is insignificant provision of textbooks. As you can see in the questionnaire, one textbook sometimes can be used by 2 or more students. Lack of qualified teachers in the schools of the country also has effect.

Several conclusions:

- The results of the fourth-graders in 2014 as a whole become worse in comparison to the results of 2009.
- The most difficult items for students were the ones with the constructive answer where written answer is required. Students take more willingly the multiple answer items.
- Students showed procedural knowledge more successfully out of three aspects of Math. The results of this aspect do not differ from the survey results of 2009. However majority of students did not reach basic level in this aspect. Conceptual understanding was shown by third of students which shows that comprehension of Math concepts is a weak spot in the primary education. The most problematic spot is the solution of the items.
- Ability to execute standard procedures is one of the most developed abilities among all others. The least developed ability is to compare the item to the similar one and transfer Mathematical knowledge into new non-standard situation.
- Students completed better the items from “Numbers and calculations” and “Elements of algebra” sections out of other 6 sections (conceptual lines) of Math. A certain progress in this section, in comparison to 2009, can be seen in the ability to calculate values of expressions by given values of the variable fourth-graders do worse in “Application of knowledge from different themes and sections”. More than a half of students did not even try to solve the items of this section.
- Ability to execute addition and extraction of multiple-digit numbers within a million is the most developed ability out of all subject abilities, however ability to execute

multiplication and division by one-digit and double digit numbers including division with the remainder is the least developed ability.

- None of the abilities, related to the conceptual lines and aspects of Math, is developed to the sufficient extent.
- The highest results, from three categories of school, showed schoolchildren from Bishkek. The rural schoolchildren have the lowest results.
- The fourth-graders who receive education in Russian language, completed the items better as whole, than students from schools with Kyrgyz language of instruction. The lowest results have been shown by students of Uzbek schools. Students of Kyrgyz language of instruction completed better the items of "Elements of geometry" only.
- The results of girls and boys in Math are practically similar.

4.3 What fourth-graders know and are able to do in Homeland Studies
The analysis of students results by types of items

Text in Homeland Studies, as well as in reading and Math, consists of items of three types:

- Multiple-choice items
- Short constructed response items
- Extended constructed response items

Items of closed type with the selection of correct answer out of 4 suggested options are the most attractive for the fourth-graders (Table 19): students more rarely missed items of this type. Only 15% of students did not try to answer the questions with selection of correct answer. However 36.4% of students completed these items, while 48.7% of students did not manage. The biggest percentage of students could not manage this type of items. Students missed the items with short constructive answer more frequently (38.5%) A student should have given a short answer in the items of such type as well as in reading and Math, consisting of one-several words, for example, "yes" or "no", to mark necessary object on the map or picture and etc. Only 25.1% of students completed these items, 38.5% did not try to answer, 36.4% of the fourth-graders did not manage the items. A student needs to formulate and write down the conclusion, provide arguments to maintain the answer, pick out convincing examples, explain how and why some occurrence takes place in order to execute the items with extended constructive answer. Only 19% of students completed these items, 44.7% did not and 36.7% did not take them. From what being said one can conclude that none of the items type were easy for the fourth-graders. Items with multiple answers seemed simpler for them, and they missed them more rarely, however they did them wrong more often. Results shown above show that the fourth-graders do not always have the opportunity to complete reasoned answers, express opinions, assume and prove during the lessons on Homeland Studies. Which is why it is easier for students to round a written answer than to form it and write it down on their own.

Table 19. The results of students (in %) by types of items. Homeland Studies. Grade 4.

		Percentage of students who	
Types of items	**Number of items**	**answered correctly**	**did not attempt to answer**
Multiple-choice items	48	36.4%	14.9%
Short constructed response items	17	25.1%	38.5%
Extended constructed response items	10	19.0%	36.7%

The analysis of the fourth-graders results in conceptual directions in Homeland Studies.

Three main directions "Animated Nature", "Earth and space" and "Physical world" have been selected according to the National Standard for surveying level of academic achievement of the fourth-graders in Homeland Studies course. Such a selection is accounted for the fact that while learning concepts, laws and peculiarities of each direction, basics of science, necessary for further learning of science subjects (biology, geography, physics, astronomy and chemistry) in senior classes, have been forming.

- Items suggested in the "Wildlife" direction, check the ability of the fourth-graders to apply received knowledge of plants, animals, human physiology,, relations between living organism in natural community, meaning of nature in human life.
- "Earth and space" direction contains concepts about the universe, the Sun as a life source, the Earth as a planet in the Solar system, different ways of picturing earth surface that is the basics of physical geography and astronomy.
- "Physical world" section includes questions checking ability to apply knowledge of objects of inorganic nature: features and meaning of water and air, soil structure, features, types and use of minerals, sources of environment pollution.

Table 20. Standard of evaluation of student knowledge in Homeland Studies.

Directions Aspects	**1. The Earth and space**	**2. Physical world**	**3. Animated nature**
Conceptual understanding	1.1. A student is able to apply knowledge about the Sun as a source of life on the Earth. 1.2. A student is able to apply knowledge about shape of the Earth, its movement around its axis and the Sun 1.4. A student knows about rivers, lakes, the difference between them, about reservoir of the Kyrgyz Republic	2.2. A student is able to apply knowledge about features and composition of air and it's meaning for life. 2.3. A student knows about the reasons why wind blows and use of wind strength by humans 2.4. A student knows basic types of minerals and their characteristics 2.5. A student is able to explain reasons of different natural phenomenon 2.6. A student know the sources of environment pollution 2.8. A student is able to define some characteristics of water and air by using simplest experiences (measurements)	3.1. A student is able to identify certain objects of wildlife and inorganic nature 3.2. A student is able to apply knowledge about plants' growth. 3.3. A student is able to set the relations between external construction of organisms and conditions of their environment. 3.5. A student is able to explain periodical (seasonal) changes in the life of plants and animals. 3.6. A student knows basic organs of human body and their functions. 3.7. A student is able to apply theoretical knowledge about functions of organs while solving certain items
Scientific inquiry	1.2. A student is able to apply knowledge about the Earth shape, its movement around its axis and the Sun. 1.3. A student is able to identify basic points and lines, find necessary objects on the map or globe.	2.5. A student is able to explain reasons of different natural phenomenon. 2.7. A student knows about structure and purpose of the soil. 2.8. A student is able to identify some features of air and water using simplest tests (measurements) 2.9. A student is able to analyze and shortly characterize the results of a test	3.2. A student is able to apply knowledge about conditions of plant growth. 3.4. A student comprehends correlation between life organisms in natural community.

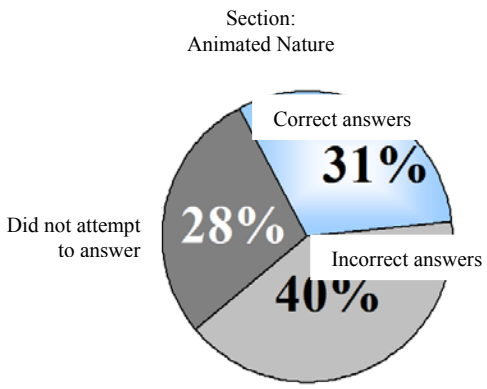
Directions Aspects	1. The Earth and space	2. Physical world	3. Animated nature
Practical reasoning	1.3. A student is able to identify basic points and lines, find necessary objects on map and globe. 1.4. A student knows about lakes and rivers, their difference between each other, about basins of the Kyrgyz Republic. 1.5. A student knows about sides of the horizon and ways of their determining.	2.1. A student knows about basic features of water. 2.2. A student is able to apply knowledge about features, structure of air and its purpose for the life. 2.3. A student knows about the reasons or wind origins and use of wind strength by a man. 2.5. A student is able to explain reasons of natural phenomenon. 2.7. A student knows about structure and purpose of soil	3.1. A student is able to identify certain objects of wildlife and inorganic nature. 3.2. A student is able to apply knowledge about conditions of plant growth. 3.3. A student is able to set the correlation between internal structure of organisms and conditions of their environment. 3.4. A student comprehends correlation between organisms in natural community. 3.5. A student is able to explain periodical (seasonal) changes in the life of plants and animals. 3.7. A student is able to apply theoretical knowledge about functions of organs in solving certain items. 3.8. A student is able to conclude on purpose of nature in human life.

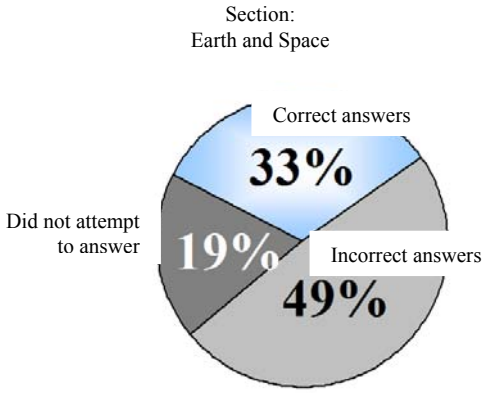
It is difficult to conclude, according to the results of survey presented in circular diagrams 34-36, on the matters of which of indicated directions, fourth-graders do best, and which worst, as the percentage of accomplished items differs slightly. They most likely show insignificant abilities and skills of students in all these directions. Thus, 33% of students across the country completed the items of the "The Earth and space" direction, in 31s % completed the item in both "Wildlife" and "Physical world" directions. As you can see the difference is small. If one compares the amount of the fourth-graders who did not try to take the items, then their percentage in "the Earth and space" and "Physical world" directions is approximately similar – 19% and 21% accordingly, it is higher (28%) in the "Wildlife" direction, in other words, the items in this direction turned out to be more difficult for students.

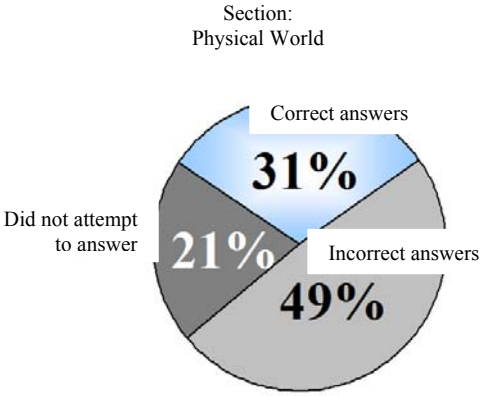
Comparison of results of surveys of 2009 and 2014 on directions show that the most a percentage of fourth-graders, who completed the "Wildlife" direction, decreased (by 9.5%). "The Earth and space" direction lost 3% of students who completed the item, the result remained the same in the "Physical world" direction.

Low percentage of correct accomplishment of the items on all directions show that majority of the fourth-graders have significant lack of knowledge about their environment, as well as inability to apply current knowledge for explaining phenomenon, occurring in the physical world. As a result, while studying at senior grades, students loose interest for learning subjects of scientific cycle, as they don't have basic knowledge and do not understand new material. Which is why it is important to pay more attention to the initial introduction of objects of organic and inorganic nature, explanation of laws and regularities, acting in the physical world surrounding us. Practical exercises and excursions will help in forming interest to learning of subject and profound comprehension. When a student learns things included in the structure of soil, minerals not by the description provided in the textbook, but during excursion, in a certain spot; when learns about the features of air and water not from the teacher's story, but tests, the student is sparked

with interest to learning of the world and it lets him to better understand, remember and learn to apply received in that way knowledge.







The analysis of the fourth-graders' results by directions according to the school category (Tables 21-23) lets us conclude that students of Bishkek schools still show the highest results in all directions of the native study class: on average, there are by 6-9% more students of Bishkek schools who completed the items successfully, that students of regional centers and small towns schools. fourth-graders of rural schools showed the lowest results. It is worth of noting that, in the survey of 2009, the highest results were shown by students of all school categories in the "Wildlife" direction. However, in the survey of 2014, the fourth-graders of Bishkek schools, completed the best the items of "Physical world" direction, and students of regional centers and small towns schools as well as rural schools – the item of "The Earth and space" direction. This confirms one more time that the highest decrease of results of is in the accomplishment of the items of "Wildlife" direction.
The fact that the results of students regional centers and rural schools is lower than the results of students of Bishkek schools, might be explained by the number of objective reasons: lack of teachers and less higher level of their career education, conditions of living and studying of students, unavailability of necessary, additional sources of information.

The analysis of test results by language of instruction show that the fourth-graders of schools with Russian language of instruction were more successful in accomplishment of items in Homeland Studies, least successful – the schools with Uzbek language of instruction. For example, only 25.3% of students of schools with Uzbek language of instructions answered correctly the questions from "Physical world" section. When students of schools with Kyrgyz language of instruction have 28.6% and Russian schools -37.5%.

Comparing results of the survey by gender, then girls do a little better than boys, on the average by 1-2%, the items in Homeland Studies directions.

Tables 21-23. The results of students by sections of Homeland Studies (breakdown by school categories, languages of instruction, and gender)

Section: Animated Nature

Groups of schools	Percentage of students who	
	answered correctly	did not attempt to answer
All schools participating in the NSBA survey	31.3%	28.2%
School categories		
Schools of Bishkek	40.6%	16.1%
Schools of regional centers and small towns	32.7%	25.3%
Rural schools	29.3%	31.1%
Languages of instruction		
Kyrgyz	29.6%	29.0%
Russian	36.7%	23.0%
Uzbek	25.7%	38.9%
Gender		
Girls	32.4%	26.8%
Boys	30.1%	29.7%

Section: Earth and Space

Groups of schools	Percentage of students who	
	answered correctly	did not attempt to answer
All schools participating in the NSBA survey	32.8%	18.5%
School categories		
Schools of Bishkek	39.3%	8.7%
Schools of regional centers and small towns	33.7%	16.7%
Rural schools	31.5%	20.6%
Languages of instruction		
Kyrgyz	31.6%	19.2%
Russian	37.5%	15.0%
Uzbek	26.9%	24.6%
Gender		
Girls	33.1%	17.9%
Boys	32.5%	19.1%

Section: Physical World

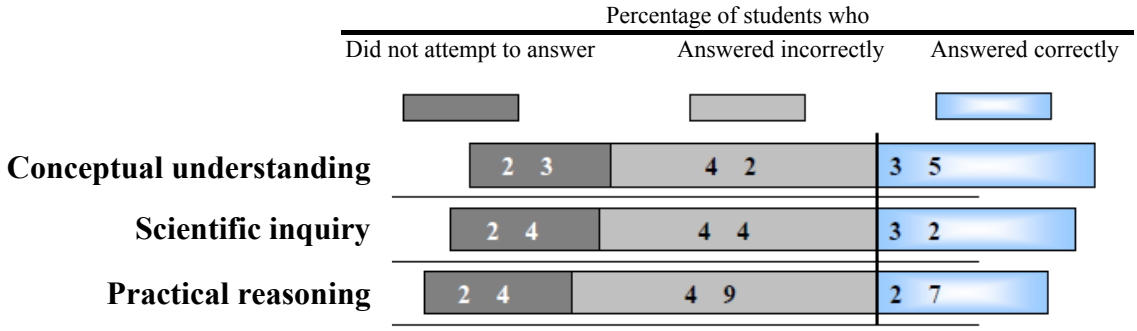
Groups of schools	Percentage of students who	
	answered correctly	did not attempt to answer
All schools participating in the NSBA survey	30.8%	20.6%
School categories		
Schools of Bishkek	42.9%	9.2%
Schools of regional centers and small towns	33.3%	18.2%
Rural schools	28.2%	23.2%
Languages of instruction		
Kyrgyz	28.6%	21.2%
Russian	37.5%	16.8%
Uzbek	25.3%	28.6%
Gender		
Girls	31.3%	20.0%
Boys	30.4%	21.3%

The analysis of results of students by aspects of comprehension of Homeland Studies class.
Items on Homeland Studies were constructed so that achievements of students by each of three selected direction of Homeland Studies ("Organic nature", "Physical world", "The Earth and space"), were tested in three aspects of subject learning: conceptual understanding, scientific inquiry and practical reasoning.

Conceptual understanding of the subject means basic concepts taught at Homeland Studies and comprehension. For example a student knows staged and conditions of plant growth, features of organic organisms, is able to identify objects of organic and inorganic nature, comprehends correlation between organic organisms in the nature and etc.

Scientific inquiry is the ability to conduct simple measurements, identify, by testing, features of objects of organic and inorganic nature, skills of testing, available for this age, ability to describe in short the studied subject, ability to forecast and explain the results of the test and etc.
For example, what natural material can replace plasticine, in order to sculpture; what scale of thermometer is required to take the temperature of the winter air; which direction will the wind blow on the sea beach in the night; what happens with air balloon filled with warm air, if you take him outside in the winter and etc.
Mastering skills of practical reasoning assumes ability of the student to apply knowledge in certain life situations, find effective ways of solving practical items, and explain suggested options of item solving using current knowledge. For example, what kind of dished you're not supposed to use while drinking in freezing temperatures; why is there a good harvest of wheat after snowy winter; what to do in order to anchor the soil on mountain slopes, where to put a plant for it to grow better and etc. The results of students by aspects of learning Homeland Studies course are shown on the Diagram 37.

Diagram 37. The results of students by the aspects of Homeland Studies



Conceptual understanding

The results of survey showed that fourth-graders did best the items, where one needs to show comprehension of basic Homeland Studies concepts, studied at class (Conceptual understanding). However the percentage of accomplished items of such type is also not high and makes only 35% (Diagram 27). This shows that majority of the fourth-graders do not have necessary knowledge about surrounding world, examined within "Organic nature, Physical World, the Earth and space" directions. They experience significant difficulties in comprehending reasons of the march of day and night, winter and summer, purpose of air and water in the life of the Earth, reasons of weather phenomenon, conditions and stages of plants' growth, seasonal changes in the life of animals. It is worth of noting, that in 2014, students who missed items on conceptual understanding is more than in the survey of 2009: There is 23% in 2014 against 8.4% in 2009 across the country.

Comparing results of the fourth-graders in the above mentioned aspect of learning matters of Homeland Studies by categories of schools (Table 24), then it is necessary to note that 45% students of Bishkek completed these items, that is quite higher than what is on the average across the country -35%

Students of regional centers and small towns (37.5%) as well as of rural (32.7%) schools completed these items worse. Almost every 5th student (20.1% and 25.2% accordingly) from these two categories of schools did not even try to answer.

The analysis of results by language of instructions show that fourth-graders of schools with Russin language of instruction mastered conceptual understanding better: 42.3% of students who completed the items on conceptual understanding, study at schools with Russian language of instruction, 32.7% of students of Kyrgyz language of instructions who gave correct answers, Uzbek students – 28.4%

Comparing results by gender, then boys and girls do items on conceptual understanding almost even- 35.5% and 34.5 accordingly.

Comparing results of 2014 with the results of survey of 2009 by school categories, language of instructions and gender, then Bishkek and rural schools have a decline of correct answers by 2-4%. The same situation is in the schools of Kyrgyz and Russian language of instruction. The results of regional centers schools and small town schools, as well as of schools of Uzbek language of instruction increased by 1-1.5%.

Table 24. The results of students by aspects of Homeland Studies. Conceptual understanding

Groups of schools	Percentage of students who	
	answered correctly	did not attempt to answer
All schools participating in the NSBA survey	35.0%	22.5%
School categories		
Schools of Bishkek	45.1%	10.8%
Schools of regional centers and small towns	37.5%	20.1%
Rural schools	32.7%	25.2%
Languages of instruction		
Kyrgyz	32.7%	23.3%
Russian	42.3%	18.1%
Uzbek	28.4%	30.9%
Gender		
Girls	35.5%	21.6%
Boys	34.5%	23.4%

Scientific inquiry

The number of students who completed the items of scientific nature (scientific inquiry) is less across the country – 32% (Diagram 27). Moreover, almost every 4th student (24%) did not even try to accomplish the item of such type. The fact that so many fourth-graders did not take the items of scientific aspect shows that such items are incomprehensible for students, as they have not run into them in the routine academic practice. Successful learning of scientific knowledge is possible only in case if you received this knowledge not only from description given in the textbook or from the story of a teacher, but from personal observations under the guidance of a teacher, examining the studied subject, planning and testing, summarizing and analyzing the results of your own experience.

Comparing results of item accomplishment by the aspect of scientific inquiry according to the category of schools (Table 25) one can note, that Bishkek students showed similar results -42.3% as in the items of conceptual understanding (45.1%). The percentage of misses of these two aspects of learning differs a little. Students who completed the items in schools of small towns and regional centers is significantly less – 33.6%, students of rural schools is even less – 29.6%. Comparison of these results with the results of 2009 shows that fourth-graders of Bishkek schools started to manage the item on scientific inquiry worse by 4.5% while the results of students of other categories of schools remain the same. However, the rated of students from Bishkek schools remain higher. The results of the fourth-graders by language of instructions have been arranged as follows: Russian language of instruction students who successfully accomplished the items on scientific inquiry is 36%, Kyrgyz – 30.8%, Uzbek – 26%.
It is necessary to note that the rate, in the schools with Russian language of instructions, for the last 5 years, significantly declined (by 7%), with Kyrgyz – only by 1%, and Uzbek increased by 2%.
Girls completed the items of such type better (32.9%) than **boys** (30.7%).

Table 25. The results of students by aspects of Homeland Studies. Grade 4
Scientific inquiry

Groups of schools	Percentage of students who	
	answered correctly	did not attempt to answer
All schools participating in the NSBA survey	31.8%	23.9%
School categories		
Schools of Bishkek	42.3%	13.5%
Schools of regional centers and small towns	33.6%	21.5%
Rural schools	29.6%	26.3%
Languages of instruction		
Kyrgyz	30.8%	24.5%
Russian	35.9%	19.0%
Uzbek	26.1%	34.1%
Gender		
Girls	32.9%	22.6%
Boys	30.7%	25.1%

Practical reasoning

The fourth-graders completed the worst items on practical reasoning. Only 27.4% across the country completed these items. 23.5% (Diagram 27) did not try to answer. This shows that majority of the fourth-graders in the country are not able to apply current knowledge in solving certain practical item. For example they may know that the Earth spins around its axis, but can't explain why when it is early morning in Bishkek, there's a late night in Moscow. They know why a man needs nose, ears, eyes, but can't explain which organs of sense help to cross the street. They can find indicated objects on the map, but can't select the shortest way from one point to another. The abovementioned implies that the knowledge received by students is not connected to the practical real-life items at all. They remain as useless information which will be forgotten in the nearest future, instead of being used in a certain situation where it is necessary to find the correct solution. Student knowledge in most cases is not connected to the necessity of its application in life.

