The Comparison of PISA Survey Results of Slovakia and Hungary

Klára Kázmér

Faculty of Central European Studies, Constantine the Philosopher University in Nitra, Nitra, Slovakia

klari.kazmer@gmail.com

The Programme for International Student Assessment or in other words the PISA is a survey measuring the skills of fifteen years old students of the participating countries. The students are tested in three areas of literacy: reading, mathematical and scientific. This assessment was first carried out in 2000. This survey provides some important knowledge not just about the participants' skills in reading different types of texts but also gives information about factors connected with students' literacy proficiency, family and gender background, effects of characteristics of schools associated with learning success, e.g. organisation of learning. The PISA also gives an opportunity to the countries to compare their results with other countries' performances in order to get some information, e.g. to discover the reasons of weaknesses and strengths of the given countries (OECD, 2004). In the following, firstly we describe the methodology and types of tasks used to determine reading proficiency levels of fifteen years old students, then we characterize the scale used to define the individuals' performance, after these information, we compare the results of students of Slovakia and Hungary and in the last part we present possible factors influencing students' performance in PISA survey.

The methodology and types of tasks used in PISA surveys

The readers can react to the read texts in different ways. According to PISA the concept of reading comprehension can be described through three dimensions: *texts* (the range and the format of the reading material), *aspects* (the type of reading tasks) and *situations* (the scale of contexts for which the text was created). The *text* refers to the type of read material. Based on PISA we can distinguish the following text classifications:

- *Text format* refers to the continuity of the text. Based on the text format the texts can be continuous, non-continuous, mixed or multiple. *Continuous texts* consist of sentences which are organised into paragraphs, e.g. novels, newspaper reports. *Non-continuous texts* are constructed out of a number of lists, e.g. forms, tables, schedules). *Mixed texts* include characteristics of both continuous and non-continuous forms and they are often found in web pages and magazines. *Multiple texts* contain parts which are juxtaposed for a given purpose.
- The term *text type* refers to a range of texts which represent different types of reading. Text types have been classified into six categories:
- *Description*, e.g. blog, diary, process in a technical manual
- *Narration*, e.g. comic, novel, newspaper report
- *Exposition*, e.g. entry into online encyclopaedia, essay
- *Argumentation*, e.g. online forum posts, letter to the editor
- *Instruction*, e.g. recipe
- *Transaction*, e.g. text message arranging meeting, personal letter sharing news
- *Medium* is the form through texts are presented: printed texts or digital texts.
- *Environment* refers only to digital texts. PISA has distinguished two types of environment: an *authored environment* and a *message-based environment*. In an authored environment the content cannot be modified, e.g. web page. While in a message-based environment the reader has a chance to modify the text, e.g. blog, e-mail.

Aspects are cognitive skills used by readers when they are processing texts. We distinguish five aspects:
- *Retrieving information*
- *Forming a broad understanding*
- *Developing an interpretation*
- *Reflecting on and evaluating the content of a text*
- *Reflecting on and evaluating the form of a text*

Situations are concerned with the contexts and purposes for which the text was composed. Pisa has identified four situations in reading:
- *Personal*, e.g. diary-style blogs, letters
- *Public*, e.g. website news, public notices
- *Occupational*, e.g. job advertisements online or in newspapers
- *Educational*, e.g. interactive learning software, text books.

