The Reading Literacy of Russian Fourth-Graders: Lessons from PIRLS-2016

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Abstract. Among the key concepts of the Progress in International Reading Literacy Study (PIRLS), reading comprehension processes are identified as the most operational, because they can serve as a basis for new teaching practices and new tools to assess academic achievements. The concept of reading processes, which is the focus of this article, has one more advantage: reading processes are defined in the PIRLS terms as universal and good for understanding both literary and informational texts. The PIRLS-2016 test demonstrated that the reading literacy of Russian fourth-graders was far superior to that of their peers from fifty other countries. An item-by-item comparison of Russian fourth-graders' answers to the test questions with the average PIRLS-2016 results proves that Russian primary school graduates can interpret and integrate ideas and information extracted from a text much better than they can retrieve explicitly stated information from the same text. Determining the strongest and relatively weak points in the reading comprehension processes of Russian fourth-graders' is required in order to unleash the educational resources that are not currently used and consequently to improve reading literacy at every stage of education.

Keywords: educational achievements, reading literacy, international study, fourth-graders, PIRLS-2016, reading processes of comprehension.

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1. Why Participate in International Studies?

The first reason as to why international assessments and their findings ought to be analyzed has to do with the low status of psycho-pedagogical sciences in modern Russian education, and reasons for this extending beyond poor funding. A science claiming to study universal patterns cannot be anything but global or international, otherwise

it will be afflicted with provincialism. Consequently, the best educational assessment practices should be analyzed while keeping in mind that what is the best today will go out of date tomorrow. The Progress in International Reading Literacy Study (PIRLS) is recognized by the international expert community as the best measure of reading literacy for 9–11 year olds.

Another reason is a pragmatic one dealing with our ability to apply scientific achievement to daily education practices. PIRLS is an international assessment of reading comprehension processes at the end of the fourth grade year. Every five years since 2001, PIRLS has provided the participant countries with important information allowing the key influencers in education to make informed, purposeful decisions. Such decisions may vary in scale, from the whole country to an individual class, but they definitely shape the future of reading literacy for the rising generation [Harrison 2017].

Why are reading comprehension processes recognized as the key indicator of education system effectiveness? Because the ability to comprehend and apply information extracted from a text is what largely affects both individual and national wellbeing:

- A fifteen-year-old student with a sufficiently high level of reading literacy is more likely to graduate from high school and pursue further education.
- National levels of reading literacy are better predictors of economic growth than other types of academic achievements [OECD 2016].

Why are reading comprehension processes at the end of the fourth grade essential? Because this is when children switch gradually from "learning to read" to "reading to learn" [Leontiev 1999]. In terms of Russian schooling, this means that academic achievements in middle school depend heavily on the reading comprehension processes of elementary school graduates. This is first of all true for learning ability as the most demanded and the least technologized outcome of education. Learning ability is directly relevant to reading literacy, as texts remain a powerful and universal teaching and learning tool even in the post-Gutenberg era. It makes sense therefore to scrutinize and reflect deeply on the PIRLS-2016 data that was disclosed at the end of 2017.[1]

2. Key PIRLS Definitions

The PIRLS definition of reading literacy is extremely loose:

> "Reading literacy is the ability to understand and use written language forms required by society and/or valued by the individual. Readers can construct meaning from texts in a variety of forms.

[1] http://www.centeroko.ru

> They read to learn, to participate in communities of readers in school and everyday life, and for enjoyment." [Mullis, Martin 2015].

Hardly could a definition like this be operational, for it provides no ground for deciding which parameters of the learning environment are crucial for such a valuable outcome. In fact, this definition embraces both aspects of written language competencies: the ability to understand texts and the ability to express one's own thoughts and feelings in writing. However, PIRLS only measures the ability to understand texts.

Reading comprehension processes have the most operationalized definitions in the PIRLS assessment. Four broad processes of comprehension are identified in the theoretical framework:

- Focus on and retrieve explicitly stated information;
- Make straightforward inferences;
- Interpret and integrate ideas and information; and
- Evaluate and critique content and textual elements.

