Development of Reading Literacy in South Korea from PISA 2000 to PISA 2009*

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Abstract

This study focuses on the achievement level in the "reading" domain within the framework of *Programme for International Student Assessment* (PISA) which is conducted by *Organization for Economic Co-operation and Development* (OECD). It aims at evaluating the achievement levels that Korean students reached in terms of reading process/task and question type. In the light of this objective, firstly, information was given about PISA assessment framework and reading literacy scale; and then, the results that South Korea got were studied with their outlines. Finally, the questions which were found to be increasing in 2000–2009 implications were compared by discussing. As the reports, documents and databases were investigated and analyzed in this descriptive study, "the document investigation" method which was among the qualitative research methods. As a result, it was found that Korean students improved particularly in open-ended questions which required high level of reading process in PISA reading literacy scale and this improvement was found to be associated with the developments in educational program.

Key Words: PISA, South Korea, reading literacy, reading task, question type.

Introduction

Focusing on the advancement level of Korea in the "reading" domain in the exams conducted by the *Organization for Economic Co-operation and Development* (OECD) within the framework of the *Programme for International Student Assessment* (PISA), this study aims at evaluating the performance levels achieved by Korean students in the "reading" domain questions of these exams. For this purpose, in this paper we will first provide information about PISA assessment framework and reading literacy scale then the outlines of the scores achieved by Korea will be examined. Finally, a discussion will be held on reading achievement levels and the questions, which revealed and increase or decrease in scores, through a comparative examination of the results of PISA 2000 and PISA 2009. The conclusions drawn will be evaluated with regards the improvements in the national educational program.[2]

Some of the recent reports and research studies refer to Korea as having 'one of the best education systems in the world' (CIEB, 2013; OECD, 2010c: 31; OECD, 2010; Pearson, 2012: 8). Moreover, Korea is ranked one of the top in the last three PISA tests (PISA 2003, 2006, 2009) in the reading domain. Therefore, we believe the results obtained by Korea are notable for Turkey, which is placed below the OECD average in terms of reading development since a large majority of students in Turkey is placed below Level 2 according to the PISA results (MOE, 2010; MOE, 2007; MOE, 2005). In addition, Turkey is one of the three countries, in which student achievement is most affected by the socio-economic background. Therefore, evaluating prominent examples with positive results in the provision of quality (and equality) in education will contribute to Turkish educational system, thus enhancing the significance of this study and similar studies.

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[2] South Korea is mentioned as 'Korea' in PISA reports. Therefore, we followed the same pattern in this study.

Conceptual Framework

In this section, the concepts contents of which are defined specifically for the PISA are described background knowledge necessary for the process of understanding/interpreting the study is provided.

Programme for International Student Assessment (PISA)

Conducted by the OECD as a project, the PISA aims to measure how far 15-year-old students, as well as collecting data and comparative indicators of education systems in about 70 countries (MOE, 2009). On the other hand, the PISA seeks to assess how well young adults, at age 15 and therefore approaching the end of compulsory schooling, are able to understand the new situations and challenges they face both in and out of school and make use of their knowledge and skills to solve real-life problems, as well as to reason and make inferences on topics they have not been acquainted with beforehand, rather than merely determining the extent they can reproduce what they have learned (MOE, 2010:1). As a result, the PISA is distinguished from similar assessment approaches through its relevance to lifelong learning.

One of the prominent features of the programme is that it provides comparative indicators of education systems, which help determine their stronger and weaker aspects, and thus contributing to attain a broader vision. These indicators provide information, from which to analyse how student performance varies across countries, policies, and between the genders and socio-economic groups.

The PISA stands out in education with its key features of:

- education policy orientation;
- focusing on lifelong learning; and
- its regularity and breadth of geographical coverage (OECD, 2009: 13).

The PISA conducts research that allows students to monitor and manage their own learning processes while examining the performance of students in key subject areas (reading, mathematics and science). To this end, information is collected through the PISA surveys about students' motivation to learn and their learning strategies.