Comparison of results of students by school category (Table 26) shows that students of Bishkek schools do better in practical items (36.1%) than student of schools of regional centers and small towns (28.3%) as well as rural schools (25.8%). Moreover, fourth-graders from Bishkek quite often try to answer such type of items than their peers from other categories of schools: thus, 26.1% of students did not try to answer the practical items, when students of Bishkek who did not either, are less in half – 12.2%

However according to the comparison of corresponding rates of 2009 survey, results of the fourth-graders of Bishkek schools decreased more than ever – by 9%, when the decline of results in schools of regional centers and small towns as well as in rural schools is slightly less – 4 and 3% accordingly.

Comparison of the results by languages of instruction shows that the highest percentage of students who completed the items on practical reasoning among the fourth-graders is found in schools with Russian language of instructions – 32.1%. There is 26% of such students in schools with Kyrgyz language of instructions and 22.9 of Uzbek.

Girls and boys do the items on practical application of knowledge about similarly – 28.1 and 26.8% accordingly.

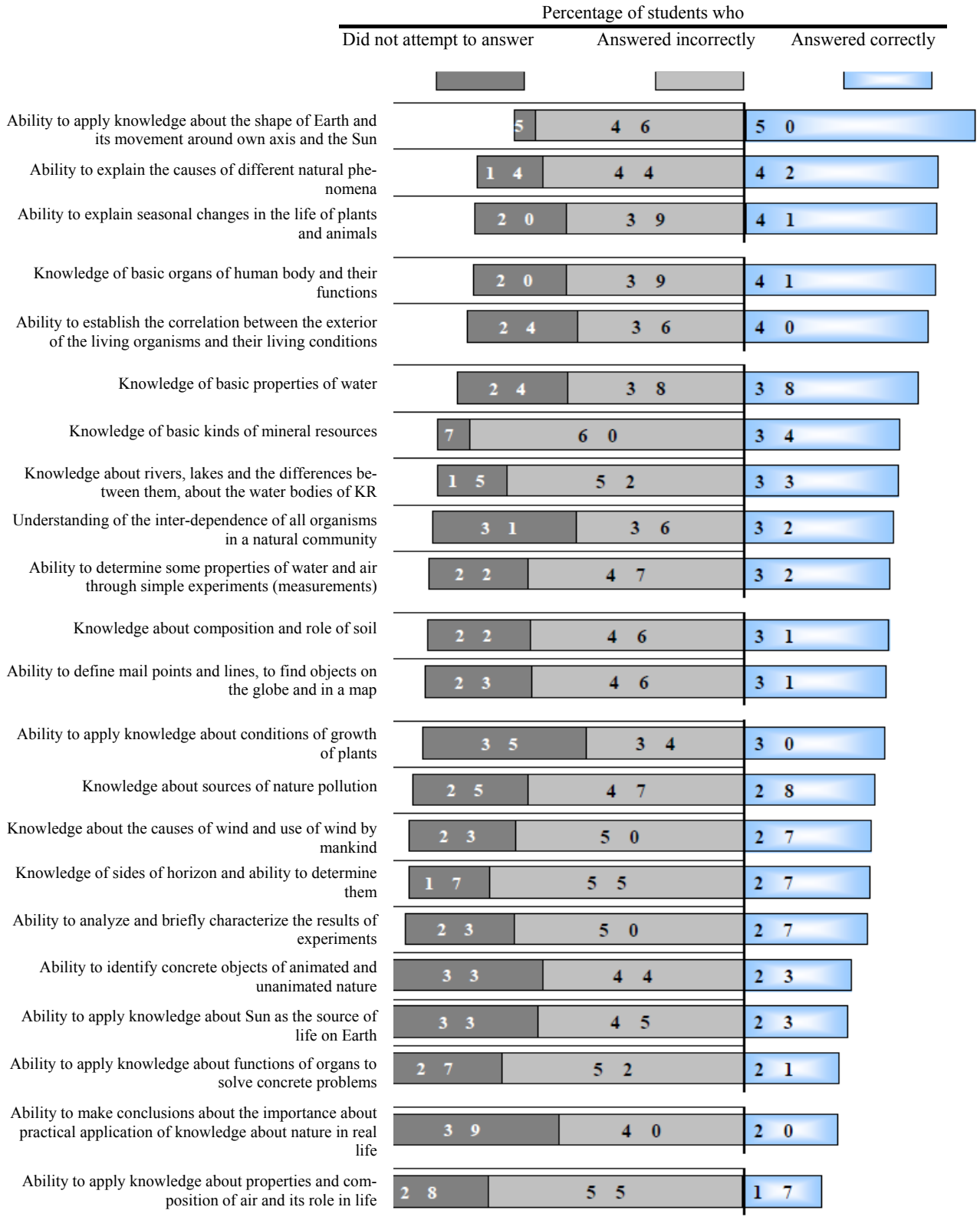
As a whole, comparison of results of the survey of 2009 and 2014 shows that a decline of education level occurred in all aspects of Homeland Studies course. Moreover, a tendency of results decline of the fourth-graders of Bishkek schools and schools with Russian language of instruction can be noted to the greater extent.

Table 26. The results of students by aspects of Homeland Studies. Grade 4
Practical reasoning

Groups of schools	Percentage of students who	
	answered correctly	did not attempt to answer
All schools participating in the NSBA survey	27.4%	23.5%
School categories		
Schools of Bishkek	36.1%	12.2%
Schools of regional centers and small towns	28.3%	21.0%
Rural schools	25.8%	26.1%
Languages of instruction		
Kyrgyz	26.0%	24.1%
Russian	32.1%	19.6%
Uzbek	22.9%	31.6%
Gender		
Girls	28.1%	22.7%
Boys	26.8%	24.4%

Analysis or test results of the fourth-graders on Homeland Studies by standards of evaluation.
There were 22 standards of evaluation developed for evaluating of education level of academic achievements of the fourth-graders in Homeland Studies according to the National standard within 3 directions, the content of which has been described above: "The Earth and space" – 5 standards, "Physical world" – 9 standards and "Organic nature" – 8 standards of evaluation. Each standard of evaluation is a certain ability, which is evaluated by the test items. Quantitative ratio of evaluation standards is adjusted to the amount of academic hours allocated for learning in the mentioned subject directions
Diagram 38 shows the results of students by standards of evaluation.

Diagram 38. The results of students by evaluation standards



Comparing results of students by the standards of evaluation, turns out that the fourth-graders did best the items where students had to apply knowledge about the shape of the Earth and its movement around its axis and the Sun ("The Earth and space» direction). 50% of tested students, as whole, completed the items of this standard, only 4.6% of the fourth-graders left these items without an answer. If one takes into consideration the category of schools, then, students of

Bishkek schools, showed best results in the test (55% completed the items), and rural schools showed the worst – (49% completed the items). The fourth-graders of schools with Russian and Kyrgyz languages of instructions completed the items with equal results – 50.5% and 50.1% accordingly. Boys, who gave correct answer to the items of this standard is more by 1% than girls (see Appendix 3 at www.testing.kg). One of the reasons of this relatively successful accomplishment of the item of this standard may be that "The Earth and the Sun" theme is basically studied at 4th grade at 2 and 3rd academic quarters, that is right before the test. The fourth-graders showed the lowest results in items of the standard evaluating the ability to apply knowledge about features, structure of air and its purpose for life ("Physical world" direction). Only 17% of students across the country completed the items of this standard. One should note a big difference in success of item accomplishment within this standard by the students of different school categories. 25.8% of Bishkek students completed these items and only 15.1% of rural school students. Probably, the reason of such a big difference is that while learning of the component parts of the air, its ability to expand when heated and contract when cooled, dissolve in the water, maintain burning and etc., it is necessary to conduct the necessary amount of experiments. It is obvious, that due to the number of reasons (probably weak resource base), teachers of primary grades of rural schools do not pay due attention, during Homeland Studies classes, to practical and lab works, frequently ignoring them. The results of the accomplishment of items on ability, by using simplest tests, to identify features of the water and air, weigh with it. If 45.3% of the fourth-graders of Bishkek schools completed the items of this standard, then, there were only 27.5% of rural schools students. Accordingly, 58.3% of Bishkek students know about the basic features of water and only 33.3% of rural schools students. The difference is 25% (!).

As to the rest of 20 standards of evaluation of the fourth-graders by the basics of Homeland Studies, one can mark out three groups by the results of the survey. First – is standards, where items have completed by about 40% of the fourth-graders (relatively easy ones). This group includes 5 standards which evaluate ability *to explain reasons of natural phenomenon, seasonal changes in the life of plants and animals, set the links of organism's structure with the conditions of its environment, as well as the knowledge of basic human organs and basic features of the water.* They include such questions as: Why does it rain? What is frog? Why does a man need eyes, ears and nose? How do the clouds arise? Why does a shadow appear? These are the matters of interest of a child from yearly ages, when the cognitive interest to the surrounding world is at high level. A child receives the answers from different sources: from his older friends, from read stories, from watched educational movies.

This can explain the fact, that the easiest item of the test was the question: "What bird flies south in the autumn?" (swallow, crow, golden eagle, sparrow). 63% of the fourth-graders from the schools with Kyrgyz language of instruction answered this question correctly; 66% - with Russian language of instruction and 59% - with Uzbek language of instructions. Despite that, the information in the Homeland Studies textbooks (1-4 grades) what birds fly south in the autumn and which don't is missing.

The second group of standards, the items of which have been completed from 27 to 34% of students, that is the third of all tested fourth-graders, includes 11 standards. These are the standards related to the all three directions. They include items requiring knowledge which can be received during classes from the teachers' story, from the read textbooks, from visual aids.

Only 31% of students across the country can find necessary objects on the globe or a map. There 39.2% of such fourth-graders in Bishkek, and 29.1% - even less in rural schools. The reason of such low results is the either the lack of visual aids at class (globe and maps) or insufficient amount of practical classes, unless it's total absence.

The results of accomplishment of the items of the mentioned standards is the confirmation of this: Please, define which of the regional centers on the map, shown above, is closest to the west? (Naryn, Karakol, Osh, Batken). Only 26% of students with Kyrgyz language of instructions completed this item, 31% -with Russian language and 21% - with Uzbek. The results are

quite depressing, despite that there is all necessary information in the textbook of Mambetova Z. Homeland Studies. 3rd grade page 27 and 33, in order to answer that question.
It is unlikely that a schoolchildren can identify sides of horizon by compass (only 27.3% of students across the country completed these items), if he never saw this compass or read about that in the textbook, that the blue end of the arrow always shows to the north (Mambetova Z. Homeland Studies 3grade, page 29).
Another vivid example, that student knowledge depends on the availability and quality of the textbooks to the significant extent, as well as on availability and usage of demonstrational and visual aids, is the results of accomplishment of the standard items, evaluating knowledge of basic types of mineral and their characteristics.
The biggest amount of students tried to answer the questions about rocks and minerals while being tested – 93%, they gave the highest percentage of incorrect answers from all standards of evaluation – 60%
Additionally, the amount of the fourth-graders, who completed the items of this standard is equal for schools of all categories and is 35%-33%. One can conclude from the given results, that majority of schools of the country lack or do not use collection of rocks, minerals during classes.
For example, only 22% of students with Kyrgyz language of instructions answered correctly the question "What mineral is transported by tubes?" (Gold, oil, high-silica sand, bauxite) – 43% - with Uzbek language of instructions and 53.5% - with Russian language of instruction. If a student has an opportunity to feel the collection sample of rocks and minerals, then the results of this item would be much higher than those, when he read about it in the textbook. (Homeland Studies, 3 grade, page 117).
The most complicated items are of the 3rd conditionally chosen groups of standards, which included 4 standards of evaluation. About 20-23% of students completed these items, that is each fifth of all tested children. The standards, which happened to be the most difficult in the groups, evaluate abilities to apply knowledge about the Sun as a source of life, about function of organs and organisms for solving items, identify objects of organic and inorganic nature, conclude about purpose of knowledge about nature in the life of a man. The majority of these standards of evaluation are related to the "Wildlife" direction. Even though the results of students should be higher, as the items of these standards are related to the objects which can be observed in the nature and which fourth-graders met in their routine life.
The reason of this is that the answers to the items, which happened to be the most difficult ones, do not lie on the surface, they require more profound thinking operations from the students such as analysis and synthesis.
As the survey results show, conducted within other international and national surveys, that students of schools of our county manage better the items checking the ability to reproduce simple knowledge and provide examples for confirming correctness of already formulated conclusions. The items requiring application of higher levels of thinking activities, cause serious difficulties for them. Such tendency is observed at the primary level of our school.
As a proof, let us show the results of the current survey. In the Homeland Studies test, fourth-graders have been suggested two different items from the "Wildlife" direction. It was required in one of the items to answer the question: "Why do birds make nests? It is said in the textbook by Mambetova Z. Of Homeland Studies on page 86: "What does a bird need a nest for? It does not live in there per se, it just lays eggs and breeds nestlings".
For accomplishment of this items a student needed to only reproduce the information provided in the textbook, however only 46% of students with Kyrgyz language of instructions completed this item (28% did not gave the answer), 45.5% - with Russian language of instruction (23.5% did not try to answer) and 43.4% - with Uzbek language of instruction (35.4% - did not try to answer).
In another items of higher level, a student is needed to write down the answer to the question: "What does a camel need a hump for? It is said in the text-boo by Mambetova Z. of Homeland

Studies on page 99: “Animals living in the desert are adapted for heat and drought. One of them is a camel. He can go long without water or forage”.
In other words, there’s no direct answer to this question in the textbook. In order to answer it correctly, a student has to analyze information of a textbook, set the cause and effect relation and conclude, that is to show his thinking abilities at higher level, at the level of analysis and synthesis. The result of accomplishment of this items speaks for itself: only 4%(!) of students of Kyrgyz language of instructions answered correctly to this question (43% did not even try), 11% - of Uzbek language of instruction (54.3% did not answer) and 21 – of Russian language of instruction (36.6% did not answer).
From the mentioned comparison of the results one can conclude, that our school, already at the initial stage teaches to memorize and reproduce knowledge and does not teach to analyze and set cause-and-effect relations, conclude, apply studied material in new situations and for solving certain items. Comparing the results of the fourth-graders by language of instruction, students of Russian language of instruction completed the requirement on all developed standards better, except for a standard evaluating comprehension of the relation between organic organisms in nature community. fourth-graders with Kyrgyz language of instruction completed the requirements of this standard by 2% better than the students of schools with Russian language of instructions and by 6% better than the students of Uzbek language of instruction.
As to the difference in the success of results of students of Russian and Kyrgyz schools, while accomplishing the requirements of almost 50% of requirements it proved to be insignificant – 10-15%. For example, the items of the standard evaluating knowledge of students of basic organs of human organism and their function has been accomplished by 54% of the fourth-graders with Russian language of instruction and 38% of students with Kyrgyz language of instruction.
The least successful are students of Uzbek language of instructions: the requirements of the majority of evaluation standards they accomplished by 5-6% worse than fourth-graders of schools with Kyrgyz language of instruction, except for the 5 standards with the items which they accomplished better.
As to the difference of the results by gender, boys did a little better in the questions about the shape of the Earth and its movement around the Sun, about rivers and lakes, about reasons of natural phenomenon, about structure and purpose of soil. As for the rest, girls overperform boys by skills and abilities with a slight difference of 1-2%.

Some conclusions

- None of the suggested three types of the items has been easy for the fourth-graders. The items with multiple answer, have been missed the least, however the highest percentage of mistakes has been done in there. The items with the extended constructive answer turned out to be the most difficult ones. Therefore, one can conclude, that fourth-graders, during Homeland Studies classes, rarely give full argued answers and express their own opinions.
- Equal amount of students completed the items by all three directions of the survey: “Wildlife”, “Physical world” and “the Earth and space”. This allows us to think that knowledge of the fourth-graders in all these directions are equally low. Comparing the results of the 2009 survey, the level of achievements of students in all directions has decreased in a way; the decline in “Wildlife” direction is notable the most.
- The level of the fourth-graders by all three aspect of the subject learning: conceptual understanding, scientific inquiry and practical reasoning is quite low. However, students completed the items on conceptual understanding best. Followed, by the level of difficulty by the items on scientific inquiry, and the worst results of accomplishment of the items in practical reasoning. This means that the items of research nature are not comprehensi-

ble for students; they can't apply knowledge for solving practical and new items. Comparing results of 2009 survey, the decline of Homeland Studies comprehension in all three aspects occurred. The results of the items accomplishment by the students of Bishkek schools and schools with Russian language of instruction show that the most.

- Students experience difficulties answering the questions, where they need information from the textbook to answer these questions. Practical and lab works are required in order to manage successfully them during Homeland Studies classes. It follows therefrom that teachers do not pay enough attention to the experimental part of the course, as well as there are not enough demonstrational and visual aids at schools
- The results of the survey showed that fourth-graders accomplish the item the best where it is necessary to recollect and reproduce received knowledge, than the items where one need to analyze the information, set cause-and-effect relations and conclude, as well as to apply knowledge in new situations and for solving certain items.
- From three categories of schools, the highest results in Homeland Studies have been shown by the fourth-graders of Bishkek schools. The students of regional centers schools and small towns schools showed lower results, the lowest results have been shown by the students of rural schools.
- The fourth-graders from the schools with Russian language of instruction completed the items of Homeland Studies better than students of Kyrgyz language of instruction. The weakest results have been shown by the students of Uzbek language of instruction.
- Girls, with a slight difference of 1-2%, completed the items of Homeland Studies better than the boys.

5. Questionnaire. What influenced the results of NSBA?

Questionnaire of teachers, students and school administration has been conducted in order to get the idea how the results of the test are related to other processes going on in the education. Basic results of the questionnaire are presented below. More detailed description can be found at www.testing.kg.

5.1 Answers to the questions of the questionnaire for the school administration.

Questionnaire of school administrators gives us the opportunity to see how the structure and organization of the school, its provision of pedagogic workers and material resources influence the level of academic achievement of students; as well as to find out whether the whole school or significant part of teaching staff took part in any courses, seminars and programs in order to have a full picture of what can be an additional factor of influence to the results of students tests. Questionnaire of school administration contained 4 sections and consisted of 30 questions. It has been filled out by the school principal or his deputy. First section of the questionnaire for the administration contained questions related to the administrator, his age and years of experience, his basic education and opportunities to reeducate. Second section was related to the structure and organization of the school, its type, maximum number of fourth-graders per class. Third section contained questions about pedagogical staff of the school, about teachers' vacancies, about facts of teachers working out of their specialty indicated in the diploma, about opportunities for teachers to increase their academic level. Fourth section contained questions about material resources of the school. Time of filling out was not limited, filled out questionnaire should be submitted not later than the end of students' test. In general, the questionnaire contained ques-

tions of a closed type. Questions of an open type required that answers should be written as a number in special place.

204 schools took part in the NSBA survey in 2014 as in 2009 survey. 130 administrators work in the schools with Kyrgyz language of instructions, 55 – with Russian language of instructions, 19 – in schools with Uzbek language of instruction. 57.8% of principals and 42.2% of deputies answered the questions of the questionnaire in total. More detailed information on answers to the questionnaire for the school administration can be found in the appendix to this report at www.testing.kg

Identity of an administrator

First group of questions was related to the identity of the administrator. Results of the questionnaire showed that, as in 2009, there are more women who work across the country (75%) than men (23.5%). Additionally, almost all questioned administrators in schools with Russian language of instructions are women (90.9%) when administrators in schools of Kyrgyz language of instruction are men (26.2%) and almost half (47.4%) in schools with Uzbek language of instructions. Approximately the same ratio was in the survey of 2009.

For the most part, people working in the school administration are with high pedagogical education (93.6%).

Answers to the following question: “How many years do you work on that position?” show that, as in 2009, almost half (46.1%) of school administrators work on that position relatively recently, from 1 to 5 years. Moreover, the amount of administrators who worked on this position more than 15 years, in comparison to 2009, has increased by 4% (20.6% against 16.5%).

96.1% of all questioned administrators answered “Yes” to the question “Do you have an opportunity to improve your qualification as a school administrator”, which is by 3% more than in 2009.

Structure and organization of a school

Answers to the question about a type of school show that only governmental schools took part in the 2014 survey, 86.8% of them were general schools, 7.4% - gymnasiums, 3.4% -lyceums, 1% are educational complexes and 0.5% are boarding schools. There was the same selection in the 2009 survey: 88.1% of usual secondary school, 9.3% of gymnasiums, 2.1% of lyceums, and 0.5% of boarding schools. As in 2009, a stratified selection has been applied in 2014 on the base of probability. The strata included schools categories (schools of Bishkek, schools of regional centers and small towns) language of instructions (Kyrgyz, Russian, Uzbek) and administrative oblasts of Kyrgyz Republic.

According to the results of the questionnaire, as a whole, there were 20-40 students in each class (63.2%). However there are schools where maximum number of students per class exceeds 50 students (8.3%). There are schools (13.2%) with maximum of students per class with less than 15 people in class. Most classes with the maximum number of 20-40 students are in schools with Russian language of instruction, it is 81.9%. The classes with such maximum number are less in schools with Kyrgyz language (56.9%) and Uzbek language (57.9%). However, if there are more than 30% of the fourth-graders in schools with Kyrgyz language of instruction who study at classed with less than 20 students, than there is a big amount of students in schools with Uzbek language of instructions who study at schools where there are more than 40-50 students in class.