These four reading competencies serve as the basis for the development of items accompanying every reading passage. Each of the competencies will be dwelled on below and supported by samples from the opened version of the PIRLS-2016 database[2].

While analyzing the assessment materials and findings, it is vital to bear in mind that the borders between the reading processes are rather arbitrary. All of them come into play when reading a text, and solving any reading task requires a comprehensive effort from the reader. Retrieving explicitly stated information only seems easier than interpreting and integrating ideas and information. Besides, texts with inherently different levels of difficulty and extents to which they deploy different reading processes impose unequal requirements on the reader.

The PIRLS-2016 assessment consists of 12 reading passages (six literary and six informational) and 175 accompanying questions (items). The texts and items are developed by the joint efforts of experts from every participating country, and the international expert community makes uneasy decisions on which reading process manifests itself the most in answering every particular question.

2.1. Focus on and Retrieve Explicitly Stated Information

Readers vary the attention they give to abundant explicitly stated information in the text. Some of the text's ideas may elicit particular focus and others may not. For example, readers may focus on ideas that confirm or contradict predictions they have made about the text's

[2] All publicly available PIRLS reading passages can be found at http://www.centeroko.ru.

meaning. In addition, readers often need to retrieve information explicitly stated in the text to answer a question they bring to the reading task, shoving everything else aside. Some readers check their developing understanding of the text's meaning or some of its aspects; others do not. Readers also may focus on the text at the word or sentence level to construct meanings, while others will draw on larger blocks of information [Mullis, Martin, 2015].

Every information retrieval strategy has its pros and cons, but every one of them should enable the reader to recognize the answer to the question they bring to the reading task immediately and accurately, almost automatically. Such valuable information may be contained in one or more parts of a reading passage.

The peculiarity of items asking the reader to retrieve explicitly stated information can be illustrated using the example from the passage *Sharks*. The purpose of this text is to provide the reader with diverse information on different types of sharks, their ways of living and their extraordinary sensory organs.

ITEM:
According to the article, what are *three* kinds of animals sharks eat?

What the reader needs to correctly answer this question:

1. The reader needs to scan through the whole reading passage: sharks' eating habits are mentioned a number of times in different parts of the text. However, the information in the second paragraph on the first page is already enough to give at least three examples of sharks' food:

   Some sweep up tiny floating animals and plants with their huge mouths. Some are fast swimmers that catch fish with their sharp, pointed teeth. Others search the coastline for seals, dolphins and seabirds. Many are bottom-dwellers that feed on crabs and shellfish in the ocean.

2. The reader must understand that vague and inaccurate answers are insufficient in general and in particular, in this case. For instance, the answer "Sharks eat animals" to the question "What animals do sharks eat?" cannot be accepted as correct. The answer "Sharks eat lions" is incorrect due to its inaccuracy: the reading passage says, on the last page, that great whites eat sea lions.
3. The text says that even tins of paint and license plates have been occasionally found in stomachs of tiger sharks. However, the reader must understand that these objects should not be named among animals that sharks feed on, even as a joke.
4. Readers must realize that they are not asked about common everyday perceptions, but about what the reading passage Sharks

says. So, the answer "Sharks eat people" will not be accepted because the texts says the opposite: "Sharks reject foods outside their usual diet (e. g. people) after first taking them in their mouth."

5. The reader must develop the habit of reading carefully not only the fragment containing the answer but the question itself, too. In cases where the reader is not used to getting the full and accurate idea of details, they may simply "overlook" the request to give three examples.

It might seem like trifles, but these trifles manifest the ability to find not only answers to test questions but also information to solve one's own problems. Approximate and inaccurate understanding, once evolved into a habit, may become a grave handicap for reading literacy. Skimming and scanning to get the overall idea are not the only reading strategies that nurture reading literacy. Reading slowly and attentively to get as full and comprehensive an idea of the author's "picture of the world" as possible instead of grasping the details that make sense "here and now" is equally indispensable for raising competent readers.