The PISA tests are implemented every three years and a cycle is completed at the end of each of these three implementations. The first cycle covers the 2000, 2003, and 2006 tests. While each cycle of the PISA covers the all the domains of reading, mathematics and science, each cycle focuses on a major achievement domain and on two or more minor domains. In the first cycle in 2000, reading was the major focus. In the second cycle in 2003, mathematics was the major focus; whereas, in the third cycle in 2006, science was the major focus. In 2009, the initial administration of the fourth cycle of the PISA, reading was again the major focus. The PISA administration cycle is shown in the following diagram:

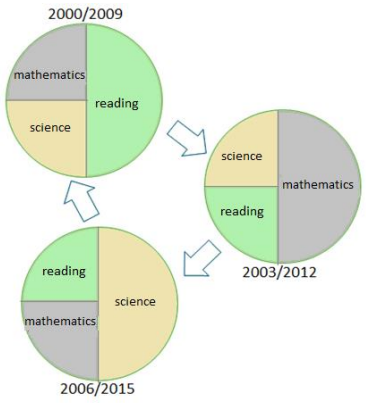


Figure 1 - *PISA Administration Cycle*

Reading Literacy Scale in the PISA

Reading domain is expressed as "reading literacy" in the scope of the PISA. The concept of "literacy" has gained a new content within this system meaning "the means for understanding and communication information" for all the fields of reading, mathematics and science. Therefore, the concept of reading literacy underlines the importance of "reading effectively in order to perform a particular goal and task". In the OECD documents, reading literacy is defined as: understanding, using, *reflecting on* and *engaging with* written texts, in order to achieve one's goals, to develop one's knowledge and potential, and to participate in society (OECD, 2010a: 42-43). Obviously, this domain requires students to be able to perform various tasks related with texts of different types. These tasks include a wide range of simple and/or complex approaches to reading, taking place singly or concurrently, such as accessing and retrieving information in the text, integrating and interpreting what they read, reflecting and evaluating, standing back from a text and relating it to their own experience.

These tasks are generally evaluated in three dimensions:

The form of reading materials or text format: Text format is concerned with whether sentences and paragraphs are presented in a continuous format or in a non-continuous format. As a result, texts fall into one of the four categories of text formats in terms of the text presentation: *continuous* texts, *non-continuous* texts, *mixed* texts, and *multiple* texts (MOE, 2010: 24; OECD, 2009: 14). Descriptive, narrative, expository, and argumentative text types are classified as *continuous* whereas those presenting information in lists, diagrams, graphs, and tables are classified as *non-continuous*. Mixed texts combine both continuous and non-continuous texts such as a scientific article including graphs and diagrams; whereas in multiple texts multiple formats brought together from several sources are presented together in an unrelated fashion such as in a catalogue. That PISA reading scale involves such different text formats as curriculum vitaes, lists, pieces of news, regulations, guides, announcements, posters, letters or maps is a natural consequence of the requirement to measure reading *literacy* for all text formats individuals might engage in their lives.

Aspects or reading processes: Aspects define the cognitive approaches that determine how readers engage with a text in an effective way. Aspects also determine the features of questions in the scale. In this context, basic reading skills of students are not evaluated since the PISA focuses more on *reading to learn* than learning to read. Therefore, the students are required to show their skills of finding a specific piece of information, forming a general understanding about the text, interpreting the text, reflecting on the content and form of the text by relating it to their own experience and view of life, and defending their own views (MOE, 2009: 4). These processes are based on three categories: accessing and retrieving information in the text, integrating and interpreting what is read, and reflecting on and evaluating the text (MOE, 2010: 27; OECD, 2009: 14).

Context and situation: Context and situation is related to the use for which the text is constructed, such as a letter or biography intended for "personal" uses, public notices for "public" uses, a guide or a report for "occupational" uses, and a textbook intended for "educational" uses. It is desirable to sample texts across a variety of situations in the PISA reading literacy survey in order to be able to maximise the diversity of content since this diversity has an impact upon success for some readers (MOE, 2009: 5; OECD, 2009: 14).

The three dimensions mentioned above are summarized in Figure 2 (A framework for evaluating reading skills) below.