School administrators noted in their questionnaire that all teachers of elementary school have the opportunity to improve their qualification as a regular passing of courses of qualification improvement (95.1%) as well as in the course of work of methodical section of elementary school teachers (95.6%) and by receiving regular methodical assistance of more experienced teachers of primary grades (97.1%). The serious problem, by their opinion, is the lack of methodical literature in the school

Material resources of the school

There was a number of questions in the questionnaire for the administrators about equipment of the school. On the base of the answers to this question, one can conclude that, from the necessary equipment in the school, there are tables and billboards (82.4%) and maps of Kyrgyzstan (85.5%). At the same time there is acute shortage of aids for learning natural sciences (dummies, herbariums, samples of mineral resources and etc.) and physical apparatus. Something of the listed above is provided in the half of the schools. There are VSRs in 53.9% of schools, projectors – in 34.8% of schools. There are practically no educational computer programs (presented in 6.4% of schools) Interactive boards are in less than 10% of schools.

Answering the question whether there are necessary books in the school library, administrators gave contradictory information. On one hand, they noted, the methodical literature on the subjects, published after 2000 is in more than 80% of school libraries. Answering the question: How well in percentage the teachers are provided with the methodical literatures? The administrators noted that on average by 53.4%. However we consider this information not quite trustworthy as well, as teachers of the elementary school noted in their questionnaire, that they experience difficulties in finding necessary methodical literature (76.3%) that they experience difficulties of methodical nature while teaching at 4^{th} grade. It is worth of noting that methodical literature in Russian is more than in Kyrgyz and Uzbek languages.

There are also problems with the literature for children. Fiction for elementary schools, according to the answers of the administrators, is in 73.5% of school libraries, and scientific literatures for students of primary classed in 39.2% of libraries, inquiry books is in half of school libraries. However, schools of Russian language of instructions are provided better with fiction and scientific literature: 83.6% of administrators noted there is fiction literature for elementary school in their library and 58.2% answered positively in relations of scientific literature. 70.8% of administrators in schools with Kyrgyz language of instruction confirmed that they have fiction literature for elementary school and 33.1% noted the same in relation of scientific literature. Schools with Uzbek language of instruction are provided with books worse: 63.2% have fiction literature and 26.3% scientific literature. Thus, school administrators noted that there are books in the school library, however the information received from the questionnaires of the teachers does not confirms this. Most likely, there are no books in library which are required for education. Only half of the teachers can often recommend additional fiction literatures for out-of-class- and independent reading and only 20.2% of teachers can recommend additional books on native studies by studied material.
According to the answers to the question: “How well in percentage is the school provided with textbooks?”, one can conclude the following. On average, schools of the Kyrgyz Republic are provided with textbooks by 78.8%, which by 4.6% more than in 2009. However this information also contradicts to the teachers’ answers, who noted in their questionnaires that 25.7% of their students use one textbook of reading for three and more students, 22.3% of Math textbook and almost 30% by one textbook of native studies for one and more students.

Pedagogical staff of the school

The following three questions were related to the *staff of the teachers of elementary school.*
From the answers of the administrators one can conclude that elementary schools experience serious shortage of elementary school teachers: in 47.5% of schools lacks 1-2 teachers, in 8.3% of schools, there are 3-4 vacancies of elementary school teachers. In some schools there's a lack for 5-6 elementary school teachers. 38.2% of school administrators left this question without an answer.
Schools with Uzbek and Russian languages of instruction experience shortage of elementary school teachers in greater extent. 63.2% of questioned administrators of schools with Uzbek language of instruction noted, that their school lacks for 1-2 teachers of elementary school. 21.8% of schools with Russian language of instruction, which participated in the survey, lacks for 3-4 teachers, and 12.7% lacks even for 5-6 teachers. One can see from the answers of the administrators, that almost half of schools have teachers of elementary school, who work not in the specialty indicated in their diploma. The majority of such teachers work in the schools with Russian language of instruction (72.7%), less percentage is in the schools with Uzbek language of instruction (52.6%) and the least (47%) is in the schools with Kyrgyz language of instruction. 36.3% of the administrators did not answer this question.
Schools are satisfied with the quality of staff. 59.3% of the administrators and 40.2% marked the answer "satisfied".

The following question was related to the factors complicating the teaching process in the elementary school. According to the opinion of the school administrators, (60% of them think so) that insufficient amount of computers in the schools influence the process of teaching, lack of Internet access and insufficient amount of the software. The second place in order of importance (almost half of the administrators think so) takes insufficient quantity or inconformity of lab equipment used in the primary classes as well as education material (textbooks and education packages). Administrators are worries less about the lack of qualified teachers of primary classes. Answering this question, 50.5% of administrators marked in the questionnaire, that they do not experience difficulties with the lack of good teachers, and another 21.6% marked the answer "very little".
According to the opinion of the administrators, agricultural works and lack of heating system in the schools influence the least on the teaching process in the elementary school.
Next two questions of the questionnaire were related to the additional activities, which have been offered by school to its students this year. Administrators marked that, mainly, these were sport events (88.2%) assistance to the old people (74.5%) bibliophile club (74.5%) and Math club (62.3%). Young naturalist club has been offered more rarely (44.6%), however generally, according to the confirmations of the administrators, there are a lot of additional activities in the school. However, extremely low results of the fourth-graders showed that either additional activities on subject have not been conducted in the most cases or they did not have a bearing on the results of the test of the fourth-graders.

The fourth-graders have been involved in creative activities: school theater (43%), music in the school band, choir or orchestra (41.7%) or edition of school magazine (46.6%) quite rarely. Still, if there's a theater, choir and magazine in the school, why there are such low results of the fourth-graders in reading and comprehension of what they have read?!
Next question was related to the additional activities of the fourth-graders who experience difficulties in learning. Majority of the administrators marked (90.2%) that there are additional activities in their schools, aimed at the development of reading skills, Math (89.2%). More than 30% of administrators confirmed the availability of special classes of adjustment, where a special approach is provided to those who experience different types of difficulties in learning. This number seems exaggerated as we know that elementary school teachers do not have time, usually they work in 2 grades at the same time, and some of them have academic hours in the secondary

school (See teachers questionnaire in the appendix) Results of the students do not confirm this data.

Next two questions were related to the methods of fourth-graders evaluation and goals of evaluation. Answering the first question, administrators marked that evaluation of the fourth-graders is conducted on the base of the personal judgment of the teacher (62.7%), besides, some schools use tests for fourth-grader evaluation, which have been developed by the teacher (41.7%) It is gratifying to emphasize that 42.2% of schools evaluation has been done on the base of selection of student works; this shows his progress and achievements in studying and out-of-class activities (student portfolio). Standardized tests, special items and projects for the fourth-graders, according to the school administrators, have been practiced in schools rarely.

School administrators, marked in their questionnaires, that, primarily, evaluation of the fourth-graders in their schools has been done in order to track the progress of the whole school from one year to the next (97.1%) then, to conclude about the teachers work (96.6%) as well as to find out the aspects of education which can be improved (87.7%). However these figures do not inspire confidence, because they differ from the results of the teachers' testing of the same schools. Teachers marked in their questionnaires that if a students get a lot of bad marks on the subject, then, primarily, it is a signal for parents to tighten the control over their children (80.8%) and for children to prepare better for the classes and after all the others a signal for the teacher to do the changes in the teaching (65.4%). Administrators also emphasized the importance of evaluation for informing parents about the progress of their child (93.1%) However taking a decision about combining students by level of their preparedness into classes or groups for learning or taking a decision of leaving a student for a second year is rarely occurring on the base of the evaluation. More than a half of the administrators marked that such an evaluation takes place in their schools as well.
24% of administrators marked that they do not use evaluation of the student in order to compare their schools with other ones, even though such information could be useful. If comparison results show that academic achievements of students of some school are higher than the other this could improve the rating of a school, for example, as a public or parent image.

Next question was related to the factors, which prevent students from studying. Answering this question, administrators of the schools should mark the following next to the each provided statement: no influence, little influence, influence in some way, influence greatly. The most important factors according to the administrators are absences of students (23.5%), as well as of teachers (24.5%), alcohol and drugs consumption (27.5%). However it is gratifying to emphasize that some administrators mark, that the important factors influencing the education of the fourth-graders are both conservative level of demands of teachers for the students (43.1% marked this factor influencing in some extent) and noncompliance of teaching for the individual demands of students (37.7%), as well as that students are not encouraged to reach their full potential (38.2%). One of the influencing factors is that students do not respect their parents (only 41.7% marked this factor as non-influencing, the rest marked its influence to various extents) as well as unsatisfying relationships between students and teacher (only 37.3% marked that this factor does not influence the education); also, school staff resists changes as well as some students suffer from threatening and aggression from other students.

Answering the question: “Which of the following statements describes best expectations of parents towards your school?”, more than a half of administrators (52.0%) marked that “Insignificant part of parents insisted that our school made so that the students achieved high academic standards”. Less than a third of administrators noted that there are parents who expect that school will provide high-level academic achievements of the children results. 11.8% of administrators

noted that there are almost no parents who insisted that school should provide their children with high-level academic achievements.

Additionally, administrators noted in their questionnaires that they inform parents about students' achievements in relations of governmental standards (91.7%) as well as about achievements of their children in comparison to the achievements of other fourth-graders (84.8%). Parents are informed about the achievements of their children in comparison to the fourth-graders of other schools only in roughly half the instances, although this rate does not have credibility as well.

Answers to the next question of the questionnaire show that even though data of academic achievements of school students are often tracked by the administrative facilities, they are not always used for encouraging school staff. For example, they do not have any significance while evaluating activities of school principal or while taking a decision on provision of methodical resources for the school. Even though schools, which provide higher academic level for their students, should be known to parents and public, it is necessary to encourage and support them in every way.

Almost all administrators noted in their questionnaire, that the evaluation of student achievements (test) has been conducted in their schools this year. Almost all teachers have familiarized themselves with the plans (materials) of classes of their colleagues and attend their classes, principal, deputies and inspectors (other officials) attend them as well. There were not browsing and analyzing of video classes or on-line classes, even though there are schools with Internet access.

5.1.1 Conclusions as a result of analysis of questionnaires for school administration.

- School administrators – are typically women with high pedagogical education who have 5 or more years of work experience, who have the opportunity to improve their qualification as an administrator. However it is necessary to note that there are many of those who do not have enough work experience for that position: more than 30% of administrators work on that position less than 3 years.
- Half of the administrators, characterizing school staff, note that their schools lack for 1-2 teacher of the primary classes. More than 12% noted that their schools lack for 3-6 teachers of primary classes. That is more than 60% of schools which experience lack for teachers of primary classes. Besides that, half of elementary schools have teachers who work non in the specialty indicated in their diplomas. Thus, there are staff problems in schools which affect the level of academic achievement of students. Despite that, 95.5% of administrators, answering the question" How much are you satisfied with the staff of elementary school, write that they are satisfied or totally satisfied.

- Administrators note in the questionnaires high rate of maximum number of students per primary class (more than 40% of schools have more than 35 students in one class, 8.3% have more than 50 students in one class). There are many overfilled classes especially in the schools with Russian language of instruction. (almost 82%). There is 47.5% of such classes in the schools with Uzbek language of instructions, and only 32% in schools with Kyrgyz language of instruction.
- Material provision of the schools, according to the answers of the administrators, requires improvement. The libraries are not in every school. Many administrators note insignificant amount of educational materials (textbooks and educational complexes for elementary school) or its incompliance to the requirements. A student who had not individual textbooks in the elementary school (there's almost a half of such students, according to

the questionnaire of the teachers) may have serious gaps in his education to this reason only.

- Half of the schools lacks for methodical literature for the teachers, especially in Kyrgyz (49.1%) and Uzbek (48.6%) languages. Schools are provided with methodical literature in Russian by 65.2%. If one takes into account that there is almost half of the schools which have teacher who work not in the specialty, there are many such, pedagogical work experience of whose is less than 4 years, then an importance of availability of methodical literature in schools can't be overestimated.
- The administrators note that there's a deficit of scientific and inquiry literature in school libraries for elementary school.
- 61-70% of schools do not have devices, dummies, collection of minerals, lab equipment necessary for classes of native studies.
- There are not VCRs and projectors and educational movies for primary classes in the most half of the schools, less than 10% of elementary schools have interactive boards.
- Administrators complain about the lack of computers with the access to the Internet in the elementary schools, however more than 60% of administrators think that lack of insufficient amount of computers in elementary schools impedes educational process the most.
- Majority of administrators of the schools pointed in their questionnaires that there are many cultural development activities for the students of elementary schools: school theaters, orchestras, choirs, club of bibliophiles, Math clubs and etc. Almost every school, according to the answers in the questionnaires, has additional classes for development of reading skills, elimination of gaps in Math and etc. According to the results of the test, this does not influence the condition of primary education in schools.
- Administrators note low interest of parents to the educational level of school where their children study. 63% of administrators note that parent do not take an interest in the achievements of the students of the schools with high academic standards. However it is worth of noting that parents not always have a choice in which school their child would study. Even in those cases when they do, parents do not have information necessary for choosing.

5.2 Answers to the questions of school teachers questionnaire.

Questionnaire for the teachers contained 24 questions related to the information about themselves, their education and opportunities to improve their qualification, attitude towards their job, conditions of work in school and methods they use. 494 teachers of elementary school across the country answered the questions of the questionnaire. Rural schools, schools of small towns and Bishkek schools took part in the survey (all answers to the questions of the questionnaire can be found in the appendix to this report at www.testing.kg).

Schools with Russian, Kyrgyz, Uzbek languages of instruction took place in the survey NSBA-2014, which is why the questionnaire survey has been conducted in Kyrgyz (302 teachers), Russian (143 teachers) and Uzbek languages (49 teachers).

The purpose of the questionnaire survey of the teachers was to explore the influence of pedagogical staff on the level of academic achievements of the students. Questionnaire survey of the teachers was held during students' testing.

Questionnaire included two sections. First section contained questions about the teachers, second section was related to the practice and methods used by the teachers during the classes.

Identity of a teacher

The results of questionnaire analysis show that 96.6 of female-teachers work in the elementary school across the country and 2.2 male-teachers. Most of the men work in the elementary school with Uzbek language of instruction (4.1%) a little less in the schools with Kyrgyz language of instruction (3.5%). The least amount of male teachers work in the elementary schools with Russian language of instruction (1.3%). Such situation remains already many years, noticeable changes of gender staff of elementary school teachers for the last 5 years did not occur.

In the question of the questionnaire about the reasons of the choice of teacher profession, one could mark several options of the answer. Almost all, that is 92.7% of the elementary school teachers, totally agreed that they work because they like to work with children. A little less percentage of elementary school teachers (72.5%) totally agreed with the statement – that teacher's profession is their mission. Other statement caused difficulties for respondents: more than 40% of elementary school teachers did not answer them. More than a half (52.6%) of the teachers totally or practically agreed with the fact that the place where they live in is difficult to find another job, and almost 10% of the elementary school teachers are ready to change profession as soon as they find appropriate job. About 30% of elementary school teachers denied that they work as a teacher due to the financial interest.
Only 16.8% of elementary school teachers named financial interest as a reason of the profession choice. This shows that it is difficult to find a job in the southern part of the Kyrgyz Republic. Answers of the teachers of the schools with Uzbek language of instruction confirm: 26.5% of the teachers consider teacher's profession as their mission; the same amount admitted that it is hard to find another job where they live. 23.2% of the teachers of the schools with Kyrgyz language of instruction concur with them and 12.6% from the schools with Russian language of instruction.
Majority of the elementary school teachers (76.1%) have higher or specialized secondary pedagogical education (18.8%) The rest have either secondary (1.6%) or specialized secondary non-pedagogical (0.8%) or higher non-pedagogical education (0.6%). The majority of the teachers with higher pedagogical education work in the schools with Uzbek language of instruction (85.7%), even though there are more teachers than anywhere else, who do not have appropriate education (6.1% have only secondary education) A little less (77.6%) teachers with higher pedagogical education work in the schools with Russian language of instructions, there are almost now teachers who does not have appropriate education – 1.4% have secondary or secondary non-pedagogical education. 73.8% of teachers who has higher pedagogical education work in the schools with Kyrgyz language of instruction, and 22.2% of teachers with secondary pedagogical education. 2.3% of teachers of Kyrgyz schools do not have appropriate education.

The results of the questionnaire survey of the teachers showed that for the last 5 years average age of the elementary school teacher has changed a little. 66.4% have 15 years of pedagogical experience, among questioned teachers, which is approximately 12.2% less than in 2009 (81.3%). However comparing to 2009, a percentage of teachers who worked from 4 to 15 years (26.5%) has significantly increased. There was 16.8% in 2009. The percentage of teachers, who worked in the elementary school less than 4 years, has significantly increased. 6.5% in comparison to 2009 1.9% of teachers. This means that more young specialists came to elementary school for the last 5 years. The most of young specialists came to the schools with Kyrgyz language of instructions: almost 16% of teachers have less than 7 years of work experience. 11.2% of teachers came to schools with Russian language of instruction. The least percentage of young teachers work in the schools with Uzbek language of instruction.

The following answers have been received to the answer "Do you have an opportunity to improve your qualification?". 90.3% of the teachers of elementary school noted that they can im-

prove their qualification on courses. Other kinds of qualification improvement do not inspire confidence in them: more than a quarter of the elementary school teachers do not connect improvement of their qualification with the self-education and work with methodical section of the school. As to the methodical section, most part of the teachers (74.9% noted that the items of the section have been conducted in their schools frequently enough (once a month). If one considers the answers to this question of the questionnaire within the language of instructions in schools, then the results will be almost the same.

One more reason why elementary school teachers cannot be engage to the improvement of the qualification to the full extent is overload. In comparison to 2009, according to the data of the questionnaire survey, the amount of overloaded teachers increased in the elementary school. Only 63% of them conduct one class, 27.1% conduct 2 primary classes concurrently, other (almost 10%) conduct classes in the secondary school. The same situation was in 2009. The percentage of teachers who have 1-1.5 of workload, was 72.9%, the rest had bigger load. This cannot in any way encourage the improvement of the teaching quality and improvement of teacher qualification. All the more, many young teachers came to the elementary school for the last 5 years.

According to the results of the questionnaire survey, the teachers of the schools with Russian language of instruction have the highest work load: only 29.4% of them answered that they have one class in the elementary school, 57.3% noted that they have 2 primary classes, the rest have classes both in primary and secondary school. 93.9% of the teachers in the schools with Uzbek language of instructions have only 1 class in the elementary school. 74.2% of the teachers in schools with Kyrgyz language of instructions have 1 class, 16.2% - 2 classes in the elementary school.
Overload of the teachers lead to less time for preparation for the classes. Answering the question "How long does it take for you to prepare for the lessons?, some teachers answered in their questionnaires, that they spent less than hour a day, even though the biggest part of the teachers (87.2%) answered that they prepare for the lessons more than an hour a day. More overloaded teachers of schools with Russian language of instruction have more opportunities to prepare for the lessons: only 77.6% of them noted that they spent more than one hour for the lesson preparation.

Not all teachers have open classrooms or study groups by subjects. Only 60.9% of the teachers answered positively to the question whether they have such classes in reading. 67.6% answered that they have open classrooms in Math, less than a half of teachers (44.9%) have additional classes in homeland studies. Despite the fact that according to the new curriculum, starting from 2010, there's only one lesson of homeland studies per week in elementary school.

Answering the question "Do you use additional literature (besides textbook)?" overwhelming majority of the teachers answered "Yes". It is worth of noting that none of the teachers use additional literature on homeland studies classes where encyclopedias and other scientific and educational literature is need so much.

More than 90% of teachers answered positively to the question "Do you use methodical literatures for preparation for the lessons?" this related reading and Math classes; 78.5% noted that they use methodical literatures for preparation for homeland studies classes. This can be partially explained by the insufficient amount of such literature directly for homeland studies. On the other hand, this shows that elementary school teachers insufficiently practice independent improvement of their qualification: 19.8% of elementary school teachers think they do not need to use methodical literature. More than a half do not experience any difficulties of methodical nature neither in reading (68.6%) nor in homeland studies (61.9%). At the same time approximately half of the teachers have difficulties of methodical nature while teaching Math to the fourth-

graders (53.6%). The results of the questionnaire survey showed that teachers experience difficulties with finding necessary methodical literature. Moreover, teachers of schools with Kyrgyz language of instruction experience more significant difficulties with the search of necessary aids (82.5% of the teachers noted that they have difficulties), than the teachers of schools with Russian language of instruction (64.3%). According to the results of the questionnaire survey, there's a particular lack methodical aids on Math in Kyrgyz and Uzbek languages: 67% of the teachers noted that they have difficulties of methodical nature while preparing for the Math lessons.

Teaching practices in classrooms

Answering the questions regarding used methods of teaching, teachers should answer in each question how often they do that (never, sometimes, often).

One can see from the answers, that teachers mostly asked students to read aloud during the classes of reading in the elementary school (87.7%), discuss studied work (88.9%), express own opinion about what they have read (83.2%%) briefly retell the work (75.3%). At the same time only 55.9% of the questioned teachers often motivate students to explain their point of view, 65.4% often stimulate students to ask a teacher or classmates questions about what they have read 40.3% of elementary school teachers often organize the work of students in small groups, 41.7% often discuss works with students, which they have read on their own. Only 46.2% of the teachers often practice notes in special reading exercise-books

At homeland studies classes, according to the answers of the teachers, students mostly answer the questions of the teacher (93.7%) and explain studied material (92.1%) Students can answer questions on their own much rarely (62.1%) or answer questions of each other (65.6%). Detailed (70%) or short (61.7%) retelling of studied paragraph has often been practiced. However, experimenting on the homeland studies occur extremely rare (11.1%) as well as excursions (9.3% of the teachers marked answer "often"), use of additional literature or internet sources on studied material occurs rarely as well (24.9%). The fourth-graders work little in small groups (36.%) and almost never work on independent projects (8.1%) Additional literatures or internet sources on studied material have rarely been recommend to them (20.2%). Less than a half of teachers conduct individual or additional work with students who experience difficulties in learning homeland studies.