The item described above is of moderate difficulty. Correct answers were provided by 79.8 percent of fourth-graders, as compared to the international average[3] of 67 percent. Meanwhile, 19.8 percent of Russian fourth-graders gave wrong answers, and 0.5 percent gave no answer at all[4], which means that one in five students has not developed even the medium-level capacity to retrieve simple information lying on the surface. Such weakness in a basic reading process can cause difficulties in middle school, where the volume and complexity of text information grow like an avalanche.

The difficulty of questions, which readers answer by focusing on and retrieving explicitly stated information, is determined first of all by the following:

(1) The extent to which the information in the text is (un)familiar;
(2) The size of the fragment that should be recalled or read over to find the answer;
(3) The availability or lack of specific instructions as to which part of the text contains the answer;
(4) The extent to which the item and the answer have identical formulations (the need to make synonymous substitutions increases difficulty); and

[3] From this point on, data is provided for the 50 countries that took part in PIRLS-2016.

[4] The following data was used in analysis: (i) the percentage (%) of students who gave correct answers (full or partial); (ii) the percentage of students who gave incorrect answers; and (iii) the percentage of students who omitted the item.

(5) The reader's habit of looking for confirmation (proof) of their answer in the text.

The lack of a habit of getting back to the text every time some specific information is requested results in two typical problems for inexperienced readers. First, they discriminate poorly between the information communicated in the text and knowledge obtained from personal experience. Second, they are confined to only a rough and inaccurate understanding of any text.

2.2. Make Straightforward Inferences

Any text has "gaps" that skilled readers fill automatically, linking together pieces of explicitly stated information. Restoration of such links, almost obvious but not explicitly stated, is necessary to build a comprehensive understanding of the text. For example, a reader reading about a character's behavior can make an inference about his/her personality. By linking separate units of information with the help of straightforward inferences, readers focus not only on word- or sentence-level meaning but also on the relationship between local meanings and the global meaning of the whole text [Mullis, Martin, 2015].

Reading tasks implying that readers make straightforward inferences based on explicitly stated information have the following characteristics:

(1) The location of the small text fragment containing the answer is indicated directly or indirectly in the item itself;
(2) The answer suggests combining two units of explicitly stated information. It is important that one such unit follows the other in the text;
(3) The logical relationship between these units of information is not verbalized but follows naturally from the context;
(4) Establishing this logical relationship is within the powers of elementary school students both in terms of cognitive difficulty (simplicity) and content: children are asked to make a straightforward inference based on two pieces of information that they know from their own experience.

What has been said above can be illustrated with an item accompanying the reading passage *Flowers on the Roof*. The purpose of this literary text is to let the reader live the experience of living through the development and strengthening of friendly relations and mutual understanding between the narrator boy and an elderly rural woman who has just moved to the city and feels she has been robbed of her familiar life.

ITEM: Find the part of the story by this picture of Granny Gunn. Why did Granny Gunn wink and grin at the little boy?

The inference that the reader should make to answer the question is typical for a reading activity of any level and purpose: the reader is supposed to comprehend the small understatements in the text. In this example, the understatement is located precisely, marked with a picture of Granny Gunn in the margin:

> "Are you upset because all your animals are so far away?" I asked her.
> "I do rather miss them," she sighed.
> "Then why don't you go and fetch them?" I asked.
> Granny Gunn winked at me and gave me a funny grin.
> There was no one at home when I came to visit her the next day. Granny Gunn had taken the bus out into the country.
> That night I woke up to hear a strange cackling sound coming up the stairs. What could it be? Of course! The hens! They must have been too frightened to go in the lift!

The fragment cited above makes it clear that the old woman winked at the boy exactly because his question had given her a good idea that she would bring to life right away. Moreover, the boy made sense of her mimic message and was not surprised to hear cackling in the stairs of their block of flats.