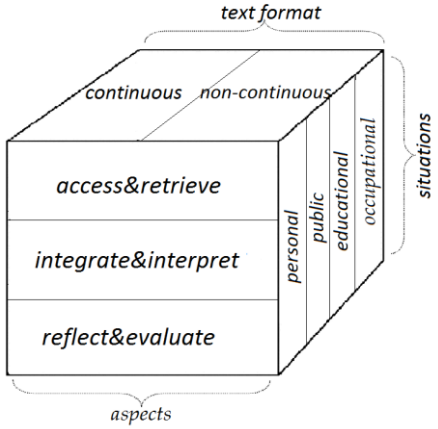


Figure 2 - A framework for evaluating reading skills
(adapted into English from Lee et. al [2008: 73])

To be able to grade test results and describe student performances in a detailed way, the scale is divided into five levels in 2000, 2003, and 2006 tests; whereas, for PISA 2009, the range of difficulty of tasks are divided into seven levels of reading proficiency, with level1b/1a as the lowest described level, up to level 6 as the highest one. Questions are designed in a way to represent these levels (for details please see MOE, 2010: 33-34).

Use of various *question formats* in reading texts and question clusters is another variable for evaluation. The questions varied in format: *multiple-choice* (simple or complex); *short response*, *constructed response* (open or closed) (MOE, 2010: 10; OECD, 2010a: 22).

The tasks involved in questions is another factor that helps determine the level of questions in PISA reading scale: Such tasks as "finding a specific piece of information" are placed in basic level questions, "inferring and interpreting" in medium level questions, whereas those such as "reflecting on texts through relating them to their own lives" and "defending their point of views" in advanced level questions.

1.2. Korea's Outlook in PISA Reading Domain

Korea, with its average performance already higher than the average of the OECD countries in 2000, was placed at the top, outperforming OECD countries in nine years. Korea, with a country mean of 525 score points in 2000, and 534 and 556 score points in 2003 and 2006 respectively performed highest among all participating countries; whereas, in the PISA 2009 reading assessment Korea performed highest among OECD countries and ranked second among all participating countries.

Korea's average scores in the reading domain by year are given in Table 1:

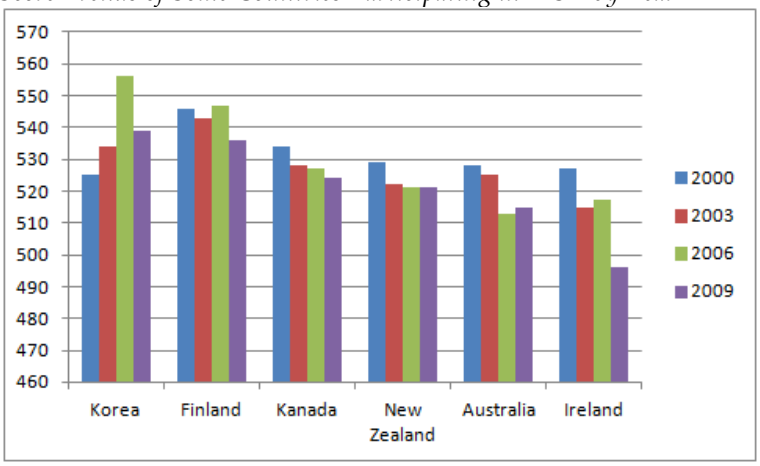
Table 1.
Average Scores of Korea in Reading Domain by Year

	PISA 2000		PISA 2003		PISA 2006		PISA 2009	
	Country	*Average Score*	*Country*	*Average Score*	*Country*	*Average Score*	*Country*	*Average Score*
1	Finland	546	Finland	543	**Korea**	**556**	Shanghai	556
2	Canada	534	**Korea**	**534**	Finland	547	**Korea**	**539**
3	N. Zealand	529	Canada	528	Hong Kong	536	Finland	536
4	Australia	528	Australia	525	Canada	527	Hong Kong	533
5	Ireland	527	N. Zealand	522	N. Zealand	521	Singapore	526
6	**Korea**	**525**	Ireland	515	Ireland	517	Canada	524

Graph 1 shows comparative scores of some of the countries generally ranked among the 10 highest performing countries taking part in all the PISA tests since 2000.

Graph 1.

Score Trends of Some Countries Participating in PISA by Year



Graph 1 reveals a general decline in the average scores of 2009 in comparison to those of 2006. Given that in 2003 and 2006, the assessment mainly focused on mathematics and science literacy, we need to monitor comparatively the scores of 2000 and 2009, in which evaluating reading development was the main focus. Accordingly, Korea showed an increase of 14 points from 2000 to 2009; whereas there was a decline in the scores of Finland and Canada (10 points), New Zealand (8 points), Australia (13 points) and Ireland (31 points). It was also a remarkable improvement that Korea's score, which was already quite higher than the OECD average, increased significantly in 2009, while many countries either maintained their positions or showed a decline.