Only maps, tables and cards for individual work are often used from the special equipment on the native studies lessons. Devices are never used by 34% of questioned teachers, preparation and dummies – 61.3%, movies and slides – 55.3%, computer educational software and internet are never used almost by 90% of homeland studies teachers.

Mostly students answer teacher's questions (91.5%) during Math and homeland studies classes. (86%) often solve problems and make up expressions. To make up a question to the given condition is asked quite rarely (60.9%), fourth-graders even more rarely can model a situation given in the task by using scheme or a picture (47.8%) even though there are items of such type in the Math textbooks. Also, students work rarely in small groups during Math classes, only 44.9% of the teachers answered that they often organize such work. Only 67.4% of questioned elementary school teachers conduct individual work with the students who have difficulties in learning Math, additional classes – by 54.7% of teachers. The rest of the teachers noted that they never or rarely do that.

Cards for individual work (98%) ruler (97.8%) and tables (96%) are often uses during the Math classes from the set of additional equipment. There are not triangle, pair of compasses, pallet and ready models of geometric shapes in the number of schools at Math classes. Computers are not used (90.7%) almost everywhere.

Answering the questions regarding the evaluation of the fourth-graders, the teachers should mark statements in the questionnaire, which they agree with, agree partially or totally agree.

The analysis of the questionnaires showed that almost all teachers of the elementary school totally (92.5%) or partially (6.1%) agree with the statement that current evaluation is mainly needed

for stimulating students to regularly prepare for the lesson or for informing parents about the student achievements (76.9% totally agree and 17% more agree partially). Only 62.3% of teachers totally agree with the statements that current evaluation is mainly needed for a teacher to build his strategy and tactics of teaching, 25.1 agreed partially.
Teachers focus most on current standards of evaluation while grading the student for the answer (work) (76.1% totally agree and 20.2% partially). Quite often, marks are given on the base of comparison of the answers of the students (62.3% totally agree and 23.1% partially). However, there's a group of teachers who think that it is important to compare achievement (work) of the student in this class with his achievements in previous classes by this subject (71.5% of the teachers totally agree and 20.2% partially).
Answers to the question how non-mark evaluation of the fourth-graders occur, do not give a chance to make any conclusion.
Answering the question: "Who is concerned, most of all, when students get a lot of low marks on the subject?", most of the teachers chose answer: "Parents, in order to strengthen control over their children" (80.8% totally agree and 15.8% partially). A little less teachers (79.8% totally agree and 16.4% partially) think that this is a signal for students to prepare better for the lessons. The least of respondents consider this situation as a signal for the teacher to change his teaching methods (65.4% totally agree and 27.7% partially), even though a teacher should be concerned with the low results of the current evaluation in the first place.
Answering the question, "Which textbooks you use for the work with students?" teachers noted necessary titles of the textbooks from the offered list in the questionnaire, or wrote titles of the textbooks they use, but which are not listed. The analysis of the questionnaires showed that schools with Russian language of instruction and Kyrgyz language of instruction work with completely different textbooks. Schools with Kyrgyz language of instruction almost every use the textbook by Toktomambetova A. Adabiy okuu (93.7%). for reading. Schools with Russian language of instruction - text–book by Golovanova M.V. Goretskiy V.G., Klimanova L.F. Native language (93.7). These textbooks do not comply with united program, they are different by size and selection of the texts for reading. Schools with Russian language of instruction most often work with the textbook by Moro M.I and etc. Mathematics 4 grade (2 volumes) on Math. Schools with Kyrgyz language of instruction – by the textbook by Bekboeva I.B., Ibraeva N.I., Mathematics, 4 grade. Schools with Russian language learn by two textbook in homeland studies classes – ones by the recommended by MES "Homeland studies" by Mambetova Z., other (41.3% by Russian textbook by Pleshakova A.A. and Kryuchkova E.A., "Surrounding world". Schools with Kyrgyz language of instruction use "Homeland studies" textbook by Mambetova Z. Thus, students work by different programs and receive different knowledge on the subject. Besides that, all these textbooks are not always related by continuity with those textbooks which expect students in the secondary school.
Almost all teachers (95.3%) answered positively to the question "Does a library work in your school?". However it is worth of noting, that there are schools in our country (they are 5%) where libraries do not work, which means there are no books for teachers and students. Condition of work of the teachers and conditions of the fourth-graders studying in such schools cannot be considered as satisfying.
There are only textbooks, in most of the cases, in those schools where libraries work. Fiction literature for elementary schools is not everywhere (85%), only 64% of schools have encyclopedias, 67.8% - dictionaries, only 44.1% - scientific literature for the students of elementary school. Which means that necessary conditions for satisfying cognitive demands of the fourth-graders in half of the schools across the country have not been created. This explains low results of students in mastering reading, Math and homeland studies.

The analysis of the questionnaire showed that almost each 5th school lacks for methodical literature for the teachers. Even though it is worth of noting that the situation with the methodical literature for the last 5 years has improved a little. Only 69.2% of the elementary school teachers in

2009 answered that their school libraries have methodical literature. 79.4% of the elementary school teachers in 2014 answered positively to the question on the availability of the methodical literature in their school library.
The most discouraging data we received by having analyzed answers of the elementary school teachers to the question: "How many students are there in your class who use one textbook?". 56.1% of the fourth-graders have one textbook for reading across the country, 15.8% use one textbook for two and 25.7% have one textbook for three and more students. Schools with Kyrgyz language of instruction are provided with the textbooks worst of all (only 46% of students have individual textbooks) best of all – schools with Uzbek language of instruction (85.7%). 67.1% of students in schools with Russian language of instruction have individual textbook.
67.8% of the fourth-graders have individual textbook on Math, 22.3% use one textbook for three or more students. Schools with different languages of instructions are provided with Math textbooks to the same extent. 64.2% of the fourth-graders, in the schools with Kyrgyz language of instruction, have individual textbook and 22.8% uses the same textbook for three or more students. 61.2% of the fourth-graders, in the schools with Uzbek language of instruction, have individual book and 20.4% - one textbook for three or more students. 69.2% of students, in the schools with Russian language of instructions, use their own textbooks and 21.7% have one textbook for three or more of the fourth-graders.

52.6% of students have "Homeland studies" textbook, 16% have one textbook for two, more than 28% - one textbook for three or more students. Schools with Uzbek language of instructions are worst of all provided with this textbooks (only 44.9% have individual textbook and 26.5% one textbook for three or more students). A little more than a half of students, in schools with Kyrgyz and Russian language of instructions, have individual textbooks and almost third of the fourth-graders use one textbook for three or more students. Such state of things affected the educational achievements of students in this subject.

5.2.1 Conclusions based on the analysis of the questionnaires for the teachers of 4th grade

- The teachers of the elementary schools are mostly women who like to work with children (92.7%) and who consider teacher's profession as their mission (72.5%). However, at the same time, more than a half (52.6%) of the primary class teachers marked in their questionnaires that it is hard to find a job in the place where they live.
- Most part of the teachers of primary classes has higher pedagogical or secondary specialized pedagogical education and more than 5 years of work experience. It is gratifying to note that the percentage of young specialists in the elementary school has increased in comparison the 2009 survey: the number of teachers with less than 5 years of the pedagogical work experience has increased almost by 5%, and with 4-15 years – more than by 10%.
- A little more than a half of the teachers (63.2%) who participated in the survey, have only one class in the elementary school. Work load of the rest is significantly higher: almost third of the teachers have 2 primary classes, and some of them have classes in the secondary school. Under such load, teachers do not have enough time neither to prepare for the lessons with the student left behind nor for self-education.
- The teachers of the primary classes mostly marked in their questionnaires that they can improve their qualifications on the courses, when they are free from work at school (90.3%). However it is noticeably harder to improve their qualification during work: 75.7% can do it in subject sections at school and only 71.5% can improve their qualification independently.
- Almost all teachers answered positively to the question whether they use methodical literature to prepare for lessons. But at the same time, 76.5% of them noted that it is difficult for them to find necessary methodical literature. The most difficult to find is the lit-

erature for Math, the least difficult – for Reading. The results of testing show that it is reading which causes most serious problems for the fourth-graders. On the other hand, 19.8% of teachers wrote in their questionnaires that they do not need to use methodical literature.

- Answering the questions regarding the methods of teaching reading, the teachers wrote in the questionnaires that they often apply methods aiming at rote memorization. Their statements that they often discuss the read books in class and offer the students to express their own opinion were not proven by the results of testing: the fourth-graders did very poorly in the items requiring them to make a conclusion based on the read text, to present valid arguments, make generalizations etc., i.e. the activities which are the core of any classroom discussion of expressing one's opinion.
- The same techniques of memorization are most often applied in the lessons on Homeland Studies, too. The most frequent activity (93.4% of cases) is answering the teacher's questions, less frequent (a little over 60% of cases) is posing questions for the teacher or the classmates. 82.6% of teachers noted that they only occasionally conduct field trips (excursions), 78.5% - that they rarely demonstrate lab experiments in classes. The teachers do not use in their lessons the common physics appliances (34.0%) or the models and molds (61.3%), leave alone the Internet and educational computer programs.
- The most frequent activities in the Math lessons are, again, answering the teacher's questions (91.5%), memorizing the rules (72.5%), and solving standard problems. The problems requiring some reasoning skills, for instance, the ability to pose a different question to the data at hand, to find an alternative way of solving problems, or solving problems with redundant or insufficient data are presented in classrooms very rarely or never (see the teachers' answers to the questionnaires in the Appendix at www.testing.kg).
- The answers to the questions regarding formative assessment show that the teachers consider motivating students to do their homework regularly to be the main purpose of the classroom assessment (92.5%). The answer option "for the teacher to know how to adjust own teaching strategies and tactics" was checked by only 66.4% of teachers. The large number of poor marks in class should also, in the teachers' opinion, serve as a signal for the parents to control their children more thoroughly, and for the students to prepare for the lessons better. They do not see this as a signal for them, the teachers, to analyze and adjust own teaching. Marking a student's answer or homework, the teachers often compare his/her success with the existing norms of assessment or with the other students' answers. But fairly often (71.5% of cases) the teachers noted in their questionnaires that they compare a student's answer at a given lesson with his own successes in previous lessons, thus motivating the student to try to improve his/her educational level.
- The analysis of the respondents' answers to the questionnaires showed that the elementary schools experience an acute shortage of textbooks. 52.6 – 65.4% of students have textbooks in different subjects for individual use. A quarter of the students in each class share one textbook among three or more. The problem of textbooks is especially serious in the subject of Reading in the Kyrgyz language schools (46% of students use the textbooks individually) and in the subject of Homeland Studies in the Uzbek language schools (44.9%).
- The teachers indicated the insufficiency of scientific and informational literature for the elementary grade level student in the school libraries. This is especially true for the literature in Kyrgyz language: 33.1% of teachers answered their libraries had such literature in Kyrgyz language, 53.1% - in Uzbek language, and 64.3% - in Russian language. This insufficiency is reflected in the level of the students' academic achievements not only in reading, but in the Homeland Studies and Math, too.

5.3 Students' responses to the questionnaires

After completing the test, each fourth-grade student was asked to fill out a questionnaire which was placed in the end of each test booklet. The total number of students participating in the survey was 5 871. The questionnaire survey, like the test itself, was conducted in three languages: Kyrgyz (3 606 respondents), Russian (1 692 respondents), and Uzbek (573 respondents).

Personal information

Answering the question "Did you go to the kindergarten?" the students were to check one of the offered answer options. The answers indicate that over 70% of the students did not attend kindergartens and did not have any pre-school education. Only 24.4% of the students attended kindergarten for longer than one year. Attending a kindergarten is a powerful factor which impacts the forming of a child's personality, socialization in the group of peers, and intellectual development and prepares a child for receiving school education. That is why the absence of the skills which are usually formed in the kindergarten in the majority of students has influenced negatively the educational level achieved by these students at the moment of graduating from the elementary school.

It is self-evident that families have the highest impact on a child's development. The survey of 2014 introduced for the first time the questions regarding labor migration of parents. Only 62.9% of the students answered that neither of their parents work in a different city (village, country). More often (14.6%) it is the father who is absent in the family; 9.4% of students wrote that both their parents are away. Almost 8% of the students answered that their mothers work in different locations.

Only 71.1% of students live with both parents. 12.7% indicated they lived with the mother, 2.5% - with the father. Approximately every tenth fourth-grader lives with relatives while both parents are absent. For the elementary grade level students, even a short-term absence of one of the parents plays a great role and negatively influences their school achievements.

Learning conditions at home

The next three questions aimed at finding out whether the students have adequate learning conditions in their homes.

Based on the students' answers, the conclusion can be made that, compared to 2009, the learning conditions in students' homes have generally changed for worse. In 2009, 79.1% of students said they had a table at home to do their homework, 54.4% had their own rooms for that. In 2014, only 67% of students wrote that they had a table for doing their homework, and 37.4% - that they had a separate room. The number of computers increased: 37.5% of students have computers at home (compared to 23.3% in 2009), 26.0% have access to Internet (17.1% in 2009).

However, although there is some progress in the implementation of computer technologies in the lives of the fourth-graders, this process goes very slowly. Answering the question regarding different types of activities they do on the computer, 59.8% of students wrote that they never communicate with their friends in different websites, 52.6% - that they never use the computer to find information necessary for their studies in the Internet, and 47.5% never play computer games.

The majority (70.8%) of the fourth-graders noted that they have their own books, but compared to the results of 2009, the portion of useful literature among these books decreased: only 54.2% of students have encyclopedias and other books that help them in their studies (63.4% in 2009).

Simultaneously, the number of students who said that they have less than 10 books at home increased almost twice (57.7% in 2014 against 35.4% in 2009). Only 4.5% of students have more than 100 books at their homes (11.3% in 2009). Thus, over the last five years, the average number of books that would help the students in their learning decreased noticeably.

At the same time, the majority of the households the students live in have vacuum cleaners (60.0%), laundry machines (56.0%), cars (50.5%); half of the students have their own cellular phones. On the one hand, these data indicate the low material level of families. On the other hand, it is clear that over the last five years, parents have grown to pay less attention to acquiring books that would help their children in learning.

The next four questions asked about the attitude of the students' family members to their studies. Answering the question "How often do you discuss your school affairs with anyone from your family?" only 56.7% of students checked the option "every day". This figure was almost the same in 2009. However, the number of parents that never speak with their children about their studies has increased almost twice (12.7% against 71% in 2009).

50.6% of students said that their parents often supervise them doing their homework, 37.0% checked the option "sometimes". Similar situation is tracked with parents' helping their children in their studies: 51.5% help often, 39.1% - sometimes. This means that about half of the parents do find time to control the children's homework or simply to ask about their school life. But a child needs constant interest to his studies and regular help with problems other than daily homework on the part of parents. When parents do not pay attention to their school affairs, children's motivation to learn lowers significantly, and vice versa, a student tends to do much better in school if his/her parents show interest in his/her successes and hardships in learning.
A child becomes even more confident both in studies and in life if his parents watch movies or TV programs with him, read and discuss books together. Unfortunately, only 25.4% of parents do it often, and every fifth fourth-grader never does these things together with parents.

Learning practices
The first part of this section regarded reading habits. It is impossible to overestimate the importance of the ability to read and understand texts. Most of what we learn we learn through reading. Scientists have proven that the earlier a child begins to read, the earlier his intellect develops and the higher intellectual level this child is likely to achieve in future. 58.8% of the students participating in the survey could read before coming to school.

The results of the questionnaire survey in this section were very contradictory. Almost 72% of the fourth-graders claimed that they enjoy reading. But the results also show that the percentage of students who read only when they are told to do so in school rose from 36% in 2009 to 60.9% in 2014. Although more than 80% of students said that reading is one of their favorite activities, less than 70% can read for more than a few minutes. Over 70% of students indicated that they like to discuss with friends what they have read and to exchange books with them, but at the same time, 49.9% state that they read only when it is necessary for school. Only 31.1% of students spend more than one hour a day reading. These data show that there are too few fourth-graders who really enjoy reading and read a lot.
The next question asked about the kinds of texts that the fourth-graders usually read. The results show that the students read literary texts (short stories, fairy-tales) most willingly: 51.7% indicated that they read them every day. This found support in the results of testing which showed that the fourth-graders are better able to work with literary texts than informational ones. Only 26.9% of students answered that they *often choose books that explain something (about sports, different animals, countries, how different things work etc*.). The situation is yet worse with the

children's magazines: 16.2% of students answered that they read them every day, 37.8% never read them.

The next question was about using the school library or any other library. The analysis of the responses showed that 18.7% of students never use the libraries, 16.3% use them several times a year, 9% did not respond to this question. The rest 56% answered that they use libraries once a week or once a month. This percentage, although rather low, still seems a little overestimated, since the responses to the next question showed that a large portion of students cannot read well in the fourth grade.
The ability to read well and understand what was read is of vital importance for a student's educational success in all subjects. The results of the questionnaire survey have shown that every fourth student does not understand most of what he/she reads and has a hard time reading for more than a few minutes; one third of the fourth-graders still read very slowly; only a half of them get good grades in the Reading classes, and on average, six out of forty students (the average number of students in a class) admit that reading is the most difficult subject for them. 11.2% of students answered that they often get bored in reading lessons. The results of the survey fully reflect these questionnaire responses.

Such situation with reading at the moment of graduating elementary school can be described as catastrophic.

The next question dealt with the reading lessons at school. The students were asked to mark to what extent they agree with the offered statements. The analysis of the results showed that for 81.0% of the students, reading lessons are interesting, but only 63.2% understand everything that they learn in these lessons. 17.1% said that they often find it difficult to understand the texts they study in reading classes, and 23.3% encounter many unknown words in these texts. Many students indicated that they cannot ask the teacher for help if they do not understand something.

The next question asked about the ways in which reading skills are being developed during lessons. According to Bloom's taxonomy (1956), it is important to develop all level of cognitive thinking, from knowledge and understanding to evaluation. Thus, the more often teachers ask their students to express their opinions, discuss the read material and bring real-life examples, the more they promote the improvement of their student's higher order thinking skills. The students' responses show that the teachers mostly use the practices aiming at developing the skills of reading and understanding, which are at the lowest level of the cognitive thinking pyramid. In other words, it can be inferred that, like in 2009, most reading lessons repeat the same activities again and again, i.e. the students simply read and retell texts and answer the teacher's questions about what they read. About half of the students said that in the reading classes, they most often read (45.1%) and retell (41.9%) a text. 53.1% of students *often* express their opinions about what they have read; 40.3% *often* discuss the texts in class, and 43.9% discuss the text at home. Mostly (73.2% of cases) the teacher explains unknown words found in the text during the lesson. The conclusion is that, although many students are interested in reading, the lesson routines do not yield them the opportunity to pursue this interest.

The next four questions regarded the lessons on Homeland Studies. This integrated subject embraces the basics of natural sciences. According to the National standard, the students are expected to learn to observe in their environment the phenomena of animated and unanimated nature, make conclusions, express their thoughts and participate in discussions. In other words, it is implied that in this subjects, the students should constantly acquire large amounts of new information and learn to apply the knowledge they receive in school to real life. Consequently, application of interactive teaching methods is very important in this subject.

The students' responses show that in most instances, the teacher simply tells how the acquired knowledge can be applied in real life (63.6%) and then asks the students to work in their workbooks on Homeland Studies (58.5%). Only 42% of students *often* discuss the learnt material in class, only 35.8% *often* conduct experiments under the teacher's supervision, 25.9% *often* work with geographic maps, and only 25.9% said that their teachers recommend them additional literature or internet resources on the material. Like in 2009, only 35.4% of students are *often* asked by their teachers to conduct experiments independently at home. 25.1% said their teachers *often* ask them to bring different material to class to learn about them. 41.7% of students are *often* asked to find additional information on the subject matter independently. Simultaneously, over 60% of the students are *often* asked to complete the tasks in the workbook on Homeland Studies. While doing their homework on the subject, 63.7% of students *often* read and try to memorize the given paragraphs in the textbooks. Even answering the questions after a paragraph is *often* done by a less percentage of students (47.2%).
This means that most often, the teachers simply ask their students to read and retell new material. Mechanical reproduction of information often causes the students to not even try to understand what they read. In order to avoid this, it is important that the teachers check how well the students understand new material. Thus, if the practice of reading and reproducing prevails in classrooms, the students are likely to stay unprepared for real life. However, this is exactly the case: in teaching Homeland Studies, most teachers employ only the methods aiming at developing lower order thinking skills.

The next section of the questionnaire concerned the teaching methods practiced in the lessons on Math. The students' responses to this section imply that the Math lessons, too, often simply repeat themselves. Only 41.5% of students indicated that their teachers *often* ask them to make up Math problems, to compose geometric shapes or perform measurements (39.9%), to discuss the procedure of solving a problem (47.3%). Even such routine Math skill as counting mentally is *often* expected only of 44.4% of students. However, 48.7% of students said that the teacher *often* offers them to ask questions when they do not understand something, and 51.2% said the teacher *often* helps them to complete the tasks which they cannot complete on their own. In other words, the teachers of Math, too, rarely promote the development of higher order thinking skills in their students. As a result, 52.6% of students wrote that they are not comfortable to solve problems on the class blackboard, and only 30.7% say they do not have difficulties understanding the material offered in the Math lessons.