These four categories can overlap each other. E.g. the purpose of a text might be both for personal and educational interest (Thomson, Hillman & Bortoli 2013:8-10). PISA tests measuring reading literacy include several types of tasks of item response format:
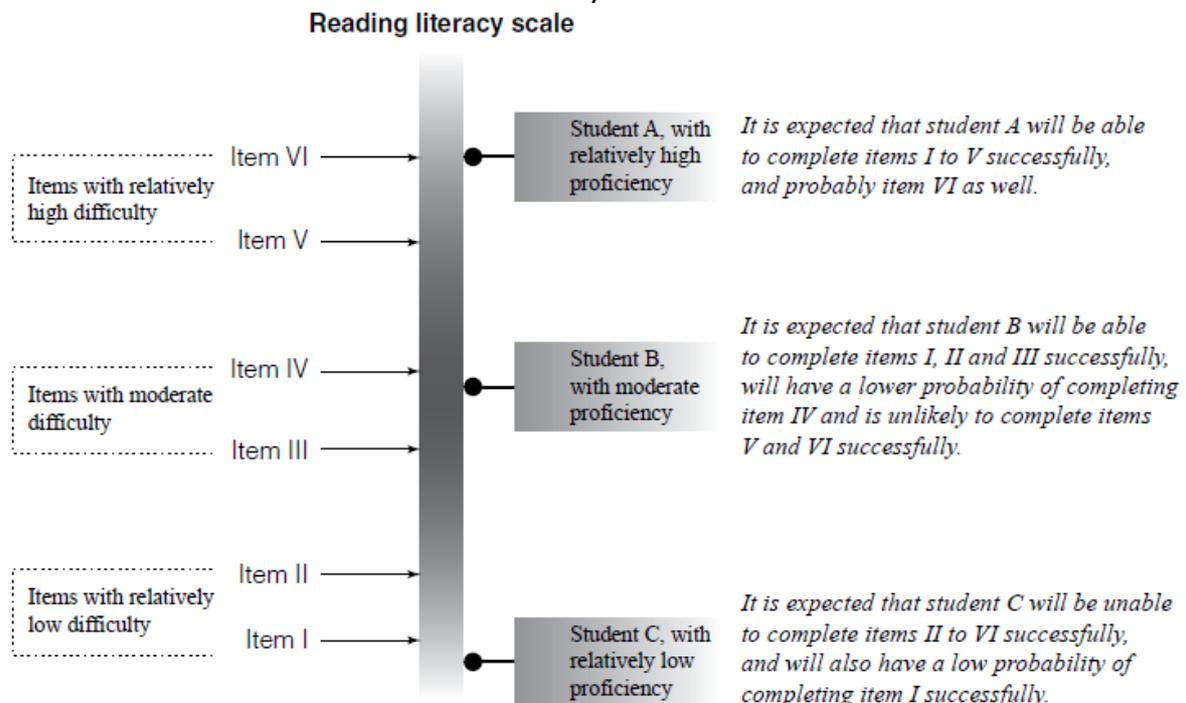- *Multiple choice items* where the readers have to choose one correct answer from four or five options
- *Complex multiple choice items* in which students are asked to choose one correct response to each of a number of questions or statements
- *Close constructed-response items* where students have to write down their own answers with a limited scale of acceptable answers

- *Short response items* are similar to closed constructed-response items but with a wider range of answers
- *Open constructed-response items* in which the readers have to write down a short explanation as a response to a question (Thomson, Hillman & Bortoli 2013:10).

The reading literacy scale

Pisa has created a reading literary scale which sums up students' performance through several aspects of reading. To evaluate the students' performance from reading literacy PISA uses a scale based on Item Response Theory. In that scale, the reading literacy items are ranked by difficulty and they are connected to the students' proficiency. Using this scale, it is possible to define the position of individuals and to determine the degree of their reading comprehension skills. The connection between students and the items on the reading literacy scale is probabilistic. The students' proficiency level represents the type of tasks they should be able to solve successfully. A student having reading skills at a certain point on PISA scale is more likely to solve tasks successfully at or below that point, but that reader is less likely to complete exercises above the given point (See Figure 1.) (Thomson, Hillman & Bortoli 2013:11).

Figure 1. The relationship between the items and the students on the reading literacy scale

Reading literacy scale

|		
Items with relatively high difficulty	Item VI — Item V —	Student A, with relatively high proficiency	*It is expected that student A will be able to complete items I to V successfully, and probably item VI as well.*
Items with moderate difficulty	Item IV — Item III —	Student B, with moderate proficiency	*It is expected that student B will be able to complete items I, II and III successfully, will have a lower probability of completing item IV and is unlikely to complete items V and VI successfully.*
Items with relatively low difficulty	Item II — Item I —	Student C, with relatively low proficiency	*It is expected that student C will be unable to complete items II to VI successfully, and will also have a low probability of completing item I successfully.*

The performance of students living in Slovakia and Hungary

In the next chapter we will provide some information about how the students in the Slovak Republic and Hungary performed in PISA survey from 2000 to 2015. To do this we will use official data from several OECD web pages. In the following we will compare these two countries' results year by year.