2009 test results revealed that 1.3% of Korean students were placed at Level 6, 12.6% was at Level 5, 33.3% was at Level 4, 31.6% was at Level 3, 15.3% was at Level 2, 5% was at Level 1a, and 1% was at Level 1b (Kim et al., 2010: 71-72). Compared to the results of 2000, it is revealed that Korea more than doubled its share of students at Levels 4 and 5. Therefore, in general, the improvement in the scores of high performing students has a notable impact upon the results (OECD, 2010c: 31).

The results of 2009 reveal that Korean students perform significantly above the OECD average in understanding and learning by using *memorization*, *summarization* and *elaboration* strategies; on the other hand, they were reported to be below the OECD average in using *control* strategies (Kim, 2011: 161). In addition, the relationship between socio-economic background and reading achievement is below the OECD average. More precisely, the socio-economic background of Korean students has less impact on their reading achievement in comparison to other countries. In terms of the delivery of equal opportunities in education, Korea is also reported to perform well above the OECD average in OECD reports (2010b: 58).

The results of 2009 test, in which electronic texts were used for the first time, were also in favour of Korea. According to the results of this test, Korean students rank first in learning using computers and the Internet with an average of 568 points. Korea is followed by New Zealand and Australia (OECD, 2011:21).

To sum up, Korea, reported among the world's best education systems, improves the academic achievement levels of its students continuously monitoring their academic development; while trying to ensure providing equal opportunities and thus narrowing the impact of socio-economic background on student performance (OECD, 2010c: 31). In addition, based on the PISA results, it could be stated that Korean students have attained the awareness of metacognitive strategies, as well as the proficiency in reading-understanding a diversity of texts.

Examination of the above presented improvement within the technical and content related structure of the PISA reading scale will provide important clues in terms of reading instruction. Therefore, rates of correct responses by Korean students will be discussed in the Findings and Discussion sections as regards *reading tasks* and *question formats*.

Method

This study aims at describing the achievement level that Korea has obtained in the reading domain in the PISA as it exists in its own circumstances. Therefore, it could be classified as a *case study* since it aims to reveal changes and processes under a specific situation.

To be able to carry out description in a developmental way, *reviewing documents*, one of the qualitative research methods, was employed in scanning the related documents and developing possible explanations through comparing results (Yıldırım and Şimşek, 2006:187). Reviewing documents involves collecting related records and documents and classifying them in a particular system.

In this study, document reviewing process is completed in two stages. In the first stage, the PISA reports that contain results of the PISA tests, the PISA database and the reports of the Korean Ministry of National Education (KICE) have been collected. Original reports were obtained since the PISA database and reports were available through the official web site. However, the results of Korea in detail were not available through the web site, the reports of the Korean Ministry of National Education were required. Upon this requirement, one of the officials of KICE and an expert of the PISA project Prof. Dr. Kim Nam Hee was contacted and required documents were obtained. These reports were included among the documents to be reviewed having been translated from Korean. In the second stage, within the framework of the defined categories, numerical findings obtained from the database and the reports, the structure of the PISA questions and rates of correct responses by Korean students were classified and compared. Then, the results are presented within this classification.

Findings and Discussion

Basic evaluation framework of PISA is *not changed* to be able to compare applications held every three years. Furthermore, questions are not open to the public. Therefore, in this section, changes in the rate of correct answers to questions, reading tasks, and question types will be discussed rather than the content of the questions.

The reading scale consists of three main reading tasks: *basic level* "access and retrieve," *medium level* "integrate and interpret" and *advanced level* "reflect and evaluate." The questions are grouped according these tasks. Moreover, question format is another classification variable. There are five formats of questions: *open constructed response*, *closed constructed response*, *short response*, *multiple choice* and *complex multiple choice*. Analysis was done according to this classification. The changes between 2000 and 2009 tests were monitored based on 25 questions which can be found both in 2000 and 2009 tests. The correct answers to 25 questions by year, reading task, question format and text format are given in Table 2.