Therefore, the general conclusion can be made that in all subjects (Reading, Homeland Studies, and Math) the teachers give preference to the methods involving explaining the new material to students and rote memorization and reproduction of material on the part of the learners.

Questions about school

The results of the questionnaire survey show that 76.2% of the fourth-graders enjoy going to school, although almost 60% of them admit that they face bad treatment from their classmates or older students.
Answering the question "How much time do you spend each day to do your homework?" the majority of students responded that they spend little time on homework: 32.8% of students chose the answer "20-30 minutes", 26.4% - "40 minutes to 1 hour". 25% of the fourth-graders spend more than one hour to do their homework. 14.8% did not answer this question.

5.3.1 Conclusions from the analysis of questionnaires for the fourth-grade students

- Over 70% of the fourth-graders did not go to kindergarten and did not have any preschool education. The results of testing confirm the significance of this stage for a child's further education.

- The fact that many parents are forced to seek employment far from their homes has a serious negative impact on the educational achievements of elementary grade students. About 40% of students noted in their questionnaires that one or both of their parents work in other countries or cities. *Every tenth child lives with relatives, not his/her own parents.*
- Parent/family involvement is very important for the life and learning of the youngest students. A little more than half of the students answered that their parent supervise their homework. Only 56.7% of the fourth-graders have an opportunity to discuss their school affairs with parents or siblings every day. 12.7% can never or almost never do this (based on the questionnaire responses, every tenth fourth-grader lives with relatives without the parents).
- It should be noted that over the last 5 years, studying conditions of the fourth-graders throughout the country have changed for the worse. In 2014, 12% less students wrote in their questionnaires that they have tables for studying at home, and 22% less students said they had separate rooms (compared to 2009). There was also a decrease in the number of books students can use for learning. The number of computers with access to Internet increased only by 3%, and this did not have a significant impact on the students' level of academic achievements.
- The ability to read well and understand what was read is of vital importance for a student's educational success in all subjects. The results of the questionnaire survey have shown that every fourth student does not understand most of what he/she reads and has a hard time reading for more than a few minutes; one third of the fourth-graders still read very slowly; only a half of them get good grades in the Reading classes, and on average, six out of forty students (the average number of students in a class) admit that reading is the most difficult subject for them. 11.2% of students answered that they often get bored in reading lessons. The results of the survey fully reflect these questionnaire responses.
- The results of the questionnaire survey have also revealed the fact that the fourth-graders read literary texts (short stories, fairy-tales) more often than scientific and informational texts (articles, science magazines for children), because the latter are hard to find in school libraries. The testing results indicate that the students do better in reading and comprehending literary texts than informational ones.
- The students noted in their questionnaires that not all of them (63.7%) understand everything that they learn in the Homeland Studies lessons. The majority of the students want to learn more and seek additional literature on their own. But half of the students say that the teachers rarely conduct demonstration experiments in class or ask the students to conduct experiments themselves, rarely offer class field trips (excursions), and rarely recommend books for independent reading. Most of the times the fourth-graders read and retell paragraphs from the textbooks (while many of them do not have individual textbooks at home), then answer the questions about the paragraph and complete the tasks in the copybooks. The same activities they are being given to do at home. This situation does not motivate them to learn natural sciences and achieve high results.
- Answering the questions regarding Math lessons, only half of the students said that they are not afraid of solving problems on the blackboard in front of the class. The students note that teachers often ask them to memorize the rules in classroom. Discussing the problem solving methods with the teacher, composing geometrical shapes, making up Math problems and equations are very rare activities in Math classes. Certainly, such approach to teaching does not provide sufficient motivation for the students to learn Math.
- Answering the questions about security and comfort in school, the majority of students (over 70%) said that they like going to school and have many friends there. But at the same time, almost 60% of students wrote that they face bad treatment from classmates or older students.

6. General conclusions

The results received in the National Sample-Based Assessment (NSBA) survey of academic achievements of the fourth-grade students of Kyrgyzstani schools in Reading Comprehension, Math, and Homeland Studies allow to make the following general conclusions:

- The students graduating from elementary grades have achieved low results in all three subject domains. More than 60% of the students were not able to achieve the minimal acceptable (basic) level in Reading Comprehension, Math, and Homeland Studies.
- The highest percentage of students who did not achieve the basic level across the country is found in the subject domain of Reading Comprehension. In 2014, there was a slight increase of results compared to the survey round of 2009. The percentage of students in the below basic level decreased by 3.3% and almost returned to the level of 2007.
- The results of the questionnaire survey show that every fourth students does not understand most of what he/she reads and can hardly read for longer than a few minutes. Every third student of the fourth grade still reads very slowly. For six out of forty students (average number of students in a class), the class of Reading is the most difficult one. 11.2% of students have said that they get bored in the Reading classes; the results of testing completely reflect these responses. Since the ability to read and understand texts is the main tool of learning, it is impossible to achieve good results in learning any other school subject without having this ability.
- In Math, the results of the fourth-graders have decreased in 2014 against the level of 2009 and almost returned to the level of 2007 with a slight tendency for declining. Also, a significant decrease (by 13.6%) of the percentage of students in the above basic and advanced levels was noted. About a half of the students did not achieve the minimal acceptable level necessary for further mastering of Math in the middle grade levels.
- The lowest results in the NSBA survey of 2014 across the whole country were achieved in Math: the percentage of students who were not able to achieve the minimal acceptable (basic) level was 66.9% (against 65.3% in Reading Comprehension and 61.7% in Homeland Studies).
- In the subject domain of Homeland Studies, the last round of survey (2014) revealed that the improvement of results which was detected in 2009 was replaced by a tendency (although weaker than in Math) for declining. There was also a decrease of the percentage of students in the levels above basic, where the indicators have returned to those of 2007. The majority of students do not possess basic knowledge in the elementary scientific disciplines which is necessary for continuing their learning of natural sciences in middle school.
- The results of the survey have shown that the students' knowledge in all sections of the Homeland Studies domain (Earth and Space, Physical World, Animated Nature) are fragmentary and base on more or less well memorized separated facts. Throughout all grade levels of elementary school, the students receive disjointed, incoherent knowledge about animated and unanimated nature. Such approach to education does not promote the development of an integral understanding of natural phenomena.
- The students have some theoretical knowledge which they are not able to apply in real life. The school curriculum does not pay enough attention to relating the acquired knowledge to real-life situations.
- The low percentage of completion in items requiring planning, describing, explaining an experiment and predicting its result speaks about a formalistic approach of teachers to the organization and conducting lab experiments.
- In Kyrgyz schools, there is a significant inequality of educational opportunities for elementary grade level students depending on the location and language of instruction of the school. In all subject domains, the highest results were achieved by the students of the schools of Bishkek, and the lowest – by the students of rural schools. The results of the

students of the schools of regional centers and small towns are placed in the middle position. The schools with Russian as the language of instruction have shown highest results, followed by the schools with Kyrgyz (middle) and Uzbek (lowest) as the language of instruction.

- In Reading Comprehension, the above mentioned slight improvement achieved in 2014 across the country covers all school categories, the highest improvement being in the schools of regional centers and small towns.
- In Math and Homeland Studies, the decrease of the results occurred in all school categories; the most significant decrease was detected in the schools of Bishkek.
- In Math and Homeland Studies, the survey of 2014 revealed the most significant decrease of the results in schools with Russian language of instruction, while these schools also showed the highest increase of results in 2009. In Reading Comprehension, the results of 2014 improved in the schools with Kyrgyz and Uzbek languages of instruction, while the results of the Russian language schools remained at the level of 2009.
- Like in 2009, girls achieved higher results than boys across all subject domains and evaluation standards in 2014; the difference is not significant but sustainable.
- Despite the fact that the students of the schools with Uzbek language of instruction have improved their results in 2014, they are still in the last place across the country.
- Many regions demonstrated noticeable improvement of results in Reading Comprehension in levels 1 and 2 compared to 2009. The largest increase of results was detected in Naryn region (15%), city of Osh (15%) and Talas region (14%). A sustainable improvement of results in Reading Comprehension is found in Naryn and Talas regions, where changes for the better took place in 2009, when other regions of the country had a decrease of results. Batken and Issyk-Kul regions have performed on the same level as in 2009. It can also be seen that, despite a slight improvement established in 2014, the results of Osh and Batken region remain very low, with 77% and 78% of students staying in the below basic level accordingly.
- In all regions of Kyrgyzstan except Naryn there was a decrease of results in Math. The largest decrease was found in Osh oblast; in Bishkek, there was the largest decrease of the percentage of students in the above basic and advanced levels, which means that the number of students that go to the middle grade levels armed with good and excellent knowledge decreased almost thrice since 2009.
- The survey revealed an uneven situation in Homeland Studies across the regions of the country. Although there was a general decrease of the results in the country, in some regions the students demonstrated significant decrease of the results, in some – only a slight decrease, and in some regions there was even an improvement of results in levels 1 and 2. The most significant decrease of results occurred in Bishkek, although this category still performs the highest throughout the country. Significant decrease of results was detected in Batken and Issyk-Kul regions, the results of Jalalabat and Osh regions stayed almost unchanged since 2009, and in the city Osh and Naryn region the results have improved noticeably.

Based on the answers to **questionnaires** filled out by **school administrators, teachers and students**, the following conclusions have been made:

- In more than 60% of schools, there is a serious lack of teachers of elementary grades. Besides, a half of elementary schools have teachers who have not been trained for working as elementary level teachers. Thus the elementary schools face serious staff problems which inevitably have a negative impact on the students' level of academic achievements.
- The supply of materials in schools, according to the answers of the school administrators, is also insufficient. Not all of the schools participating in the survey have libraries, many

schools experience shortage of learning materials (textbooks and learning kits for elementary grades), the materials at hand often do not meet quality requirements. The administrators also note that school libraries have a deficit of scientific and informational literature for elementary grades.

- There is a lack of textbooks in elementary schools. According to the answers given by teachers, 52.6 – 65.4% of students have textbooks in different subjects for individual use. A quarter of students in each class share one textbook for three or more students. The lack of textbooks is especially acute in the Reading discipline in Kyrgyz language schools (46% of students use individual textbooks) and in the Homeland Studies disciplines in Uzbek language schools (44.9% of students use textbooks individually).
- 61% to 70% of schools do not have the appliances, molds, mineral samples, lab equipment necessary for the lessons on Homeland Studies. The majority of schools do not have computers or the access to Internet, VCRs and projectors, educational films for elementary grades. Less than 10% of elementary schools have interactive class boards.
- Half of the schools do not have a sufficient amount of methodical literature for teachers, especially in Kyrgyz and Uzbek languages. Russian language schools also have only 65.2% of the required amount of methodical literature. The methodical literature is vitally important today, since the number of teachers who do not have teaching experience or the appropriate training gradually grows.
- The questionnaire survey shows that only 63.2% of teachers who participated in it teach only one class in elementary school. Others have a significantly greater work load: almost one third of the teachers teach two classes, some teachers, on top of that, teach subjects in middle grade levels. Having such a serious work load, the teachers do not have enough time to prepare for the lessons, spend additional time with the underachieving students, or for self-education.
- The teachers' answers show that they raise own qualification, use contemporary books on methodology, apply various teaching strategies in classrooms, conduct additional lessons for the underachieving students in all subjects, and conduct elective study groups. However, the results achieved by the fourth-graders in the survey do not reflect the efficiency of these proclaimed efforts.
- The teachers note in their questionnaires that they use various teaching strategies in the lessons of Reading, Math, and Homeland Studies, including interactive strategies. However, the skills and abilities demonstrated by the students in the test indicate that the strategies actually applied in classrooms are mostly oriented at memorization or following standard procedures. For instance, the low percentage of successful completion of items requiring planning, describing, explaining and predicting the results of simple experiments speaks about the teachers' formalistic approach to organizing and conducting demonstration lab experiments.
- The survey showed that the students are not able to answer the items which require writing down own opinion, making arguments or conclusions. Even a simpler ability to find an idea in a text or copy a sentence from a text was demonstrated by only a small percentage of the fourth-graders.
- Teachers' answers to the questionnaires indicate that they perceive classroom evaluation mostly as an instrument of stimulating the students to prepare for lessons and informing the parents about the educational achievements of their children, but do not use evaluation as a tool for developing and adjusting teaching tactics and strategies.
- Over 75% of the fourth-graders did not go to kindergarten and did not have any preschool education.
- The fact that many parents are forced to seek employment far from their homes has a serious negative impact on the educational achievements of elementary grade students.

About 40% of students noted in their questionnaires that one or both of their parents work in other countries or cities. *Every tenth child lives with relatives, not his/her own parents*.

- The results of the questionnaire survey suggest that most families do not actively participate in the children's life and education. Only about 40% of students answered that their parents pay attention to their homework. Only about a half of the students *often* have an opportunity to discuss their school affairs with parents or siblings. 12.7% never or almost never do that. Schools administrators also pointed out low interest in the educational level of a child's school on the part of the parents.
- It should be noted that over the last five years, learning conditions of the fourth-graders across the country have become noticeably worse. In 2014, 12% less students wrote in their questionnaires that they have tables for studying at home, and 22% less students said they had separate rooms (compared to 2009). There was also a decrease in the number of books students can use for learning. The number of computers with access to Internet increased only by 3%, and this did not have a significant impact on the students' level of academic achievements.
- Answering the questions about security and comfort in school, the majority of students (over 70%) said that they like going to school and have many friends there. But at the same time, almost 60% of students wrote that they face bad treatment from classmates or older students.

Among the *factors influencing students' results*, the following most important ones should be noted:

- Inequality of educational opportunities: the results often depend on the student's dwelling location and language in which he/she is being taught. The highest results were demonstrated in the capital, the lowest – in the rural areas, regional centers and small towns occupy the middle position. Russian language schools have generally higher results than Kyrgyz and Uzbek language schools.
- Lack of teachers: acute shortage of teachers, high percentage of teachers with insufficient qualification, little experience or inadequate professional training.
- Absence of unified requirements for teaching school disciplines, of up-to-date standards and programs (curricula). Lack of learning materials (textbooks and other) for teachers and students in all languages of instruction makes it very difficult to bring the educational process into compliance with the existing national educational standards.
- Overload of teachers which does not allow them to raise own qualification or to meet all the requirements found in the teachers' qualification characteristics.
- Poor supply of learning equipment in schools; absence of lab facilities and equipment, visual aids necessary for efficient teaching of Homeland Studies, Math, Reading and other elementary school subjects.
- Insufficiency and dissimilarity of textbooks, serious deficit of quality textbooks in all languages of instruction.
- Limited access of teachers to contemporary methodical literature or other sources for professional growth.
- Limited access of students to informational resources, especially in rural areas and for students studying in Kyrgyz or Uzbek languages.
- Insufficient application of effective teaching strategies by elementary grade teachers.
- Existence of serious problems with the elementary school student's reading and comprehension skills. These problems will later cause more difficulties in learning at the middle grade level.
- Insufficient attention paid by parents to the problems in their children's education.
- Insufficient educational resources and inadequate learning conditions the students have in their homes.

7. Recommendations

Based on the conclusions of the survey, the following measures can be recommended:

- The systematical approach to the reforms in education should take into account the conclusion of this survey, as well as other surveys conducted in Kyrgyzstan. To analyze and discuss the results of the survey among all interested parties (Government of the KR, Ministry of Education and Science, Parliament, city and rayon departments of education, schools' methodic sections, parents, civil sector etc.)
- To inform the teachers of secondary (middle) grades who will teach current graduates of elementary schools about the results of the NSBA survey conducted in 2014. To plan necessary measures oriented at overcoming the difficulties which will arise inevitably in the course of further schooling of these students in the fifth grade and further on.
- To continue implementation of the updated educational standards oriented at the educational outcomes, which provide for the coherence in the buildup of skills and knowledge applicable in real life and in further education.
- To support the new educational standards with corresponding academic programs, textbooks, learning materials and methodical materials for the teachers.
- To adapt the programs of the professional training of elementary school teachers according to the requirements of contemporary teaching methods. To introduce special departments (Chairs) of teaching methods staffed with trained specialists in the universities and professional schools. To pay serious attention to the pedagogical practice of the future teachers in schools under the specialists' supervision.
- To pay special attention to the various teaching methods which promote students' thinking skills and preparedness for real life in the course of pre-service and in-service teacher training. To provide the teachers with contemporary methodic literature in their specific subjects (in Russian, Kyrgyz, and Uzbek languages).
- To strengthen the efforts to raise the prestige of the teachers' profession using the economic levers, creating decent living conditions for teachers and creating opportunities for satisfying work and professional improvement. To work out a system of contemporary requirements which elementary school teachers must meet. To provide methodical support to those teachers who do not fully meet the set requirements.
- To create a centralized website for the teachers of Kyrgyzstan where important documents such as standards, curricula, programs, textbooks and learning materials, methodic literature, articles and educational survey reports can be published. This website can also contain information about the effective teaching methods and methodologies of formative and summative assessment of students, video records of lessons, online discussions etc. To apply the experience of Kazakhstan in creating the website.
- To regulate the teachers' work load, to encourage the teachers to raise their professional qualification, to provide the school administrations with the possibilities to give incentives to teachers etc.
- To plan and conduct a series of measures aiming at teaching the students to read not only literary but informational texts and to comprehend what they have read, to analyze and make conclusions and inferences, to extract necessary information etc. To employ different methods to achieve this: joint reading followed by discussion in class, reading to complete certain tasks, defining primary and secondary elements in a text, finding necessary information etc. At present, the requirements about the ability to understand informational texts do exist in the approved national standards and programs in all subjects, but neither the textbooks nor the methodical literature contain any materials which would promote the students' learning to work with informational texts.

- To reform the system of formative and summative assessment of students, gradually shifting from the assessment aiming at reprimanding or rewarding the students to the assessment as a way of monitoring students' achievements, identifying problems of teaching, improving the interaction of teachers and students, improving the individual and group work in classrooms etc. The summative assessment should not measure the volume of factual knowledge but the conceptual understanding and the level of necessary skills and abilities.
- To consider the possibility of employing independent organizations to evaluate students' knowledge based on unified criteria (annual and final examinations, achievement evaluations).
- To compile an updated list of learning materials necessary for effective learning in elementary grades (maps, globes, lab equipment, samples of minerals, large triangles, compasses etc.). To seek opportunities to supply the schools with standardized minimal sets of these materials.
- To make efforts to overcome informational isolation in rural areas at least by supplying school libraries with literary, scientific, informational, documental, periodical and educational literature for elementary grade levels, paying the most attention to the schools with Kyrgyz and Uzbek and the language of instruction.

8. Examples of test items in Reading Comprehension. Grade 4

A HUNDRED BUTTONS

Based on the story by L.E. Ulitskaya

A button came off Bakyt's pants. Bakyt picked it up in one hand and, holding his pants up with his other hand, ran home.

– Mommy, – he said. – Sew my button back on, quickly!

Bakyt's Mom is a painter. She was sitting at a table and drawing a picture for a children's book.

– Wait, Bakyt, – Mom said. – I am busy now. Or you can take a thread and a needle and sew it on yourself.

Bakyt took a needle and thread and wanted to sew on the button. He began to pull the thread through the needle, but it was very difficult. He tried and tried for a long time, and finally pulled the thread through the eye of the needle. Then he made a knot at the end of the thread – that was not easy, either.

Then he began to sew. What a trouble! The needle would not go into the button's holes, and it pricked his fingers, and the thread got entangled, too.

Bakyt could not do it.

Mom finished drawing her picture, took the needle and thread and very quickly sewed the button on.

– Oh, Mommy, – asked Bakyt. – Why is it so difficult for me to sew the button on and so easy for you?

– That is because I have done it about a hundred times, Bakyt, so it is easy for me to do.

– So if I sew on a hundred buttons, will it become easy for me, too?

– Of course it will, Bakyt, – said Mom.

Bakyt put his pants on and ran out to the yard.

The next morning it was raining, Mom had to go to work, and Bakyt stayed home alone. He took out a box of buttons, a needle and thread, and began to learn to sew the buttons on.

He sewed the first two buttons on the curtain, then another five – on the table cloth, and the next four – on his sweater.

And each time he was doing a better job. Mom still hadn't come home. Then Bakyt took

her robe and sewed four big green buttons, two red ones and one small brown button on it. He sewed six buttons on Mom's apron and two – on the kitchen towel! And each time it was easier for him to do!
When Mom came home, she laughed very hard when she saw all the buttons sewed on to everything. Then she told Bakyt to carefully rip them off. But late at night, when she was going to bed, she found the last button – right in the middle of her pillow!

QUESTION 1: A HUNDRED BUTTONS
What is the main idea of this text?

A. You shouldn't waste your time
B. Everybody should know how to sew on buttons
C. You should practice a lot to learn something
D. You can learn anything as you grow up

Correct answer: C
***Purpose of the question*:**1.1. To identify an ability to define the main idea of a text.
Skill: Comprehension.
Percentage of correct answers: 40.8%

QUESTION 2: A HUNDRED BUTTONS

Why couldn't Bakyt sew on his button himself?

A. He was in a hurry to go out to the yard
B. He did not have good thread
C. He couldn't find a good button
D. He had never done it before

Correct answer: D.

Purpose of the question:2.2. To identify the ability to explain the character's words and actions. Skill: comprehension
Percentage of correct answers: 63.0%

QUESTION 3: A HUNDRED BUTTONS
Write down one example from the text which shows that sewing on buttons for the first time is a difficult item.

_____
_____

A HUNDRED BUTTONS: EVALUATION GUIDE FOR QUESTION 3
Answer fully accepted
Code 1: The student can find in the text and write out the words describing the difficulties Bakyt had sewing the buttons on;
Or the student explains these difficulties with his own words, but based on the text, for example:

- The needle can prick your fingers;
- He tried to pull the thread through the needle, but it was difficult;

- It was not easy to tie a knot on the thread;
- The needle would not go into the button's holes;

Answer not accepted

Code 0: The student fails to find the necessary information,
Or repeats the question,
Or provides information which is not contained in the text,
Or gives an unclear answer, for example:

- Bakyt could not sew on buttons;
- Bakyt's Mom sewed on his button;
- Bakyt wanted to learn to sew on buttons;
- Bakyt couldn't so anything at first;
- It is always difficult to do something for the first time.