The item implies giving a short written answer. Acceptable responses demonstrate understanding that Granny Gunn winked at the boy because she liked his idea, which she turned into a good plan. For example,

> Because the child gave her a good idea.
> She was thinking yes, I will do that.
> She decided to go get her hens.

This item represents a high level of difficulty, yet not the highest. In Russia, 76.1 percent of fourth-graders gave correct answers, as compared to the international average of 64 percent.

Only 1.3 percent of fourth-graders did not write anything at all, but 22.6 percent responded unacceptably. Why is this?

It is hard to assume that winking and grinning in response to an expressed thought is beyond children's everyday experience. However, understanding of the meaning of these common mimic signs in the context of Flowers on the Roof requires linking what immediately precedes the winking and what immediately follows it: the boy's question, the wink (and Granny Gunn's unverbalized idea), and Granny Gunn's action that this unverbalized idea is put into. Otherwise speaking, the characters' preceding and following actions should be used to reconstruct the meaning of the mimic message, and translate it into words. This task is challenging for a reader of any age, as body language is normally "read" directly, without verbal mediation.

The difficulty of questions, which readers answer by making straightforward inferences based on information explicitly stated in the text, is determined first of all by the following:

(1) The reader's habit of linking together separate pieces of information as well as filling the "gaps" and understanding the understatements that cannot but be present in any text, or the lack of such habit;
(2) The size of the "gap", or logical discontinuity, between the two units of information that the reader is supposed to link independently (in the example above, the gap was rather small; wider gaps can make the task of understanding the text unsolvable for a inexperienced reader);
(3) The reader's ability not only to understand other people's thoughts expressed in written form but also to express one's own thoughts in understandable form in writing; and
(4) The reader's ability to focus on and retrieve explicitly stated information. Obviously, insufficient development of this basic skill makes it difficult for readers to make a straightforward inference from the information contained in the text, simply because they may overlook it. As a consequence, all problems related to information retrieval (see above) also encumber readers' efforts in filling independently the small "gaps" that they inexorably come across in any text.

2.3. Interpret and Integrate Ideas and Information

As readers interpret and integrate, they are attempting to construct a more specific or more complete understanding of the text by integrating personal knowledge and experience with meaning that resides within the text. For example, readers may draw on their experience to infer the underlying motive of a character whose actions are described by the author. Because of this, meaning that is constructed through interpreting and integrating ideas and information is likely to vary significantly among readers, depending upon the experiences and knowledge they bring to the reading task [Mullis, Martin, 2015].

Let us illustrate this with an item accompanying the reading passage Leonardo da Vinci. This text introduces the reader to Leonardo da Vinci as an inventor.

ITEM: Why did Leonardo da Vinci not see most of his inventions being used?
A. He was busy inventing lots of new things.
B. He was a painter as well as an inventor.
C. He died before they were built.
D. He did not allow anyone to build them.

The text describes Leonardo's numerous invention projects but says nothing about his engineering attempts to bring any of his own ideas

to life. The reader may know something or may have no idea that da Vinci was also extremely good at military engineering, civil engineering, and land reclamation.

The choice C is considered correct, if only because the passage contains no clue to plausibility of other options (even though they are not impossible, according to common sense). The reader is expected to be self-disciplined and avoid indulging in fantasies on the artist aspiring to create more and more masterpieces and forgetting to implement the existing ones. Experienced readers are used to drawing on the author's text, looking through possible explanations of the facts stated by the author. Indeed, hints indicating that Leonardo died before any of his ideas was brought to life are scattered around the text:

> Leonardo took all the things that he learned and the ideas that he borrowed from other people and improved them. As a result, most of the drawings in his notebooks looked like totally new ideas. Some of the drawings looked like a vision of a future world—the world we know today. For example, his design for a "flying machine" was done long before any planes or hot-air balloons could be seen in the sky.
>
> Although he was so full of new ideas, Leonardo did not actually build many of the inventions shown in his drawings. One of his notebooks includes a drawing of a person with a parachute. This idea wasn't tested until nearly 300 years later, in 1783, when a Frenchman became the first person to float to earth with a parachute.
>
> Leonardo took all the things that he learned and the ideas that he borrowed from other people and improved item. As a result, most of the drawings in his notebooks looked like totally new ideas. Some of the drawings looked like a vision of a future world—the world we know today. For example, his design for a "flying mashine" was done long before any planes or hot-air balloons could be seen in the sky.