The first PISA survey was done in 2000. In that year 43 countries participated in the survey: 28 OECD countries and 15 non-OECD countries. We cannot compare the performance of students of Slovakia and Hungary in 2000 because the Slovak Republic has been taking part in the assessment only since 2003. From the following figure we can see Hungary's performance compared to the other participants (OECD, n.d./a).

Figure 2 Percentage of students performing at each of the proficiency levels on the combined reading literacy scale
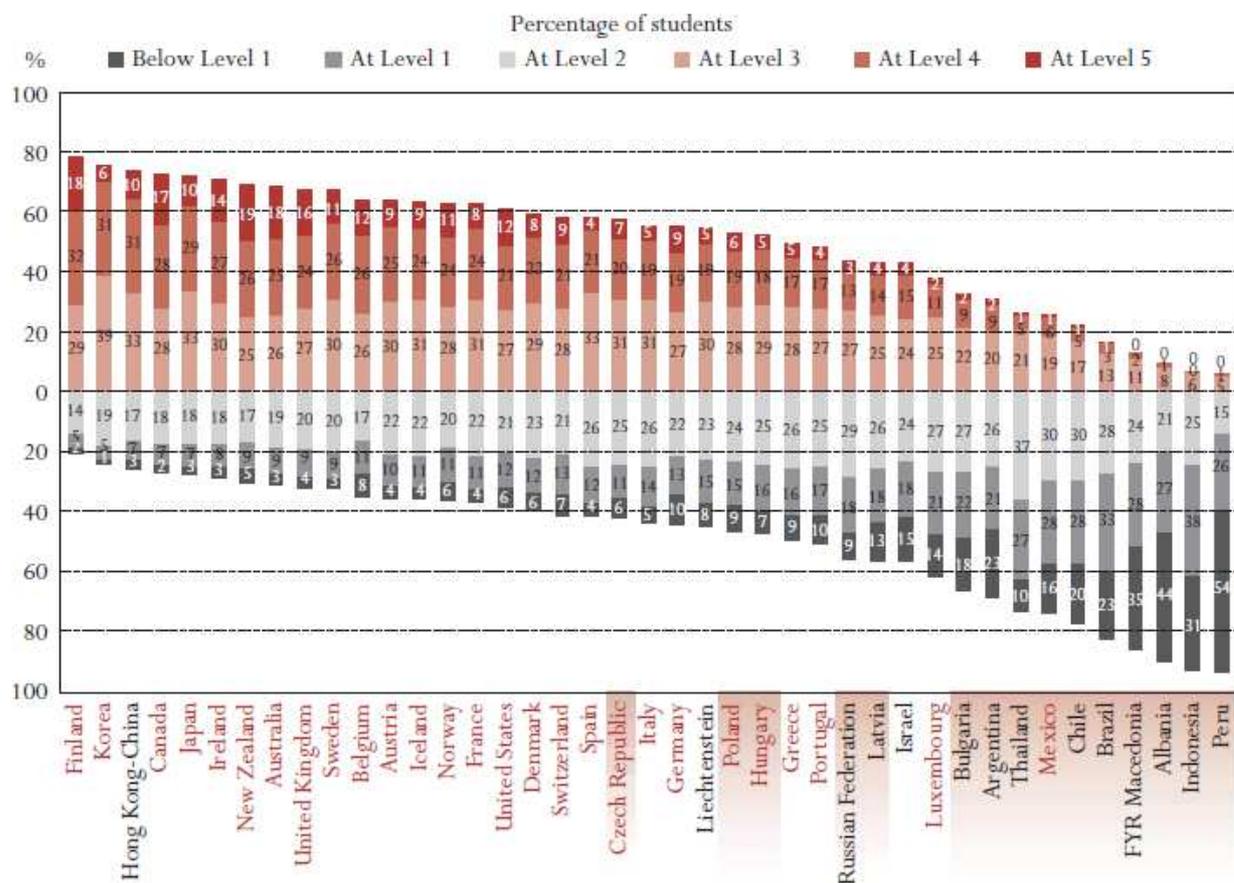
The results show huge differences between the 15 years old students' reading literacy skills. The next table shows results of Hungary.