Code 9: No answer

Purpose of the question: 1.2. To identify the ability to find the necessary information in the text. Skill: Comprehension

Percentage of correct answers: 19.2%

QUESTION 4: A HUNDRED BUTTONS

What did Bakyt's Mom mean when she said: " I have done it about a hundred times, so it is easy for me to do"?

A. It is easy to sew on buttons
B. She sewed on one hundred buttons in her life
C. If Bakyt sews on less than a hundred buttons, he won't learn to do it
D. To learn to sew on buttons you need to practice it many times

Correct answer: D

Purpose of the question:2.4. To identify the ability to define the meaning of a word or a phrase based on the context. Skill: Comprehension

Percentage of correct answers: 48.4%

QUESTION 5: A HUNDRED BUTTONS

Which of Bakyt's personal features is **best** described by this text?

A. Playfulness
B. Carefulness
C. Persistence
D. Carelessness

Correct answer: C

Purpose of the question:2.3. To identify the ability to define the character's main features. Skill: Evaluation

Percentage of correct answers: 23.8%

WHY ARE SWEETS BAD FOR YOUR TEETH

Based on the article by D. Ryabov

Why does your body need sugar?

Your every effort – in gym, play, or in class – takes energy. Sugar is one of the products that give energy to your body. After eating something sweet, you feel a burst of

energy and strength. That's why it is good to have a little sweet snack before strong physical or intellectual activities. Besides, sweets are tasty and they brighten up your mood.

Why are sweets bad for your teeth?

Sugar is a food not only for people but also for the bacteria that live in people's mouths and destroy the enamel on teeth. These bacteria "eat" the same things we eat. And sweets like cookies, cakes, and sugar – are their favorite food. Besides, most sweet products are sticky and they live tiny deposits in teeth, where the bacteria like to live and destroy teeth. That is how people get caries. At first, it is a small white, gray, or yellow spot, which then becomes a hole.

What should you do save your teeth healthy?

Eat less sweets. For example, instead of three times a day, eat candies just once a day, or, better yet, every other day. Replace milk chocolate with bitter chocolate: it contains less sugar.

But the most important thing is to brush your teeth after each meal. If you don't have the possibility to brush them, you can chew a gum, it will remove the remains of food. But you shouldn't chew a gum longer than five minutes, or until it loses its taste. Eating an apple will also clean your teeth of little pieces of food. If pieces of food stick between your teeth, use dental floss; but be very careful with toothpicks: they can hurt your gums.

If we compare sweet drinks, cakes, chocolate and marmalade – which product is the worst for your teeth?

The less time a sweet product remains in your mouth, the less harmful it is. When we drink sweet tea or lemonade, we swallow them right away, chocolate also melts quickly, but cakes and marmalade require a lot of chewing, so you keep them in your mouth a little longer, and more pieces stick to your teeth. So from the standpoint of your teeth, cakes and marmalade are most harmful products for your teeth.

QUESTION 1: WHY ARE SWEETS BAD FOR YOUR TEETH

Using the knowledge gained from the text, define which of the products listed below is the most harmful for the teeth.

A. Sweet soda drink
B. Chewing gum
C. Ice-cream
D. A "Snickers" bar

Correct answer: D

***Purpose of the question*:**3.3. To check the ability to connect the content of the text to own knowledge. Skill: Application

Percentage of correct answers: 41.6%

QUESTION 2: WHY ARE SWEETS BAD FOR YOUR TEETH

Find in the text and write down a sentence that explains why marmalade is more harmful than chocolate.

_____

_____

WHY ARE SWEETS BAD FOR YOUR TEETH: Evaluation guide to Question 2

Answer fully accepted

Code 1: the student writes down the sentence: "The less time a sweet product remains in your mouth, the less harmful it is. Chocolate melts quickly, but marmalade we chew for some time, and little pieces stick to our teeth."

Or the student writes this thought with his own words:

- Pieces of marmalade stick to teeth for a long time
- Lemonade we just drink, but marmalade we have to chew

Answer not accepted

Code 0: the students writes down any other sentence or thought not specified in Code 1, for example:

- The less time a sweet product remains in your mouth, the less harmful it is (it is unclear whether the student means chocolate or marmalade)
- Marmalade contains a lot of sugar
- From the standpoint of your teeth, cakes and marmalade are more harmful than chocolate.

Code 9: No answer

Purpose of the question: 1.2. To check the ability to find necessary information in the text. Skill: Comprehension

Percentage of correct answers: 24.4%

QUESTION 3: WHY ARE SWEETS BAD FOR YOUR TEETH

The sweets are bad and at the same time good for your body.
Write down the ways in which the sweets are good for you

_____

_____

WHY ARE SWEETS BAD FOR YOUR TEETH: EVALUATION GUIDE TO QUESTION 3

Answer fully accepted

Code 1: The student's answer mentions the fact that sugar is the source of energy, or the fact that it brightens up your mood, or both:

- After eating sweets, we feel the burst of energy and strength
- We need sweets because every effort takes energy
- Sweets help our brain work

Answer not accepted

Code 0: Any other answer, for example, the student speaks about *when* it is recommended to eat sugar and not *why*: "before gym classes", or says that sweets are tasty:

- Sweets are very tasty
- Sweets are good for our body (not specified how)

Code 9: No answer

Purpose of the question:2.6. To check the ability to systematize the gained information. Skill: Application

Percentage of correct answers: 25.9% учащихся.

QUESTION 4: WHY ARE SWEETS BAD FOR YOUR TEETH

Why is this text divided into four parts, and each part has its own title?

A. It is about four different, unrelated topics
B. It contains four answers to four questions on the same topic
C. So that a reader will see that it is a serious topic
D. Because it was written by four different authors

Correct answer: B

***Purpose of the question*:** 4.2. To check the ability to understand structural characteristics of the text. Skill: Analysis

Percentage of correct answers 25.6%

QUESTION 5: WHY ARE SWEETS BAD FOR YOUR TEETH

A usual day of a school student includes: 1) classes at school; 2) lunch; 3) rest after school; 4) doing homework; 5) cleaning the room; 6) going to sports sections; 7) reading books and magazines; 8) watching TV in the evening.

Right down when is it BEST to eat a chocolate bar so that it brings the most good to your body. Explain your answer.

_____

_____

WHY ARE SWEETS BAD FOR YOUR TEETH: EVALUATION GUIDE TO QUESTION 5

Answer fully accepted

Code 1: A) The student picks one or more of the following answers: 1), 4), 6) and provides an explanation which implies that the chocolate gives energy for those activities.

B) The students answer contains only the numbers of activities and one of them is wrong, but the explanation is correct, for example:

- 1 and 3, because they require a lot of energy
- Before going to sports section, so you don't get too tired

Answer not accepted

Code 0: A) the activities are listed correctly, but there is no explanation or the explanation is incorrect.

B) the explanation is correct but there are no numbers of activities.

C) all activities are listed incorrectly, but the explanation is incorrect

- After breakfast, lunch and dinner
- To have a lot of energy
- Before doing homework
- Going for sports section
- When we drink tea and watch TV
- Before strong physical or intellectual activities (written out of the text but does not contain a concrete answer to the question)

Code 9: No answer

Purpose of the question: 3.3. To check the ability to connect the content of the text to own knowledge. Skill: Application

Percentage of correct answers 5.3%.

QUESTION 6: WHY ARE SWEETS BAD FOR YOUR TEETH

Which one of the genres listed below describes this text?

A. Fairy-tale
B. Story
C. Proverb
D. Article in children's magazine

Correct answer: D

***Purpose of the question*:**4.1. To check the ability to identify types and genres of texts. Skill: Application

Percentage of correct answers 28.7%

EVERYBODY VALUES WHAT THEY HAVE EARNED

Once upon a time there lived an old man with his wife, and they had an only son. One day the old man called his son and said to him:
– Son, you have grown and become a man, it is time for you to learn some trade. You will need it in your life.
The son obeyed his father, and the next day was going to the town, but his mother stopped him and said:
– My son, you are so young, you will have enough work when you grow up. Better spend time with your friends, and when your father asks you in the evening what did you do all day, you tell him that you worked hard and earned one tanga.
Saying so, the mother gave her son a coin. The son listened to his mother, and when in the evening his father asked him about what he did all day, the young man gave him the tanga that his mother gave him in the morning.
The old man took the coin and threw it in the hauz[3]. The young man did not understand why his father did so, but he didn't ask. The next day, the same story happened. The young man was going to town, but his mother stopped him, gave him a coin and sent him to walk with his friends. In the evening, he gave the coin to his father again. And again the father threw it in the hauz.
On the third day, the son said to his mother:
– I think father has found out somehow that I didn't earn the money I have been giving to him. I want to go to town and earn money today.
So the son went to town, where he worked for one man the whole day from morning to evening and earned half a tanga. In the evening, tired, he came to his father and gave him his earned money. The father took the coin and threw it in the hauz. The young man didn't want his earned money to be thrown out, and he jumped into the water in his clothes to get it back. And when he came out with the coin, the father said to him:
– See, my son, how much your earned money means more to you than the money you got for free.

QUESTION 1: EVERYBODY VALUES WHAT THEY HAVE EARNED

Why did the father throw the son's money into water each time?

A. People throw money into water for good luck
B. The son brought home too little money
C. The father wanted to see what his son would do
D. The father didn't want his son to spend his money

Correct answer: C.

Purpose of the question: 2.2. To check the ability to explain a character's actions and words. Skill: Analysis

Percentage of correct answers 54.0%

QUESTION 2: EVERYBODY VALUES WHAT THEY HAVE EARNED

What lesson does this text teach?

A. You should always obey the elders
B. A man cares more about things that he earned
C. Everybody should take care of their parents
D. A man must learn some trade

Correct answer: B.

Purpose of the question: 3.1.To check the ability to find the moral in the text. Skill: Evaluation

Percentage of correct answers 35.6%

[3] Hauz – a small water tank dug in the yard

QUESTION 3: EVERYBODY VALUES WHAT THEY HAVE EARNED
Write down why the son went to work on the third day.

_____

EVERYBODY VALUES WHAT THEY HAVE EARNED: EVALUATION GUIDE TO QUESTION 3

Answer fully accepted

Code 1: the student writes out of the text or explains with his own words that the son understood that his father found out about his deceit:

- I think the father has found out somehow that I didn't earn the money I have been giving to him.
- The father found out that his son didn't earn his money
- Because his father didn't approve that his son brought home money he didn't really earn
- The father understood that his son didn't work
- The son know that his father found out about his cheating

Answer not accepted

Code 0: the student's answer is not based on the text

Or the answer is unclear, for example:

- Because the son decided to earn money himself (it is not clear why he only decided this on the third day)
- The young man was not lazy
- He went to town to make some money
- He wanted to see what his father would do
- He didn't want his father to throw money into water
- He was afraid of his father

Purpose of the question: 2.2. To check the ability to explain a character's actions and words. Skill: Analysis

Percentage of correct answers 33.2%

QUESTION 4: EVERYBODY VALUES WHAT THEY HAVE EARNED
Did mother's actions help her son?
Pick the answer and write down your explanation.

Yes, because_____
No, because_____

EVERYBODY VALUES WHAT THEY HAVE EARNED: EVALUATION GUIDE TO QUESTION 4

Answer fully accepted

Code 1: the student picks "NO" and gives an appropriate explanation based on the text, for example:

- No, because her son had to lie to his father
- No, because her son didn't work
- No, because her son didn't learn anything
- No, because it was not a real work

Answer not accepted

Code 0: the student pick "Yes" or "No" and does not provide explanations,

Or the student gives any explanations to "Yes"

- Yes, because her son was young

Or the student picks both answers and gives explanations to both, for example:

- Yes, because she showed her son that he needs to work, and no, because she gave him a coin

Or the student's answer is unclear or not connected to the text:

- No, because she didn't want him to go

Code 9: No answer.

***Purpose of the question*:** 3.2. To check the ability to find arguments. Skill: Analysis

Percentage of correct answers 18.7%

QUESTION 5: EVERYBODY VALUES WHAT THEY HAVE EARNED

What characteristic best suit the young man's father, based on the text?

A. Unfair
B. Kind
C. Indifferent
D. Wise

Correct answer: D.

Purpose of the question: 2.3. The check the ability to define a character's main features. Skill: Analysis

Percentage of correct answers 41.9%

QUESTION 6: EVERYBODY VALUES WHAT THEY HAVE EARNED

When the father threw the one-tanga coins into water, the son didn't jump in to get them, but when the father threw only half a tanga, the son jumped into water even in his clothes.

Write down why he did so.

_____

EVERYBODY VALUES WHAT THEY HAVE EARNED: EVALUATION GUIDE TO QUESTION 6

Answer fully accepted

Code 1: in his answer, the student implies that the son earned the half-tanga coin

Or that he didn't earn the one-tanga coins:

- His mother gave him the tanga
- He worked for this money
- It was his own money
- He didn't care when he didn't earn the money

Answer not accepted

Code 0: the student gives any other reason, for example:

- He jumped into water because there was money in it
- He wanted to save money for his parents

Code 9: No answer.

Purpose of the question: 2.2. To check the ability to explain a character's actions and words. Skill: Analysis

Percentage of correct answers 53.4%

QUESTION 7: EVERYBODY VALUES WHAT THEY HAVE EARNED

«Once upon a time there lived an old man with his wife, and they had an only son».
For which of the genres listed below is such beginning common?

A. For a short story
B. For a proverb
C. For a folk fairy-tale
D. For a magazine article

Correct answer: C.

Purpose of the question: 4.1. To check the ability to identify the type and genre of the text. Skill: application

Percentage of correct answers 61.9%

QUESTION 8: EVERYBODY VALUES WHAT THEY HAVE EARNED

What does the title of this text mean?

A. Every man has to work
B. A man cares more for the things he had to work for
C. You can't make others work for you
D. If you earn money, you can buy things with it

Correct answer: B.

Purpose of the question: 1.3. To check the ability to work with the title of the text. Skill: Comprehension

Percentage of correct answers 38.9%

NATURE'S TIRELESS WORKERS

Based on the article by T. Nikolaeva

There are so many kinds of earthworms, or so called "rain worms" on our planet - about 1500 different kinds! Most of them live in warm and humid forests. There are about 100 kinds of earthworms on the territory of our country.

Usually, a young earthworm is only a few centimeters long. When it grows up it reaches the length of about 8-15 cm. Some tropical earthworm can reach the length of 2,5-3 m.

Earthworms spend all their lives in the soil, nuzzling deep passages. They come out on the surface only in the night or during heavy rains, when they leave their passages filled with water to find air to breathe.

Earthworms suffer from droughts and high temperatures. An earthworm's passage is a narrow long canal, in hot summers it can be as deep as 1,5 m.

These creatures eat fallen leaves, the remainders of grassy plants and the soil itself. As a result, the soil penetrated with their burrows is loosened, stirred, moisturized and fertilized.

An earthworm processes through his body an amount of soil equal to its body's weight just in one day.

The earthworms accomplish this very useful work all over the planet, and they cannot be replaced by any other animal. A well-known writer and biologist Igor Ivanovich Akimushkin writes in his book "Animal World":

«It is amazing how such a soft-bodied creature nuzzles soil, which is sometimes dry and very hard! It has three ways of accomplishing this hard item. If the soil is loose and mellow, the earthworm drills it like a jackhammer[4]. In its frontal part, the earthworm has a hard gullet that can quickly move ahead. The earthworm strongly beats the soil with the frontal part of its body, working like a hammer. But these strikes harden even the loose soil in front of the earthworm. Then it uses another way: it rips off little pieces of soil with its lips and swallows them. When it's full, it crawls to the surface and discharges the soil. But when it encounters especially dense and dry soil, the earthworm begins to moisturize it with its saliva. When a little piece of soil becomes moist, the earthworm swallows it. Then it moisturizes the soil ahead and swallows it again. And so the earthworm slowly and, we need to say, with great effort prepares its habitation.

During the day, it hides in its burrow with its head turned to the entrance, which is covered with leaves, pine needles or other rubbish. But at dusk it comes alive. It crawls out to the surface almost completely, leaving only its rear end to hold on to the edge of its burrow. And the long front part of its body makes circular motions, raising a little above the ground, and probes everything around. When it feels a fallen tree leave with its lips, it grabs it and takes it to its burrow».

[4] Jackhammer – a mechanism that helps to drill soil

QUESTION 1: NATURE'S TIRELESS WORKERS

Why are these worms sometimes called "rain worms"?

A. They crawl out to the surface during the rain
B. Many worms can be found of the surface before the rain
C. They nuzzle soil actively when it rains
D. They moisturize soil with their saliva, making it wet like the rain

Correct answer: A.
***Purpose of the question*:** 2.1. To check the ability to understand the causes of events. Skill: Comprehension
Percentage of correct answers 34.1%

QUESTION 2: NATURE'S TIRELESS WORKERS

Find in the text and write down the sentence which tells in what parts of Earth most kinds of earthworms live.

_____

НЕУТОМИМЫЕ ТРУЖЕНИКИ ПРИРОДЫ: ОЦЕНКА ОТВЕТА НА ВОПРОС 2
Answer fully accepted
Code 1**:** The student writes the following sentence: "Most of them live in warm and humid forests" or expresses this idea in his own words, for example:

- They like to live where it is warm and humid
- In tropics

Answer not accepted
Code 0: The students writes down any other sentence or gives other information in his own words, for example:

- There are so many earthworms on our planet

Code 9: No answer
***Purpose of the question*:**1.2. To check the ability to find necessary information. Skill: Application
Percentage of correct answers 21.6%

QUESTION 3: NATURE'S TIRELESS WORKERS

The answer to which question **can** be found in this text?

A. What do the earthworms eat?
B. Who is the earthworm's natural enemy?
C. How does the earthworm's breathing work?
D. Can the earthworms feel smells?

Correct answer: A.
***Purpose of the question*:**1.4. To check the ability to determine which information can and cannot be gained from the text. Skill: Application
Percentage of correct answers 36.4%

QUESTION 4: NATURE'S TIRELESS WORKERS
When is the earthworm most active?

A. When it is hungry
B. When it is very hot
C. In the night
D. In the day
Correct answer: C.
Purpose of the question:2.6. To check the ability to systemize the gained information.
Skill: Analysis
Percentage of correct answers 21.1%

QUESTION 5: NATURE'S TIRELESS WORKERS
What can we learn **only from the words of Igor Akimushkin** that were included in the text?

A. Where the earthworms live
B. How the earthworms dig the soil
C. What dangers await the earthworms
D. What is the usual length of an earthworm
Correct answer: B.
Purpose of the question:2.6. To check the ability to systemize the gained information.
Skill: Analysis.
Percentage of correct answers 32.9%

QUESTION 6: NATURE'S TIRELESS WORKERS
Basing of the text, write down the explanation why in especially hot summers the earthworms dig their burrows deeper than usual.

NATURE'S TIRELESS WORKERS: EVELUATION GUIDE TO QUESTION 6
Answer fully accepted
Code 1: The answer reflects the student's understanding that the depth of the earthworm's burrow depends on temperature and humidity of the air. For example, the answer implies that the earthworm hides in it burrow from heat or dryness:
- It is not as hot in the deep
- So that they don't dry out
- The earthworm likes when it's cool
- It is afraid of droughts
- It is afraid of heat

Answer not accepted
Code 0: the students gives any other reasons:
- It prepares for the winter
- The earthworm is afraid of light
- It is easier for the earthworm to dig moist soil than dry soil
- It likes to dig when it's hot

Code 9: No answer
Purpose of the question: 2.5. To check the ability to make inferences based on the gained information. Skill: Synthesis
Percentage of correct answers 24.2%

QUESTION 7: NATURE'S TIRELESS WORKERS

If you noticed many earthworms in your garden, would it be good or bad for the plants? Pick the correct answer and write down why you think so.

It's good because_____

It's bad because_____

NATURE'S TIRELESS WORKERS: EVALUATION GUIDE TO QUESTION 7

Answer fully accepted

Code 1: the student picks "good" and provides an explanation that somehow implies that the earthworms loosen the soil, or fertilize the soil, or moisturize the soil, for example:

- It's good, the soil will not be as hard
- It's good for the plants because they grow better when soil is loose

Answer not accepted

Code 0: the student picks "good" but does not provide an explanation or the explanation is inappropriate, unclear or contradictory. **Or** the student picks "bad" and gives any explanation, for example:

- It's good for the plants (it is unclear if the student understands exactly what is good)
- Bad, the soil becomes moist and loose
- It's bad because they eat the plants

Code 9: No answer

Purpose of the question: 3.3. To check the ability to connect the content of the text to own knowledge about life. Skill: Application

Percentage of correct answers 10.0%

9. Examples of test items in Math. Grade 4

NUMBERS

QUESTION 1: NUMBERS

Write down the number that follows in counting the number 420 099.

Answer: _____

NUMBERS: EVALUATION GUIDE FOR QUESTION 1

Answer fully accepted

Code 1: 420 100

Answer not accepted

Code 0: Other answers

Code 9: No answer

Purpose of the question:1.1. To check understanding of the constructing principle of the row of natural numbers and the principle of positional order of numbers (Conceptual understanding).

Percentage of correct answers 36.4%

QUESTION 2: NUMBERS

How will the number 630 change if in its writing the figures 3 and 0 exchanged places?

A. Increased by 27
B. Decreased by 27
C. Increased by 37
D. Decreased by 37

Correct answer: B.

Purpose of the question: 1.8. To check the ability to solve problems containing comparison of numbers (Problem solving).