This item belongs to the highest level of difficulty. Seventy-six percent of Russian fourth-graders succeeded in making the generalization necessary to choose the right answer, as compared to the international average of 49 percent.

The difficulty of questions, which readers answer by interpreting and integrating ideas and information, is determined first of all by the following:

(1) The reader's mindset in order to understand the text completely and monitor the completeness and accurateness of their understanding constantly;
(2) The cognitive difficulty of the mental processes required to integrate and interpret messages communicated in the text;

(3) The emotional and personal depth of the narrative that the reader is about to experience aesthetically; and
(4) The reader's ability to focus on and retrieve explicitly stated information from the text and make straightforward inferences based on such information. Clearly, readers with these skills poorly developed will find it hard to interpret and integrate the text's information simply because they cannot retrieve it and/or subject it to simple mental processing. Consequently, all challenges related to information retrieval and primary-stage mental processing (see above) also decrease the reader's ability to gain an in-depth understanding of a text.

2.4. Evaluate and Critique Content and Textual Elements

As readers evaluate the content and elements of a text, the focus shifts from constructing a comprehensive, detailed and profound meaning to critically considering the text itself. Readers engaged in this process step back from a text in order to evaluate and critique it from a personal perspective or with an objective view. This process may require readers to weigh their understanding of the text against their understanding of the world—either rejecting, accepting, or remaining neutral to the text's representation. For example, readers may counter or confirm claims made in the text or make comparisons with ideas and information found in other sources.

In evaluating and critiquing elements of text structure and language, readers draw upon their knowledge of general or genre-specific features of language usage, verbal and nonverbal ways of presenting messages about ideas, feelings, and information.

Readers may reflect on the author's choice of devices for conveying meaning and judge their adequacy. Relying on their understanding of language conventions, readers may recognize advantages and disadvantages of the author's style. Further, readers may evaluate the mode used to impart information, which includes pictures, tables, charts, diagrams, etc.

In evaluating the content and organization of a text, readers draw essentially upon their past reading experience and familiarity with the expressive means of a language. This ability allows readers to judge the completeness, coherence, and clarity of presenting information or events in the text, their credibility, and the power and methods of the author's impact on the reader [Mullis, Martin, 2015].

Let us illustrate what has been said with an example of an item accompanying the text Shiny Straw. The purpose of this reading passage is to enable the reader to compare two characters through a literary experience. The reader has to recognize dramatic human problems behind the convincing characters of two wolves, who are the main characters in this story[5]. One of them, called Blue Wolf, embodies a

[5] A chapter from Daniel Pennac's *The Eye of a Wolf*.

serious and responsible attitude towards life. His sister Shiny Straw is a glorious creature, endowed with many talents, and utterly frivolous. Blue Wolf pays his own freedom as the price of trying to save his sister after a risky escapade.

> ITEM #14. Do you think that Blue Wolf would have been a better title than Shiny Straw?
> Check your choice.
> ☐ Yes ☐ No
> What in the story makes you think so?

The question about the story's name is essentially a question about understanding the fundamental meaning and message of the story. Profound understanding of the story's most important message always rests on two conditions: understanding the author's intention and the reader's attitude towards the story's events, characters, and moral collisions.

There is no one correct answer in response to this item. Or, rather, both versions are acceptable (Shiny Straw is a better name, or Shiny Straw is not a better name) as long as the argumentation demonstrates understanding of the role of Blue Wolf or Shiny Straw in the story from both the author's view and that of the reader.