Table 1. Hungarian participants' performance in PISA 2000

Below Level 1	Level 1	Level 2	Level 3	Level 4	Level 5
7%	16%	25%	29%	18%	5%

Hungary has collected 480 points and it was the 24th from the participating countries. The best performing countries in 2000 were Finland, Hong Kong-China, Japan and Korea (OECD n. d.[1]).

In 2003 the second PISA survey was written in 41 participating countries (30 OECD countries and 11 non-OECD countries). In that year the main focus was put on testing the skills of students from mathematics but skills from reading and science were also tested. The results show that Hungary had better results than Slovakia but both of them were below the OECD average. Students of Hungary scored 482 points but students from Slovakia reached only 469 points. On the list created by OECD Hungary has reached the 25th place and the Slovak Republic the 31st place (OECD, n.d./b).

In 2006, they tested mainly scientific literacy. From reading literacy tasks students living in Hungary scored the same as in the previous survey: 482 points. Slovakia's results were lower than before; the performance has changed to 466 points. Hungary achieved the 27th place and Slovakia the 34th (OECD, 2007).

2009 was again a year of testing primarily the reading literacy skills of 15 years old students. The results show that Hungary and Slovakia are still below the OECD average. Hungary with having 494 points (26th place) from reading comprehension is not so far from the OECD average (500 points) but the Slovak Republic is significantly far from the OECD average with its 477 points (35th place). We can state that both of the countries are below the OECD average but while Hungary's results differ from the average only in some points, the Slovak Republic is significantly below the average (OECD, 2010).

The PISA 2012 survey was again focusing on mathematic literacy. However, the two other areas: reading and science literacy were also measured. If we compare the data from 2012 with data from 2009 we can see that both countries did not manage to improve their performance. In 2012 Hungary was farer from the OECD average than in the previous survey having only 488 points (30th place). The gap between the two countries has grown more because the Slovak Republic has collected only 463 points (43rd place). Both countries were statistically significantly below the OECD average (OECD, 2014).

So far the last PISA survey has been in *2015* putting the main stress on testing scientific literacy. In that survey Hungary and the Slovak Republic were again significantly below the OECD average. Hungary had 477 points and the Slovak Republic 461 points (OECD, 2016).

To sum up the students performance of Slovakia and Hungary we use a table and a figure (see below). From these data we can say that both of the chosen countries have always been under the OECD average but the performance of Hungary has always been better than that of Slovakia. The

smallest difference between these two countries was in 2003 and the biggest was in the year 2012.

Table 2. Students' performance of Slovakia and Hungary from 2000 to 2015

Years	2000	2003	2006	2009	2012	2015
Hungary	480	482	482	494	488	477
Slovakia	-	469	466	477	463	461

Figure 3. The average performance in reading of students from the Slovak Republic and Hungary from 2000 to 2015 (OECD, n.d./c).
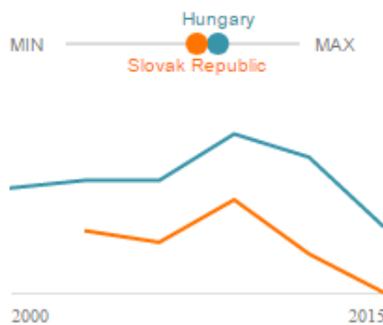
In the following we provide information about the possible features influencing students' performance in PISA's reading comprehension survey.

Possible features determining students' reading literacy performance in PISA

Students filled out questionnaires which provide us information about the participants' own individual characteristics, the school characteristics and about school systems. The information about students' characteristics include areas such as: home background, engagement in reading, approaches to learning and gender differences. Connected to the school characteristics we get information about the social background of the students, climate and resources. Next, we will characterize briefly the above mentioned features:

I. Student characteristics:

- *Home background* – Pisa survey emphasizes the influence of the home background on the performances of students in learning and reading. The results of surveys show that students coming from better social, economic or cultural background have better results in testing than students from worse socio-economic background. Moreover, it is believed that socio-economic differences are the strongest factors influencing the test results. The difference between the least advantaged students and the most

advantaged students is more than one reading proficiency level on the five-level scale of PISA.