Percentage of correct answers 36.6%

QUESTION 3: NUMBERS

Which of the following figures should be written instead of $*$ to make the inequality $3*2 < 315$ correct?

A. 1
B. 2
C. 3
D. 4

Correct answer: A.

Purpose of the question: 1.2. To check the ability to read, write, and compare natural numbers within one million, to present numbers as a sum of items (procedural knowledge).

Percentage of correct answers 43.1%

DIVISION

QUESTION 4: DIVISION

757 575 : 75 =

A. 101
B. 111
C. 1 001
D. 10 101

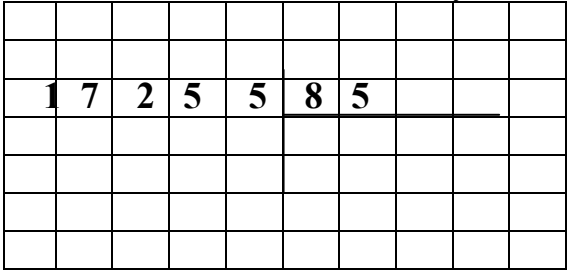
Correct answer D.

Purpose of the question: 1.6. To check the ability to perform multiplication and division by one-digit and two-digit numbers, including division with remainder (Procedural knowledge).

Percentage of correct answers 43.5%

QUESTION 5: DIVISION

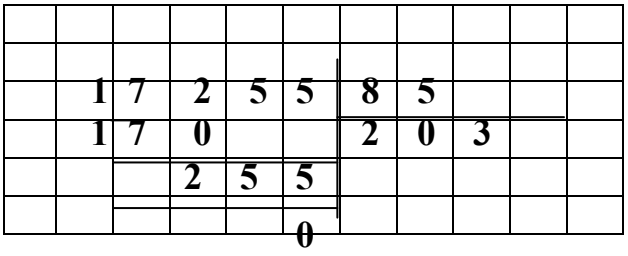
Make the division. Write down your solution on the checkered paper below.



DIVISION: EVALUATION GUIDE FOR QUESTION 5

Answer fully accepted

Code 1: The student writes the correct solution



Answer not accepted

Code 0: The division is performed incorrectly. The result is different.

Or 203. There is no written solution.

Code 9: No aswer.

Purpose of the question:1.6. To check the ability to perform multiplication and division by one-digit and two-digit numbers, including division with remainder (Procedural knowledge).

Percentage of correct answers 34.1%

QUESTION 6: DIVISION

What is the remainder of dividing 715 by 7?

A. 8

B. 5

C. 2

D. 1

Correct answer: D.

Purpose of the question:1.6. To check the ability to perform multiplication and division by one-digit and two-digit numbers, including division with remainder (Procedural knowledge).

Percentage of correct answers 60.8%

QUESTION 7: WHO IS MISTAKEN?
Which of the guys in the picture is mistaken?

A. Talgat
B. Natasha
C. Maxim
D. Bermet

Correct answer C.

Purpose of the question:5.1. To check the ability to analyze information presented in graphic form or in tables and make conclusions (Conceptual understanding).

Percentage of correct answers 44.6%

MASS

QUESTION 8: MASS

Pick the row in which the mass units are written in the correct descending order.

A. gram, kilogram, centner, ton
B. centner, ton, kilogram, gram
C. ton, centner, kilogram, gram
D. kilogram, gram, ton, centner

Correct answer: C.

Purpose of the question: 2.1. To check the knowledge of correlations between the measurement units (Conceptual understanding)

Percentage of correct answers 34.3%

QUESTION 9: MASS

24 300 kg =

A. 243 t
B. 24 t 3 c
C. 24 t 30 c
D. 2 430 c

Correct answer: B.

Purpose of the question: 2.2. To check the ability to compare values, to perform conversion from one measuring units to other, to perform arithmetic actions with named values (Procedural knowledge)

Percentage of correct answers 28.2%

PURCHASING

QUESTION 10: PURCHASING

For 5 kilograms of tangerines, 375 soms was paid.
How much does 1 kilogram of tangerines cost?

Answer: _____ soms

PURCHASING: EVALUATION GUIDE TO QUESTION 10

Answer fully accepted

Code 1: 75 soms

Answer not accepted

Code 0: Other answers.
Code 9:No answer.

Purpose of the question: 2.3. To check the ability to solve problems containing the units of speed, time, distance, price, quantity, value (Problem-solving)

Percentage of correct answers 46.3%

QUESTION 11: PURCHASING

If a piece of curd cheese costs 28 soms, then what maximal number of pieces one could buy for 200 soms?

A. 9
B. 8
C. 7
D. 6

Correct answer C.

Purpose of the question: 2.3. To check the ability to solve problems containing the units of speed, time, distance, price, quantity, value (Problem-solving)

Percentage of correct answers 25.9%

QUESTION 12: PURCHASING

Asel, Bermet and Valya bought the same pens. Asel said that she paid 24 soms for 3 pens. Bermet said she paid 35 soms for 5 pens. And Valya said she paid 56 soms for 8 pens. If one of the girls is mistaken, then how much does one pen cost?

A. 9
B. 8
C. 7
D. 6

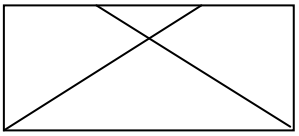
Correct answer: C.

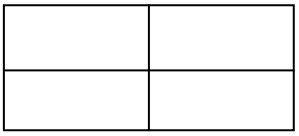
Purpose of the question:2.3. To check the ability to solve problems containing the units of speed, time, distance, price, quantity, value (Problem-solving)

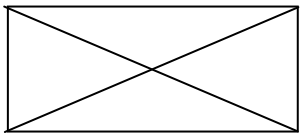
Percentage of correct answers 24.2%

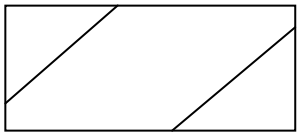
QUESTION 13: GEOMETRIC SHAPES

In which of the following pictures has a rectangle with correct diagonals in it?

(A) 

(B) 

(C) 

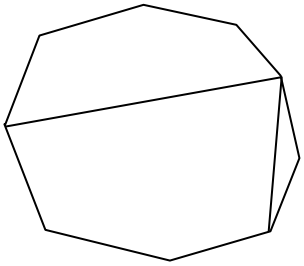
(D) 

Correct answer: (C)

Purpose of the question:4.1. To check the ability to identify basic geometric shapes and their elements (Conceptual understanding).

Percentage of correct answers 56.5%

QUESTION 14: GEOMETRIC SHAPES



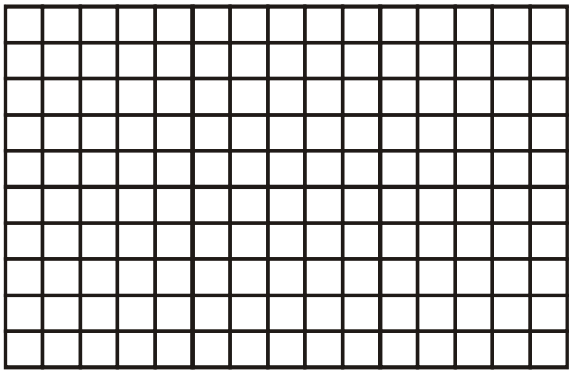
Write down how many pentagons are there in the picture above.

Answer: _____

GEOMETRIC SHAPES: EVALUATION GUIDE TO QUESTION 14
Answer fully accepted
Code 1: 2 .
Answer not accepted
Code 0: Other answers
Code 9: No answer
Purpose of the question:4.1. To check the ability to identify basic geometric shapes and their elements (Conceptual understanding).
Percentage of correct answers 30.2%

QUESTION 15: SQUARE

On the checkered paper below, draw a square with the side length of 3 cm 5 mm (2 checkers = 1 cm).

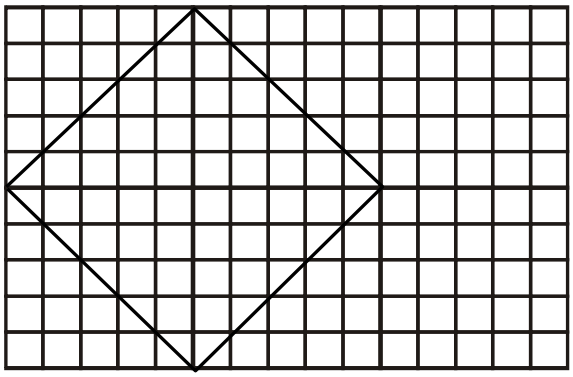


SQUARE: EVALUATION GUIDE TO QUESTION 15

Answer fully accepted

Code 1: The student draws a square with the side length equal or approximately equal to 7 checkers. The inaccuracy of ± 2 mm may arise if the student used a ruler.

Note: The answer is fully accepted, if the square is drawn so that its side to not coincide with the sides of the checkers, but the condition about its side length is met, for example:



Or the student performed all the procedures correctly, but one of the sides of the square is drawn one checker too long or too short (miscalculation in counting checkers).

Answer not accepted

Code 0: Other answers

Code 9: No answer

Purpose of the question:4.3. To check the ability to perform conversion and construction of geometric shapes (problem-solving).

Percentage of correct answers 24.3%

QUESTION 16: EXPRESSIONS

If $b = 2,$ then the value of the expression $28 \cdot b - 16$ equals

A. 74

B. 40

C. 22

D. 12

Correct answer B.

Purpose of the question:3.1. To check the ability to find numeric value of a lettered expression containing one variable (Procedural knowledge).

Percentage of correct answers 53.2%

QUESTION 17: EXPRESSIONS

2 boxes have 12 kilograms of tomatoes in each, and 3 other boxes – 15 kilograms of cucumbers in each.

Which of the following expressions must be used to calculate by how many kilos there are more cucumbers than tomatoes?

A. $12 \cdot 3 - 15 \cdot 2$

B. $15 \cdot 3 + 12 \cdot 2$

C. $12 \cdot 3 + 15 \cdot 2$

D. $15 \cdot 3 - 12 \cdot 2$

Correct answer D.

Purpose of the question: 3.2. To check the ability to construct and write down numeric and lettered expressions and equalities with a given condition (problem-solving).

Percentage of correct answers 21.5%

EQUATIONS

QUESTION 18: EQUATIONS

If $385 : t = 11$, then $t =$

A. 4 235

B. 396

C. 374

D. 35

Correct answer D.

Purpose of the question: 3.3. To check the ability to apply correlations between components of arithmetic actions to solve simple equations (procedural knowledge).

Percentage of correct answers 54.2%

QUESTION 19: EQUATIONS

Solve the equation $7 \cdot y - 80 = 32$.

Write down the solution.

EQUATIONS: EVALUATION GUIDE TO QUESTION 20

Answer fully accepted

Code 1: $y = 16$ or 16. There is a written solution in which both steps of the algorithm are correct, for example:

- $7y = 32 + 80$

$7y = 112$

$y = 112 : 7$

$y = 16$

- $7y = 112$

$y = 16$

- $y = (80 + 32) : 7$

$y = 16$

- $7y = 112$

$y = 112 : 7$

$y = 16$

Check:

$16 \cdot 7 - 80 = 32$

$112 - 80 = 32$

$32 = 32$

Or the student writes down the solution algorithm correctly, but does not complete calculations or makes an arithmetic mistake, for example:

- $7y = 32 + 80$

$7y = 122$

$y = 122 : 7$

$y =$

- $y = (80 + 32) : 7$
- $7y = 32 + 80$

$7y = 112$

$y = 112 : 7$

$y = 106$

Answer not accepted

Code 0: Any answer. There is a solution different than the ones specified in Code 1.

Code 9: No answer

Purpose of the question:3.4. To check the ability to solve equations with complex structure (procedural knowledge).

Percentage of correct answers 20.7%

QUESTION 20: CHAMOMILES

There are two flowerbeds with chamomiles in the school garden. One of the flowerbeds is a rectangle with sides 6m and 4m long, the other is square. The perimeters of both flowerbeds are equal.

If an equal number of chamomiles grows in each square meter in these flowerbeds, then which of the flowerbeds has more chamomiles growing in it?

Support your answer with calculation.

CHAMOMILES: EVALUATION GUIDE TO QUESTION 21

Answer fully accepted

Code 2: The second flowerbed or the square flowerbed. There is a written calculation containing the analysis of the result, for example:

- $P_1 = (6 + 4) \cdot 2 = 20\,\text{m}$

$20 : 4 = 5$ m – side of the square

$S_1 = 6 \cdot 4 = 24$ m^2

$S_2 = 5 \cdot 5 = 25$ m^2

$25 > 24$, then, the second flowerbed has more chamomiles.

- $P_{пр} = 20$ m

$a_{sq} = 5$ m

$S_{re} = 24$ m^2

$S_{sq} = 25$ m^2

By 1 square meter S_{sq} is bigger than S_{re}

Answer partially accepted

Code 1: The second flowerbed or the square flowerbed. There is no written calculation, for example:

- №2

Or there is a calculation without the analysis of the result, for example:

- $P_1 = (6 + 4) \cdot 2 = 20$ m

$P_1 = P_2$

$P_2 = 4a$

$4a = 20$

$a = 5$

$S_1 = 6 \cdot 4 = 24$

$S_2 = 5 \cdot 5 = 25$

Or the answer is “the first flowerbed or the rectangular flowerbed”. The calculation algorithm is written correctly, and the wrong answer is the result of arithmetic mistakes, for example:

- $P_{re} = 20$

$a_{sq} = 5$

$S_{пр} = 6 \cdot 4 = 26$

$S_{кв} = 5 \cdot 5 = 25$

$26 > 25$, then, the first flowerbed.

Answer not accepted

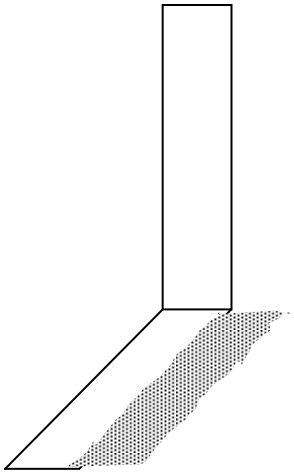
Code 0: Any answer. The calculation is different than ones specified in Codes 2 and 1.

Code 9: No answer

Purpose of the question: 6.1. To check the ability to apply knowledge in real-life situations (problem-solving).

Percentage of correct answers: Code 2 – 0.3%, Code 1 – 2.5%

QUESTION 1: SHADOW FROM THE SUN



On the picture ahead, there is a pillar and a daily shadow of this pillar.

Put a cross on the picture in the place where the Sun is at this moment.

SHADOW FROM THE SUN: EVALUATION GUIDE TO QUESTION 1

Answer fully accepted

Code 1: the cross on the picture is in the upper right part.

Answer not accepted

Code 0: The cross is in any other part of the picture or out of the picture entirely.
Code 9: No answer

Purpose of the question: 1.1. To check the ability to apply knowledge about Sun as the source of life on Earth (Conceptual understanding).

Percentage of correct answers 17.1%

WEATHER CONDITIONS

Questions **2 and 3** refer to the information below:

After a night's rain, there were puddles of water on the asphalt. In the day, the puddles disappeared.

QUESTION 2: WEATHER CONDITIONS

Write down what the weather was like on the day after the rainy night.

_____

ПОГОДНЫЕ УСЛОВИЯ: ОЦЕНКА ОТВЕТА НА ВОПРОС 2

Answer fully accepted

Code 1: The student's answer indicates a dry, warm or windy weather, for example:

- It was hot
- Sunny and dry
- Cloudless
- It was sunny and the wind was blowing

- Windy
- The weather was warm.

Answer not accepted

Code 0: Any other answers
Code 9: No answer

Purpose of the question: 2.1. To check the knowledge of the basic properties of water (practical reasoning).

Percentage of correct answers 30.4%

QUESTION 3: WEATHER CONDITIONS

Write down where the water disappeared during the day.

WEATHER CONDITIONS: EVALUATION GUIDE TO QUESTION 3
Answer fully accepted

Code 1: The answer contains implication of the evaporation process. For example:

- It turned into clouds
- Became vapor
- Into the air (atmosphere)
- It evaporated
- It dried

Answer not accepted

Code 0: Other answers which do not imply evaporation, for example:

- It froze
- It disappeared under the ground
- It went into canalization
- The dogs (birds, insects) drank it

Code 9: No answer

Purpose of the question: 2.1. To check the knowledge of the basic properties of water (practical reasoning).

Percentage of correct answers 27.7%

QUESTION 4: WEATHER CONDITIONS

Which of the following is NOT connected to the weather description?

A. Strength of wind
B. Direction of wind
C. Air temperature
D. Air composition

Correct answer: D.

Purpose of the question : 2.2. To check the ability to apply knowledge about properties and composition of air and its significance for life (practical reasoning).

Percentage of correct answers 23.9%

QUESTION 5: PRECIPITATION

Area	Quantity of precipitation over one year
Tropical forest	150 cm
Jailoo	50 cm
Desert	?

In the table above, the quantity of precipitations over one year in different areas is shown.

How much precipitation was there in the desert over that year?

A. 200 cm
B. 100 cm
C. 50 cm
D. 10 cm

Correct answer: D.

Purpose of the question: 2.7. To check the knowledge about the composition and importance of soil (scientific research).

Percentage of correct answers 30.9%

QUESTION 6: ANIMATE NATURE

Which of the types of human activities listed below has an item of animate nature as object?

A. Coal mining
B. Deforestation
C. Iron smelting
D. Collecting water into reservoirs

Correct answer: B.

Purpose of the question: 3.1. To check the ability to define concrete objects of animate and inanimate nature (practical reasoning).

Percentage of correct answers 23.9%

QUESTION 7: MINERAL RESOURCES

Which of the resources listed below is transported in pipes?

A. Gold
B. Petroleum
C. Silica sand
D. Bauxite

Correct answer: B.

Purpose of the question: 2.4. To check the knowledge of the basic types of mineral resources and their properties (conceptual understanding).

Percentage of correct answers 32.9%

QUESTION 8: APPLIANCES

Compass	
Microscope	
Clock	
Thermometer	

In the above table, write next to the name of each appliance its function or purpose.

APPLIANCES: EVALUATION GUIDE TO QUESTION 8

Answer fully accepted

Code 1: The functions of all appliances are explained correctly as follows:

Compass	Shows sides of horizon (North, South, West, East)
Microscope	Magnifies small objects (to see small objects)
Clock	Shows time
Thermometer	Shows (measures) temperature

Answer not accepted

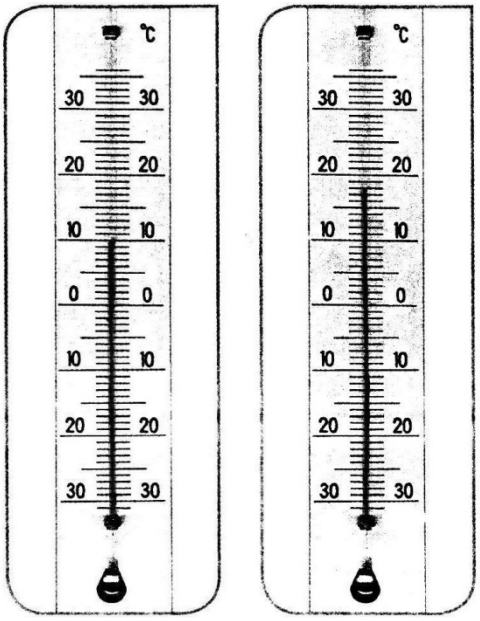
Code 0: The function of any of the appliances is named wrong.

Code 9: No answer

Purpose of the question: 2.8. To check the ability to determine some of the properties of water and air through simple experiments (measuring) (conceptual understanding).

Percentage of correct answers 23.4%

QUESTION 9: WEATHER CONDITIONS



morning afternoon

The above picture shows the readings of a thermometer which was used to measure air temperature in the morning and afternoon on September 20.

How did the air temperature change in the afternoon on September 20?

A. Increased by 8 degrees
B. Decreased by 8 degrees
C. Increased by 18 degrees
D. Decreased by 10 degrees

Correct answer: A.

Purpose of the question: 2.8. To check the ability to determine some of the properties of water and air through simple experiments (measuring) (conceptual understanding).

Percentage of correct answers 26.7%

GROWTH OF PLANTS

QUESTION 10: GROWTH CONDITIONS

A flowerpot with an indoor plant was put in a dark, warm place for several days, where it became pale and its stem became thinner, although it was watered timely.

Write down why such changes occurred with the plant.

GROWTH CONDITIONS: EVALUATION GUIDE TO QUESTION 10

Answer fully accepted

Code 1: The student's answer implies that plants need sunlight (light)

- They need light to grow
- Without light, everything dies
- It grows worse in darkness
- Because there was no light (sun)

Answer not accepted

Code 0: Any other answer

- Darkness is scary
- The plant can't see where it grows to
- It's good to be in the light (unclear answer)

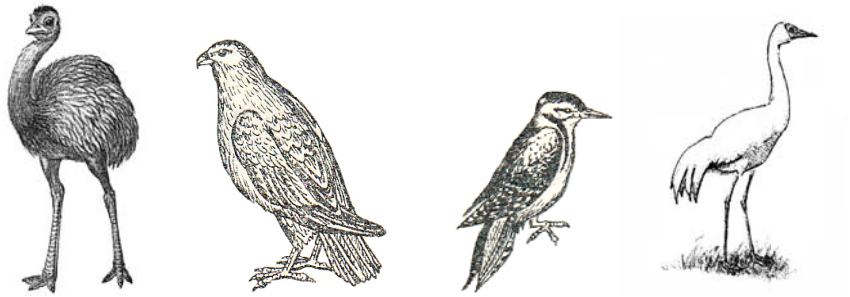
Code 9: No answer

Purpose of the question: 3.2. To check the ability to apply knowledge about plant growth conditions (conceptual understanding).