Table 2.
Korean Students' Correct Answers to Questions by Year, Reading Task, Question Format and Text Format

Unit	*Question Code*	*Reading Task*	*Text Format*	*Situation*	*Question Format*	*Correct Answer Rate*				*difference 2000-2009*
						PISA 2000	*PISA 2003*	*PISA 2006*	*PISA 2009*	
Drugged Spiders	R055Q01	Integrate and interpret	Continuous	Public	Multiple Choice	88.9	90.3	89.9	88	-0.8
	R055Q02	Reflect and evaluate	Continuous	Public	Open Constructed	44.8	53.4	57.3	51.6	+6.9
	R055Q03	Integrate and interpret	Continuous	Public	Open Constructed	55.2	60.9	64.2	64.6	+9.4
	R055Q05	Integrate and interpret	Continuous	Public	Open Constructed	69.4	78.3	82.7	86.1	+16.7
Aesop	R067Q01	Integrate and interpret	Continuous	Personal	Multiple Choice	93.2	84.2	83.4	86.3	-6.9
	R067Q04	Reflect and evaluate	Continuous	Personal	Open Constructed	61.4	66.6	78.5	72.8	+11.4
	R067Q05	Reflect and evaluate	Continuous	Personal	Open Constructed	72.2	78.6	88.4	80.1	+7.9
Shirts	R102Q05	Integrate and interpret	Non-continuous	Personal	Close Constructed	52.5	51	51.5	55.7	+3.2
	R102Q07	Integrate and interpret	Mixed	Personal	Multiple Choice	88	92.5	91.7	93	+5.0
Telephone	R104Q01	Access and retrieve	Non-continuous	Public	Close Constructed	88.1	87.9	88.1	88.2	+0.1
	R104Q02	Access and retrieve	Non-continuous	Public	Close Constructed	50	53.1	50	52.8	+2.9
	R104Q05	Access and retrieve	Non-continuous	Public	Short Response	34	33.4	33	30	-4
Exchange Student	R111Q01	Integrate and interpret	Continuous	Educational	Multiple Choice	85.2	85.5	83.1	86.7	+1.6
	R111Q02B	Reflect and evaluate	Continuous	Educational	Open Constructed	33.4	42.2	49.2	44.8	+11.5
	R111Q06B	Reflect and evaluate	Continuous	Educational	Open Constructed	53.9	56	56.5	53.7	-0.1
Employ-ment	R219Q02	Reflect and evaluate	Non-continuous	Professional	Open Constructed	83.9	87.9	90.7	89.3	+5.5
South Pole	R220Q01	Access and retrieve	Mixed	Educational	Short Response	54	46.4	48.3	44.2	-9.8
	R220Q02	Integrate and interpret	Mixed	Educational	Multiple Choice	61.5	70.7	66.8	70.6	+9.1
	R220Q04	Integrate and interpret	Continuous	Educational	Multiple Choice	52.8	70.6	66.6	69.5	+16.8
	R220Q05	Integrate and interpret	Continuous	Educational	Multiple Choice	90.4	88.5	86.8	86	-4.3
	R220Q06	Integrate and interpret	Continuous	Educational	Multiple Choice	62	67.3	69.6	72.2	+10.2
Optician	R227Q01	Access and retrieve	Mixed	Professional	Multiple Choice	81.4	80.9	82.9	85.1	+3.7
	R227Q02	Access and retrieve	Continuous	Professional	Complex Multiple Choice	67.7	69.8	68.3	70.9	+3.2
	R227Q03	Reflect and evaluate	Continuous	Professional	Open Constructed	64.4	74.1	83.9	71.7	+7.3
	R227Q06	Access and retrieve	Non-continuous	Professional	Short Response	80.7	79.9	79.8	84.6	+3.9

(OECD, 2010d; OECD, 2007; OECD, 2004; OECD, 2001)

Table 2 gives the characteristics of 25 reading questions, repeated in PISA tests, as well as the number of correct answers given to these questions by Korean students. In the PISA reading scale, there are units consisting of different text formats and each unit is followed by questions related to the text. These questions may be in different formats and even if they are related to the same text, they

may contain different reading tasks. For instance, the first question in Table 2 (R055Q01) is the first question related to the *continuous* text titled Drugged Spiders and is a multiple-choice question. The rate of correct answers given by Korean students to this question was 88.8% in 2000, 90.3% in 2003, 89.9% in 2006 and 88% in 2009. The difference between 2000 and 2009 rates is -0.8. An examination of all questions in Table 2 from this perspective reveals that there are differences in correct answer rates as regard different reading tasks and question formats although they are related to the same text. This lends support to the argument that the change in achievement is dependent upon reading task and question format. Therefore, quantitative findings from the database will be presented under a title based on question formats (open constructed, short response etc.).