This is not about giving an ingenious answer, "I like Blue Wolf / Shiny Straw more," but about speculating on what makes these characters central in the story for the reader as well as for the author. These are examples of children's answers that demonstrate both understanding the author's perspective and having their own:

> — No, because the story is about how curiosity can kill, and this is about Shiny Straw.
> — Yes, because the rescue of Shiny Straw by Blue Wolf is the central event in the story.

Each of the answers cited above points at one of the author's crucial emphases in the story while at the same time revealing the reader's interpretation of the story's fundamental meaning. Readers are not expected to discriminate between the author's point of view and their own here.

This item lies within the highest level of difficulty. Fifty percent of Russian fourth-graders were able to indicate both the author's perspective and that of their own, as compared to the international average of 38 percent.

What makes it so difficult? Just like any item implying that readers evaluate and critique content and textual elements, the item about a better name for the story does the following:

- Implies holistic reading comprehension where central and peripheral messages are brought into correlation;
- Requires constantly drawing on the text, not its individual fragments but all of its elements, both content and organization. In this case, the reader needs to be sensitive to the author's emphases that are mostly expressed compositionally;
- Requires having a considerable experience of proving one's point on the meaning of a literary work in writing; and
- Gives the reader more freedom than items of any other difficulty category, as both "Yes" and "No" answers are equally possible. However, freedom may be a challenge unless it is supported with considerable experience of rhetoric and argumentation in the classroom. It is in such situations that individual opinions are valued and thoughts need to be expressed in a way to be understandable and convincing for the readers or audience.

The difficulty of questions, which readers answer by evaluating and critiquing content and textual elements, is determined first of all by the following:

(1) The reader's habit of correlating the author's statement with their own opinion;
(2) The reader's ability to discriminate between the author's point and one's own views as well as use the text to prove that the author meant exactly what the reader engages in a dialogue with;
(3) The reader's attention to formal textual elements and habit of attending to every detail of the form as an essential sense-making unit;
(4) The reader's knowledge of sense-making formal textual elements in both literary and informational texts;
(5) Emotional and cognitive complexity of content elements that carry the text's messages (measured as the gap between the reader's personal experience and the situation described in the text); and
(6) The reader's ability to retrieve explicitly stated information, make straightforward inferences, and interpret and integrate ideas and information. Insufficient development of these reading competencies makes it difficult for readers to feel and make sense of the relationship between the content and textual elements simply because they are unable to find their bearings in the content fully and accurately. As a consequence, all problems related to information retrieval and its primary- and secondary-stage mental processing (see above) also encumber readers' efforts in evaluating and critiquing content and textual elements.

3. Strong and Weak Sides of Russian Fourth-Graders' Reading Processes

PIRLS-2016 involved over 340,000 students from 50 countries and 11 benchmarking entities. The top ten ranked were Russia (581[6]), Singapore (576), Hong Kong (569), Ireland (567), Finland (566), Poland (565), Northern Ireland (565), Norway (559), Taiwan (559), and England (559); the bottom ten were the Emirates (450), Bahrain (446), Qatar (442), Saudi Arabia (430), Iran (428), Oman (418), Kuwait (393), Morocco (358), Egypt (330), and South Africa (320).

Russia was represented by 4,577 elementary school graduates from 206 regular schools in 42 regions[7]. It showed extremely positive results in PIRLS-2016, which undoubtedly indicate the remarkable ability of Russian elementary educators[8] to raise competent readers, at least at the first stage of reading literacy development, when children are learning to read. However, a harsh law applies to any technology, including pedagogy: self-appeasement and cessation of motion soon result in decline. But how does one identify the resources of Russian methods for reading education?