Percentage of correct answers 46.7%

QUESTION 11: BIRDS

Birds live in different conditions. The organization of their bodies depends on the conditions of the area in which they live.



1 2 3 4

Which one of the birds shown in the pictures 1-4 above lives in a swamp?

A. 1
B. 2
C. 3
D. 4

Correct answer: D.

Purpose of the question: 3.3. To check the ability to establish the correlation between the organization of a body and its environment (practical reasoning).

Percentage of correct answers 54.3%

Question 12 refers to the map of Kyrgyzstan below.

QUESTION 12: MAP OF KYRGYZSTAN

On the above map, define which of the regional centers of Kyrgyzstan is farthest to the West?

A. Naryn
B. Karakol
C. Osh
D. Batken

Correct answer: D.

Purpose of the question: 1.5. To check the knowledge of the sides of horizon and the methods of determining them (practical reasoning).

Percentage of correct answers 26.9%

QUESTION 13: SWAMP ANIMALS

There are many animals that live in swamps and are adapted to living in swamp areas.

The swamps are inhabited by herons, frogs, mosquitoes.

The spring was cold this year, so there were very few mosquitoes in the summer.

Write down how this will affect the quantity of frogs in the swamp this year.

SWAMP ANIMALS: EVALUATION GUIDE TO QUESTION 13

Answer fully accepted

Code 1: The student's answer implies that the quantity of frogs will decrease:

- There will be few of them
- It will be smaller
- There will not be many frogs, they don't have anything to eat
- They will die of hunger

Answer not accepted

Code 0: Any other answer:

- Will not affect
- It won't change
- There will be more frogs

Code 9: No answer

Purpose of the question: 3.4. To check the understanding of the interdependence of living organisms in a natural community (practical reasoning).

Percentage of correct answers 11.6%

QUESTION 14: MIGRANT BIRDS

Some kinds of birds come to our land in spring, and leave for the south in autumn.

Which of the birds listed below flies to the south in autumn?

A. Swallow
B. Crow
C. Sparrow
D. Golden eagle

Correct answer: A.

Purpose of the question: 3.5. To check the ability to explain seasonal changes in the life of animals (conceptual understanding).

Percentage of correct answers 63.4%

QUESTION 15: MOUNTAINOUS PLANTS

In the spring, schoolchildren gathered snowdrop flowers, pulling them entirely out of the soil. The next year there were very few snowdrops. Write down why this happened.

MOUNTAINOUS PLANTS: EVALUATION GUIDE TO QUESTION 15

Answer fully accepted

Code 1: The student's answer implies that the plant cannot grow without its roots:

- There were no roots
- Without the root the plant will not grow
- Because the plants were pulled out entirely, with their roots.

Answer not accepted

Code 0: Any other answer:

- There were no seeds
- The flowers will fade fast
- You shouldn't spoil everything in the mountains
- There will be less bees and other insects

Code 9: No answer

Purpose of the question: 3.8. To check the ability to make conclusions about the importance and practical application of nature in human life (practical reasoning).

Percentage of correct answers 20.4%

QUESTION 16: ORIENTATION

Lake Issyk-Kul is located to the east from the city of Bishkek.

Write down which city on the Issyk-Kul shoreline is the closest for a Bishkek dweller.

ORIENTATION: EVALUATION GUIDE TO QUESTION 16

Answer fully accepted

Code 1: The student gives the answer “Balykchy”.

Answer not accepted

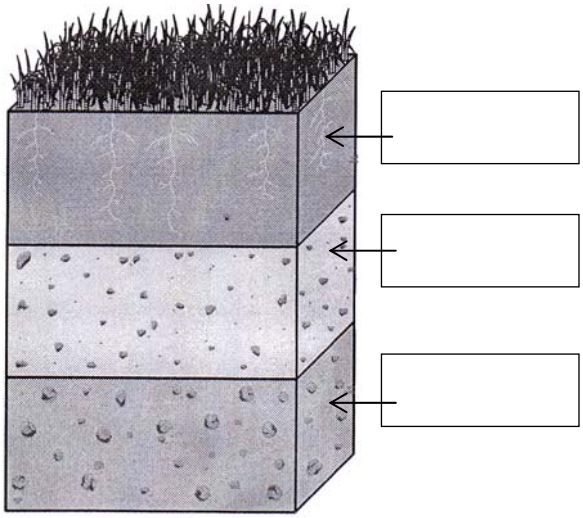
Code 0: Any other answer

Code 9: No answer

Purpose of the question: 1.5. To check the knowledge of the sides of horizon and the methods of determining them (practical reasoning).

Percentage of correct answers 40.2%

QUESTION 17: SOIL



The picture above shows different soil layers. Put a "V" sign in the box pointing at the soil's fertile layer.

SOIL: EVALUATION GUIDE TO QUESTION 17

Answer fully accepted

Code 1: The sign is placed only in the upper box.

Answer not accepted

Code 0: Any other answer
Code 9: No answer

Purpose of the question: 2.7. To check knowledge of the composition and function of soil (practical reasoning).

Percentage of correct answers 34.6%

QUESTION 18: SOIL

Microbes that live in the soil process the debris of plants and minor animals into humus.

Which of the items listed below with these microbes process the fastest of all?

A. A piece of glass
B. An iron nail
C. A piece of wood
D. A piece of plastic

Correct answer: C.

Purpose of the question: 2.7. To check knowledge of the composition and function of soil (practical reasoning).

Percentage of correct answers 39.1%

QUESTION 19: GROWTH OF PLANTS

Schoolchildren conducted three experiments of growing the sprouts of peas in different temperatures.

After a week of growth, they measured the length of the sprouts and wrote it down in the table:

Experiment number	Temperature of environment	Length of sprout
1	1°	5 см
2	15°	
3	25°	15 см

Write in the table what the length of the pea sprout in Experiment 2 could be.

GROWTH OF PLANTS: EVALUATION GUIDE TO QUESTION 19

Answer fully accepted

Code 1: The student writes any number from 6 to 14.

Answer not accepted

Code 0: Any other answer

Code 9: No answer

Purpose of the question: 3.2. To check the ability to apply knowledge about the conditions for plant growth (scientific inquiry).

Percentage of correct answers 40.9%

QUESTION 20: EXPERIMENT WITH WATER

Write down what kind of experiment should be conducted with two identical house plants to prove that plants need water for growth.

EXPERIMENT WITH WATER: EVALUATION GUIDE TO QUESTION 20

Answer fully accepted

Code 1: The student's answer implies that one of the plants should be watered and the other not, which would lead to different development of the initially identical plants:

- Water only one plant
- Only water Plant No. 1
- Only water the second plant
- Water plant 1 and not water plant 2 (or vice versa)
- One of the plant gets no water
- To pour more water for one plant than for the other

Answer not accepted

Code 0: Any other answer:

- No water
- To give them enough water
- Not water the plants for a few days
- Not water both of them

Code 9: No answer

Purpose of the question: 3.2. To check the ability to apply knowledge about the conditions for plant growth (scientific inquiry).

Percentage of correct answers 5.9%

11. Analysis of programs and textbooks that served as basis for developing evaluation standards

The NSBA survey is based on the evaluation standards that were developed specifically for this type of scientific research. The first step in developing these standards for the three subject domain (Reading Comprehension, Math and Homeland Studies) was to define which knowledge, skills and abilities should the students have at the moment of completing elementary school. These requirements to the educational outcome are stipulated in the existing normative documents: educational standards, programs and textbooks recommended by the Ministry of Education and Science of the Kyrgyz Republic for the elementary grades. Since the testing was aimed at measuring the educational achievements of the elementary school graduates of 2014, it was not entirely based on the curricula, which the fourth-graders had not yet completed at the time the testing took place. In order to define the skills and abilities the fourth-graders should possess in every subject domain, the analysis of the educational standards and programs was conducted. A survey was held with the Directors of Studies (zavuches), teachers and students to find out which textbooks and learning materials are being used in elementary grades (in schools with Kyrgyz, Russian, or Uzbek as the language of instruction, located in town or rural areas in different regions of the country). In order to make the content of the test fully according to what was studied by the pupils in school, it was necessary to know exactly what information and in what form did these pupils receive in every topic of every school discipline. This work turned out to be conjugated with a number of obstacles and difficulties.

The first obstacle was the fact that the Kyrgyz Republic does not have educational standards which would stipulate clearly and in detail the basic knowledge, skills and abilities required of a student, describing the development and improvement of each skill or ability from the first year of schooling until the graduate level. If such standards existed, it would be possible to track a student's progress in meeting these standards in each of the grade levels, to find out at any time of schooling what a student should know and be able to do at this point of his learning, and what level of development of a skill should be expected of a student at the moment of graduating elementary school.

The second obstacle was the deficit of textbooks for elementary schools and, as a consequence, the inconsistency of textbooks and academic programs in Reading, Math and Homeland Studies. It turned out that only a part of schools follows the regulations of the Ministry of Education and Science and uses the recommended textbooks. Other schools work with the textbooks that they have, for instance, Russian textbooks.

The third obstacle was the absence of consistency of textbooks for schools with Kyrgyz and Russian languages of instruction. The schools with Russian as the language of instruction often use textbooks in Reading and Homeland Studies which were published in the Russian Federation. These textbooks do not comply with the programs for the elementary grade levels in Kyrgyzstani schools.
Therefore, it was necessary to choose only the themes within each subject which were covered in all schools of the country, and to limit the material for evaluation to that in which all students received sufficient information. Based on these materials, the evaluation standards for the NSBA survey have been worked out.

Reading Comprehension

The basic reading skills are contained in the *National Standards for subject education in the Schools of the Kyrgyz Republic. Bishkek, 2006,* and in the reading program for the elementary schools in Kyrgyzstan – *«Bashtalgych klasstardyn programmasy: Kyrgyz tili, adabii okuu jana*

klastan tyshkarky okuu, matematika, meken taanuu (1-4)" – KBBAnyn "Bilim" basma borboru basmasy, Bishkek, 2013. But none of these documents has these skills presented in a systematic way, they are just listed, sometimes combined in groups.

Moreover, the program does not reflect the gradual, from one grade level to the next, forming and development of each individual skill of reading and comprehending a text. Some of the skills are just repeated in the program for each grade level.

In order to learn in school, a student must not only be able to read and understand literary texts that are being studied in the Reading classes, but possess skills of working with informational texts that he deals with in Math, Homeland Studies, Native language, etc. That's why the tests used in the NSBA survey included items measuring these skills specifically.
Separate skills of working with informational texts are spread over the educational standards and programs in each of the subjects.
So the analysis covered not only the program for Reading, but also the programs for Homeland Studies and Math. Based on the results of this analysis, the evaluation standards had been developed which included the abilities to work with literary and informational texts. These standards were the basis of the NSBA survey in Reading Comprehension.

In Kyrgyzstan, schools with different languages of instruction often work with different textbooks. It was necessary to work out common evaluation criteria for reading and comprehension of the text regardless of the language of instruction, which would be applied to all students participating in the survey. But a program for reading and out-of-class reading, which includes corresponding textbooks, only exists for the schools with Kyrgyz as the language of instruction. Russian Literature in these schools is being taught according to a special second-language program, which also has a corresponding textbook. The program for Reading in schools with Russian as the language of instruction does not exist in Kyrgyzstan, neither do consistent textbooks. Some schools use the textbooks by M. V. Golovanova, V. G. Goretsky, and L. F. Klimanova "Native Speech. Grade 4" (2 parts), others – "Book for Reading" by the same authors, yet others – the textbook by Z. I. Romanovskaya "Live Word. Grade 4" (2 parts). Some schools use all three of these textbooks, while almost all schools with Kyrgyz as the language of instruction use the textbook by A. Toktomambetov "Literary Reading. Grade 4", which corresponds with the academic program and is recommended by the Ministry of Education and Science of KR for the academic year 2013-14.

The textbooks for Reading which are being used in Kyrgyzstan in schools with Russian and Kyrgyz languages of instruction are highly incommensurable. The fourth-graders whose main language is Kyrgyz but who use the textbook by M.V. Golovanova, V. G. Goretsky and L. G. Klimanova "Native Speech" (2 parts) in school classes on Russian language have a hard time understanding a gross number of Old Russian and outdated words and expressions and texts which are not fully age-appropriate and do not arise their interest, which seriously impedes the forming of the necessary reading comprehension skills. These fourth-graders have to deal with such complex concepts as, for instance, "historical memory", or "dimensions of human thought". They are being offered to read memoires about Russian classic authors containing the descriptions of life in Russia in the nineteenth century, which are mostly unfamiliar to them. They have to read many difficult poetry texts of the 19th century.

Less difficulties arise if a school with Russian as the language of instruction uses the textbook by M.V. Golovanova, V. G. Goretsky and L. G. Klimanova "Book for Reading" (2 parts): the texts in this book are shorter and easier to understand, the Old Russian folklore takes up less space, and the texts are better adapted, while more attention is paid to the contemporary literature.

The students of the schools with Kyrgyz as the language of instruction are thus in the most beneficial conditions for forming the skills of reading and comprehending texts. They are usually offered texts appropriate in length and comprehension level: short stories by Kyrgyz writers, Kyrgyz folk tales or the folk tales of other peoples translated into contemporary Kyrgyz language, fairy-tales of different peoples, pieces of world's classic children's literature. Working with a short and comprehensible text, teachers are able to pay more attention to different aspects of reading without having to spend time on explaining the meanings of the old lexica and the historical realities of the past.

But besides the problem of the incommensurability of the reading textbooks in schools with different languages of instruction, there exists a problem of shortage of textbooks. The teachers of elementary grades wrote in their questionnaires that only a half of the students (56.1%) have textbooks for individual use. Very often (in 25.7% cases) three or more fourth-graders share one reading textbook, which is bound to impede the development of their reading and comprehension skills.

Math

The normative document obligatory for implementation, which determines the basic content of the elementary course of Math, the volume of knowledge, skills and abilities to be acquired in every grade level, is the academic program for Math.

The evaluation standards developed by CEATM for evaluating academic achievements of the fourth-graders in Math are based on the academic program for Math for grades 1-4 (compiled by I. B. Bekboev and N. I. Ibraeva), which was approved by the Academic Council of the Kyrgyz Academy of Education and recommended by the Ministry of Education and Science of the Kyrgyz Republic.

The "core" of the elementary school's program for Math consists of the following parts:

1. Numbers and calculations (natural number, arithmetic operations and their properties, numerical expressions, fractions, simple and complex textual arithmetic problems)
2. Quantities and measurements (length, square, mass, speed, time, distance, cost; measurement units and their relationships)
3. Geometric shapes (identifying geometric shapes, development of measuring and drawing skills).
4. Elementary algebra is not included as a separate part of the program; however, the section on Numbers and calculations covers the topic "Elementary alphabetic expressions, their meanings; equations".

The learning material is spread over the grade levels according to age of the students.

The program includes the generic list of minimal Mathematical abilities and knowledge to be mastered by a student by the time of graduating the elementary school. Besides, the program specifies the minimal requirements for the preparedness in Math of the pre-school level children.

The results of the survey disclosed the following:
In elementary grades, most students (69.8% of all students participating in the survey) used the textbook by I. B. Bekboev and N. I. Ibraeva, which was recommended by the Ministry of Education and Science of the KR. 23.7% of the fourth-graders learned Math using the textbook by M. I. Moro, M. A. Bantova, and G. V. Beltyukova.
Other students used the textbooks by I. I. Arginskaya (0.8%), A. G. Peterson (1.4%) or others.

Therefore CEATM based its work on developing the evaluation standards for Math subject domain for the fourth grades on the academic program for Math for grades 1-4 (compiled by I. B. Bekboev and N. I. Ibraeva) and on the first two of the textbooks listed above.
Both textbooks are oriented on mass secondary schools; both comply with the educational standards.
Using the textbook by I. B. Bekboev and N. I. Ibraeva is advantageous because it is succeeded by the textbook by the same authors in the secondary grades.
The textbook by Moro is succeeded in the secondary grades by the textbook by N. Y. Vilenkin and co-authors "Mathematics. Grades 5-6".
The methodological approaches to some of the topics differ in these textbooks. For instance, the textbooks on elementary Math by I. B. Bekboev and N. I. Ibraeva introduce arithmetic operation after the concepts of number and numerical series, while the textbook by Moro presents numbers as results of arithmetic operations. In the latter textbook, the concepts of number and operation are introduced simultaneously.
The textbook by I. B. Bekboev and N. I. Ibraeva places an accent on the preliminary study of geometric notions, the material on Geometry is represented widely and in varied forms. The textbook by M. I. Moro, M. A. Bantova, and G. V. Beltyukova contains significantly less geometric material. The geometric portion of all problems presented for solving in the textbook by I. B. Bekboev and N. I. Ibraeva is almost two times the portion presented in the textbook by M. I. Moro, M. A. Bantova and G. V. Beltyukova.
Both textbooks contain a sufficient amount of problems oriented at forming sustainable skills of oral and written calculation, at perceiving the relationships among the measuring units and operations with quantities, and at applying the correlations between the components of arithmetic operation to solve simple equations.
However, there are differences in the quantity and quality of the problems requiring solving equations of a more complex structure. The textbook by Moro includes only the equations requiring two-step operations: performing arithmetic operations with numbers in the right part of the equation and finding the unknown components of arithmetic operations. The textbook by I. B. Bekboev and N. I. Ibraeva, in its turn, includes also equations that require application of the correlations between the components of arithmetic operations twice. Such equations, though, can be found in the workbook corresponding to the textbook by Moro.
Both textbooks contain sufficient amounts of problems oriented at developing the students' ability to formulate a problem, and problems which a teacher can use to form the skills of comprehensive reading to extract useful information from a text.
The textbook by M. I. Moro pays greater attention to forming the problem-solving skills as a universal learning operation. This textbook often contains problems presented in form of tables. The data contained in the tables usually shows the relationships between different values and quantities. At the same time, working with tables helps the students to acquire an important learning skill of processing non-textual information.
Also, this textbook promotes the ability to build a working model (scheme) of a problem, which forms the ability to analyze the stem of the problem and to identify necessary components.
Generally, all the listed textbooks in Math contain enough items aiming at forming such universal learning operations as logical operations, modeling using symbols, formulating and solving problems.

The evaluation standards are based on the academic program for Math in grades 1-4 (compiled by I. B. Bekboev and N. I. Ibraeva) with consideration of all textbooks used in Kyrgyzstani elementary schools. Test items were developed based on the material of the Math academic program and taking into account the amount of time dedicated to each theme according to the program.

Homeland Studies

The evaluation standards for evaluating academic achievements of the fourth-graders in basic natural sciences and the test items for the NSBA survey were developed according to the following three documents: the National educational standards for subject education in the schools of the Kyrgyz Republic (Bishkek, 2006), the academic program for the Homeland Studies (Bishkek, 2013), and the existing textbooks in this subject.

The National educational standard determines minimal requirement for the level of preparedness of students in the subject "Homeland Studies" in the elementary grades and stipulates three basic parts of natural sciences for teaching: knowledge about nature, about man and about society.

According to these requirements, the academic program for the subject Meken Taanuu (Homeland Studies) for the schools with Kyrgyz as the language of instruction was developed in 1992-93 (author – Z. J. Mambetova), and the program for Homeland Studies for schools with Russian as the language of instruction authored by A. I. Akulova was developed in 1994. These programs were developed based on the assumption that 68 academic hours will be dedicated to the subject in each of the four years of elementary education.

These programs worked until 2010. In the academic year 2010-11, the number of academic hours dedicated to the subject of Homeland Studies was decreased by half (from 68 to 34 academic hours in one year). Consequently, the program was modified cardinally. However, there is no textbook which would comply with the requirements of the new academic program for Homeland Studies, so the teachers have to pick the important material from the previous textbooks by themselves. For instance, the new program dedicates only 7 academic hours to cover the chapter on "The Nature of the Earth Surface". But, according to the previous program, the textbook contains a series of important concepts of natural science within this chapter: soil, air, atmosphere, water, climate, weather, nature protection, the Red Book of Kyrgyzstan. The new program which includes 34 academic hours redistributes the priorities in covering different themes and topics. However, the teachers cannot simply skip part of the material because it is presented in the textbooks in a structured form. There is also acute shortage of even the old textbooks in schools. According to the results of the questionnaire survey conducted among the teachers of elementary schools, only a half of the fourth-graders (52.6%) use the textbook "Homeland Studies" by Z. J. Mambetova individually. Others have to share the textbook for two (16%) or even for three or more students (28.1%). The questionnaire survey also showed that only 28.9% of teachers use this textbook in their work, and only 7.7% use the workbook corresponding to this textbook.

In schools with Russian language of instruction, the most popular textbook is the one authored by A. A. Pleshkov and E. A. Kryuchkova "World around us", published by the Russian printing house "Prosveschenie". According to the questionnaire survey results, 41.3% of elementary schools use this textbook, despite the fact that its contents significantly differ from the contents of the textbook by Z. J. Mambetova and do not comply with the academic program for Homeland Studies approved by the Ministry of Education and Science of the KR.

Certainly, the scientific notions and concepts about the structure of the Solar system, form and structure of Earth, properties of water and air, the origination of wind, the laws of evolution of plants and animals etc. are the same for every system of education. But, given the absence of the unified program requirements and consistent learning materials, each teacher is forced to determine on his own which parts of the curriculum to place accent on and how much time to spend to a certain topic or notion. Under these conditions, it is impossible to fully meet the requirements stipulated in the National educational standard for the subject of Homeland Studies, which is re-

flected accordingly in the results of evaluating the achievements of the fourth-graders in basic natural sciences.

The evaluation standards and test items for basic natural sciences for the NSBA survey were developed on the basis of the programs and textbooks recommended by the Ministry of Education and Science of KR. During the development of evaluation standards, the accent was placed on checking the most vital skills necessary for successful further mastering of the science subjects (Physics, Chemistry, Geography, Biology and Astronomy) in the middle and high grade levels.