- *Engagement* – The results of the survey have shown that students who are eager to read are likely to have high levels of reading comprehension skills. Students interested in learning learn more effectively and achieve better results at school. The PISA results emphasize the importance of students' engagement in reading. Students who read often and enjoy reading usually have better reading comprehension skills and better results in the PISA survey than those who don't. Schools have to improve not just their students' cognitive skills in reading but also they have to motivate them to read. Students can be motivated through different ways. Boys are more likely to be interested in newspapers and comics and girls rather prefer other genres, e.g. fiction. Socio-economic backgrounds are connected to students' engagement. It is shown by the PISA surveys that students coming from not advantaged socio-economic backgrounds are less interested in reading. On the other hand, members of disadvantaged countries are among the most interested readers and they have good results in the PISA tests. We can see that the level of students' engagement in reading determines the results more than the socio-economic factors. The student's interest in reading can help him/her to overcome the disadvantages of his/her home environment.

- *Approaches to learning* – According to the PISA results students' learning strategies and their attitudes towards learning and reading have great influence on their reading skills. The results of the survey show that students having stronger approaches to learning usually have better reading comprehension skills. The results also prove that students having stronger motivation do better at school because they want to learn. Students have to be motivated to use different learning techniques. So this proves that learning strategies are strongly connected with attitudes towards learning.

- *Gender differences* – Pisa has revealed the sex differences in reading skills. On most continents the girls are more interested in reading and they perform better in PISA surveys than boys. Both boys and girls have specific strengths and weaknesses showing that different strategies must be used to fulfil their needs.

II. *School characteristics:*

- *Social background of students* – We have to note that not just the students' individual characteristics are important when reading and understanding a text but also the school's features. On average students attending schools which are socially more advantaged have higher levels of reading comprehension skills compared to those students who attend less advantaged schools.

- *Climate and resources* – The school environment/atmosphere has a huge effect on the students' learning. The results revealed that factors such as the climate of the classroom and the physical infrastructure of the school influence students' performance at school.

III. *School system characteristics* – PISA results do not tell how the perfect education system looks like but they give us some hints which

features of schools are needed to be improved in order to have better education (OECD, 2004).

Summary

In our work, we have dealt with PISA surveys organized in OECD countries and in some partner countries since 2000. Firstly, we briefly described the aim of PISA, why the tests are written. The assessment measures the skills of fifteen years old students from three areas of literacy: reading, mathematical and scientific. The tests have been written in each third year since 2000. In this paper, we also characterized the methodology used in composing the tasks, moreover we presented the types of tasks used in the tests. Then we showed the reading literacy scale determining students' performance in the survey. After this information, we presented the results of two chosen countries: Slovakia and Hungary and we compared them. From the results, we see that both countries have always been below the OECD average. Although both countries did not do well in the survey Hungary's performance has always been higher than Slovakia's. Next, we listed possible factors influencing the performance of participating countries.

To sum up reading comprehension is a crucial skill to achieve successfulness not just in school but in everyday situations. People having weak reading skills lose their self-confidence and they face several obstacles in their life. It is necessary to map students' reading comprehension skills as soon as possible to discover what are the factors obstructing the readers in comprehension and to help to disappear these elements.

References

OECD (n. d./a). *Literacy Skills for the World of Tomorrow – Further Results from PISA 2000*, OECD, Unesco Institute for Statistics.

OECD (n. d./b). *First Results from PISA 2003*. OECD.

OECD (n. d./c). *PISA 2015: Country Overview*, Retrieved from https://www.compareyourcountry.org/pisa/country/hun

OECD 2004*. Messages from PISA 2000*. OECD, Retrieved from http://www.oecd.org/education/school/programmeforinternationalstudentassessmentpisa/34107978.pdf

OECD 2007*. PISA 2006: Science Competencies for Tomorrow's World.* OECD.

OECD 2010. *PISA 2009 Results: Executive Summary,* OECD.

OECD 2014. *PISA 2012 Results: What Students Know and Can Do – Student Performance in Mathematics, Reading and Science*, OECD.

OECD 2016. *PISA 2015: Results in Focus*, OECD.

Sue Thomson, Kylie Hillman, Lisa De Bortoli 2013. *A teacher's guide to PISA reading literacy*, ACER Press, Australia.