Microanalysis, proposed by Marina Kuznecova, was used to find those resources: Russian fourth-graders' results in every PIRLS item were compared to the international averages [Kuznecova 2009]. The objective difficulty of an item is determined by PIRLS international averages. Relative (Russia-specific) difficulty is determined by the difference between Russian fourth-graders' average results and the average results across all the PIRLS countries. Parts of the test where this difference is positive and particularly noticeable reveal the areas of Russian readers' best achievements and the relevant conditions of teaching reading in elementary school. Conversely, the lowest difference values outline the deficiencies which can be remedied to improve the reading literacy of Russian school students.

Differences between the Russian and international averages (Δ) were calculated for each of the 175 PIRLS-2016 items. In 38 of the items, both full and partial correct answers are accepted[9]. However, this study leaves out partial correct answers because they may yield a low Δ due to the fact that the correct answers of many Russian students were complete. The difference between the Russian and international averages for the 175 items to which full correct answers were provided varies widely, from +32.2 to –5.9[10], the arithmetic mean (μ)

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6 Integral reading literacy scores on a 1,000-point scale.

7 For the list of federal subjects that participated in PIRLS-2016, see [Ministry of Education and Science of the Russian Federation et al. 2016].

8 The word *education* is used in its broadest sense here and includes home, school, and extracurricular learning environments.

9 Maximum score is two points for 32 items and three points for six other items. Partial correct answers are assigned intermediate scores (e. g. one point out of two, two out of three). For a detailed description of qualitative and quantitative assessment of PIRLS answers, see [Martin, Mullis, Hooper 2017].

10 Positive scores show how much Russian results are above the international

Table 1. **The number of items answered with varying degrees of success in the Russian sample** (the same data is given as a percentage of the overall number of items for each reading literacy in parentheses)

Reading literacy	Difference between the Russian and international averages (Δ)				Total
	High Δ > (μ + SD)	Above average (μ + SD) > Δ > SD	Below average SD > Δ > (μ − SD)	Low Δ < (μ − SD)	
Focus on and retrieve explicitly stated information	5 (10)	14 (28)	20 (40)	11 (22)	50(100)
Make straightforward inferences	10 (19)	13 (25)	23 (43)	7 (13)	53(100)
Interpret and integrate ideas and information	11 (23)	23 (49)	8 (17)	5 (11)	47(100)
Evaluate and critique content and textual elements	2 (8)	10 (40)	8 (32)	5 (20)	25(100)
Total	28 (16)	60 (34)	59 (34)	28 (16)	175 (100)

being 13.6, and the standard deviation from the mean (SD) being 7.1. Table 1 breaks down the "difference between the Russian and international averages" by processes of reading comprehension.

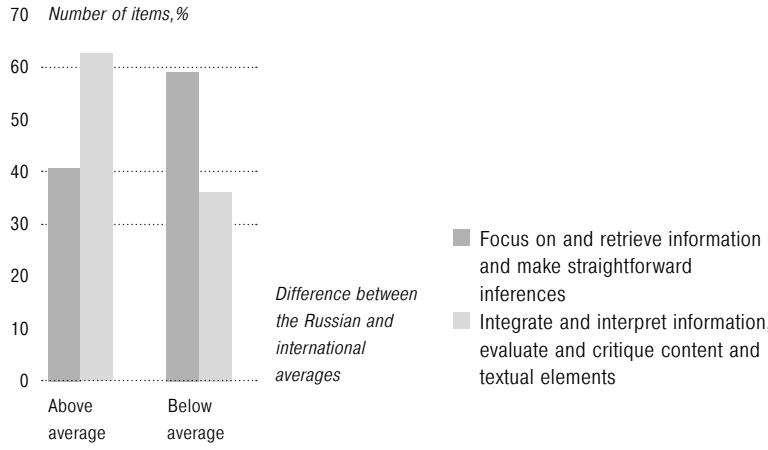
The 28 items that show a high difference between the Russian and international averages (μ + SD) describe the area of ultimate attainment of Russian fourth-graders. They mostly appeal to the reader's ability to interpret and integrate ideas and information (39 percent of the overall number of μ + SD items).