Open Constructed Response Questions

Nine out of 25 questions repeated in every PISA test administered from 2000 to 2009 are open constructed response questions. Of these, seven are about the "reflect and evaluate" task while two are about the "integrate and interpret" task.

Open Constructed Response Reflect and Evaluate Questions

The first open constructed response reflect and evaluate question in the PISA reading scale is the question coded R055Q02.

Table 3.
Comparison of Correct Answers to the Question Coded R055Q02 by Year

	PISA 2000	*PISA 2003*	*PISA 2006*	*PISA 2009*	*2000–2009*
Korea	44.8	53.4	57.3	51.6	+ 6.9
General average	52.9	47.7	46.9	47.6	- 5.3

Table 3 shows the rates of correct answers Korean students gave to the question coded R055Q02. The question coded R055Q02 entails "opposing the text's arguments" and is a high-level question that requires a process of reasoning with inferences and information not directly given in the text (Kim et. al, 2008: 51). While the rate of correct answers to this question declines in the general average of the participating countries, the rate of correct answers by Korean students increases. The difference is higher especially between 2000 and 2003.

The questions coded R067Q04 and R067Q05 are *open constructed response* questions that seek to assess the "*reflect and evaluate*" task and they require students to read part of Aesop's Fables before answering them (Tables 4 and 5).

Table 4.
Comparison of Correct Answers to the Question Coded R067Q04 by Year

	PISA 2000	*PISA 2003*	*PISA 2006*	*PISA 2009*	*2000–2009*
Korea	61.4	66. 6	78.5	72.8	+ 11.4
General average	54.3	56.4	55. 6	57.6	+3.3

R067Q04 requires students to choose between two different arguments regarding the end of the text and support this argument with their own reasons. A convincing answer about why one of the two contrasting arguments in the text is selected is considered as the correct answer (Kim et. al, 2008: 54). Therefore, students are supposed to question their reasons for supporting a specific argument and provide their reasoning. The increase in the number of correct answers by Korean students increased by threefold compared to the general average of participating countries.

R067Q05 is a question requiring students to make a comparison between the life in Aesop's Fables, written 2,500 years ago, and the life today (Kim et. al, 2008: 54).

Table 5.
Comparison of Correct Answers to the Question Coded R067Q05 by Year

	PISA 2000	*PISA 2003*	*PISA 2006*	*PISA 2009*	*2000–2009*
Korea	72.2	78.6	88.4	80.1	+ 7.9
General average	62.5	66.5	66.0	67.6	+ 5.1

The PISA scoring key states that full score should be given for comparisons based on historical characteristics related to the lifestyle and while gradually lower scores should be given to the comparisons based on other characteristics in the text (Kim et. al, 2008: 55). A comparison between PISA 2000 and PISA 2009 indicates a 7.9-percent increase. This indicates that a significant portion of Korean students are able to draw parallels and make comparisons between the life 2,500 years ago and the life today.

The question coded R111Q02B, with results given in Table 6, is another *open constructed response* question concerning the "*reflect and evaluate*" task.

Table 6.
Comparison of Correct Answers to the Question Coded R111Q02B by Year

	PISA 2000	*PISA 2003*	*PISA 2006*	*PISA 2009*	*2000–2009*
Korea	33.4	42.2	49.2	44.9	+ 11.5
General average	34.1	33.3	33.8	36.5	+ 2.4

Regarding this question which requires students to read the text with a focus on its implicit and explicit content and writing style, the rate of correct answers by Korean students rose significantly. This indicates that students' performance regarding the content as well as *style* of the text improved.

The question coded R227Q03 in Table 7 is an *open constructed response* question related to the "*reflect and evaluate*" task and it aims to measure if students can establish a connection between the world knowledge and a specific part of the text (Kim et. al, 2008: 55).