The 28 items that show a low difference between the Russian and international averages (μ – SD) outline the area of relatively weak points of Russian fourth-graders. They mostly appeal to the reader's ability to focus on and retrieve explicitly stated information (39 percent of the overall number of μ—SD items).

Figure 1 presents the same data plotted on a larger scale. First, the indicator "difference between the Russian and international averages" has only two levels here, "above average" and "below average". Second, processes of reading comprehension are merged into

average, and negative ones, how much below. The unit of measurement is the number of students who gave correct answers to the item (% of all students who have any answer).

Figure 1. **Strong and weak points of Russian fourth-graders' reading literacy** (as a percentage of the overall number of items for each category of reading competencies).



two groups, related with primary and secondary stages of information processing:

(1) ability to focus on and retrieve information and make straightforward inferences; and
(2) ability to integrate and interpret information, evaluate and critique content and textual elements.

The data in Figure 1 indicates that Russian fourth-graders are relatively stronger at the secondary stage of information processing and relatively weaker at the primary stage[11]. The same imbalance of reading competencies was observed in PIRLS-2006 [Kuznetsova 2009], but the lessons of this study have not been learned over the last decade. In other words, the foundation of the magnificent building up of Russian fourth-graders' reading literacy has long been showing signs of instability. Could this be the reason for the low reading literacy of 15-year-old Russians that has regularly been documented in the PISA assessment [OECD 2016]?

4. Conclusion

The logic of assessing reading literacy does not and should not coincide with that of developing the competencies required to under-

[11] The chi-square test shows that differences between the two categories of reading competencies are significant at the level of at least 99.9%.

stand a text. Yet, these two logics overlap in formative assessment [Pinskaya, Ulanovskaya 2013]. It is for teachers practicing formative assessment methods that this study is of particular importance, since adequately articulated questionnaire and assessment items improve educational outcomes dramatically [Wiliam et al. 2004].

Comparison of Russia's high results with the international average scores for each PIRLS-2016 item has revealed the area of relatively weak points of Russian fourth-graders: they are worse at focusing on and retrieving explicitly stated information than at interpreting and integrating ideas and information.

To come to grips with this, one should desist from seeing reading processes as a hierarchy where simpler processes form the foundation and the indispensable prerequisite for more complex ones. Rather, the relations among reading processes should be represented as concerted efforts of organs in the body. For instance, vision and digestion are equally intricate and important processes. A chick with good digestion but impaired vision will grow anemic because it can find less food than its siblings. Young readers who interpret ("digest") information brilliantly but retrieve it with negligence have few chances of growing into mature readers capable of learning through texts.

The ability to retrieve explicitly stated information and make straightforward inferences by filling the inevitable "gaps" is not a superstructure over reading speed. This fundamental reading literacy can be developed and even evaluated at stages of education as early as when a child is only able to read a couple of words. Three haiku lines can often be more effective in teaching to read each word carefully than big fat novels or textbooks. For instance, first-graders are asked to draw a picture called "The moon is flying amongst storm clouds, // Tree branches all around // Are still shedding raindrops[12]." Before taking a pencil, they peer into the verbal picture. Everyone will see the night sky, which is barely concealed by the word "moon". Many will spot openings among the clouds, marked by the word "amongst". Only few students will see, not without the teacher's prompt, the wind that carries the storm clouds: it hides behind the word "flying". Several sketches of this kind, and children begin to respond, "This is what the text says... It says that..." to the teacher's questions. This way, the seeds of reading literacy are sown timely and into a fertile ground of activities that are fun and productive. It is a lifelong way to the heights of reading literacy, full of inevitable avalanches and pitfalls where it is not enough to cite a fragment and where critical perception is expected.

Evaluating critically what has been said in this article, the reader might realize, following the authors, that individual difficulties in the development of every reading competency are not fatal. The key is to

[12] Matsuo Bashō.

overcome the lack of teaching methods that could improve the reading literacy of Russian students at all stages of school education.

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