Table 7.
Comparison of Correct Answers to the Question Coded R227Q03 by Year

	PISA 2000	*PISA 2003*	*PISA 2006*	*PISA 2009*	*2000–2009*
Korea	64.4	74.1	83.9	71.7	+ 7.3
General average	55.6	53.8	53.2	55.4	- 0.2

This question requires an evaluation related to the information not provided in the text and freshly provided in the question (Kim et. al, 2008: 55). In the 2009 test, 71.7% of Korean students answered correctly this question with a 7.3-percent increase.

Another open constructed response "reflect and evaluate" question in which an increase was observed is the question coded R219Q02 for the non-continuous text titled "Employment." With this question, the increase was 5.5% and the rate of the students who correctly answered this question was 90%. Finally, there was no increase only in one of the open constructed "reflect and evaluate" questions (R111Q06). There was no change in the rate of correct answers to this question (difference=0.1).

In sum, Korean students are able to express their own ideas about the text, justify their arguments by reasoning, and establish correlation with the world knowledge and the text. The "reflect and evaluate" process which involves the skills for expressing own ideas as well as the conclusion obtained after reading the text in a critical and reasonable fashion by nature overlaps the open constructed response format. As the open constructed response format requires students to *write down long texts* as answers, it is clear that Korean students exhibit improved writing skills in parallel to developments in their reading skills.

Open Constructed Response Integrate and Interpret Questions

There was a *continuous increase* in both open constructed response "integrate and interpret" questions not only between 2000 and 2009, but also in all tests (Tables 8-9).

Table 8.
Comparison of Correct Answers to the Question Coded R055Q03 by Year

	PISA 2000	*PISA 2003*	*PISA 2006*	*PISA 2009*	*2000–2009*
Korea	55.2	60.9	64.2	64.6	+ 9.4
General average	60.6	58.8	57.5	59.8	- 0.8

The rate of correct answers by Korean students to the question coded R055Q03 regarding the expository text titled "Drugged Spiders" rose by 9.4% as seen in Table 8. The increase in the rate of Korean student's correct answers to the other open constructed response "integrate and interpret" question was considerable (see Table 9). The rate of correct answers to the "integrate and interpret" question coded R055Q05 steadily increased all across four tests (PISA 2000, 20003, 2006, and 2009).

Table 9.
Comparison of Correct Answers to the Question Coded R055Q05 by Year

	PISA 2000	*PISA 2003*	*PISA 2006*	*PISA 2009*	*2000–2009*
Korea	69.4	78.3	82.7	86.1	+ 16.7
General average	77.5	72.4	71.1	73.2	- 4.3

This question provides new information about the spider web and requires students to make inferences from the text in order to evaluate this new information (Kim et. al, 2008: 56). With this question, students are supposed to associate the newly provided information to the text's holistic meaning without focusing on its specific parts.

The steady increase in the rate of correct answers to the open constructed response "integrate and interpret" questions indicates that Korea students made significant progress in this area.

Closed Constructed Response Questions

Out of the three closed constructed response questions, two are about the access and retrieve task while one is related to the "integrate and interpret" task. While there was an increase in all of these questions, this increase was between 0.1 and 3.2%. The common characteristic of these questions is that they produced consistent correct answer rates in all four tests (PISA 2000, 2003, 2006 and 2009) (see Table 2).

Short Response Questions

There are three short response questions in the PISA reading scale and all of them are "access and retrieve" questions at the basic reading level. Short response questions are questions with two choices such "yes" or "no" and "true" or "false." While there a decrease regarding two of these questions, the increase in one of them was 3.9%. The question coded R220Q01, which produced a distinct decrease, is about the continuous/non-continuous educational text titled "South Pole." Except for a partial increase in 2006, this question produced continuous decrease.

Table 10.
Comparison of Correct Answers to the Question Coded R220Q01 by Year

	PISA 2000	*PISA 2003*	*PISA 2006*	*PISA 2009*	*2000–2009*
Korea	54	46.4	48.3	44.23	- 9.8
General average	46.0	43.8	42.2	40.3	- 5.7

The general average of the participating countries, too, exhibits a decrease in the rate of correct answers to the question. This decrease, however, is lower compared to the decrease in the rate concerning Korean students.

Another short response question with a decrease in the rate of correct answers is the question coded R104Q05 related to the non-continuous text titled "Telephone." This is the only question with a continuous decline (see Table 11).

Table 11.
Comparison of Correct Answers to the Question Coded R104Q05 by Year

	PISA 2000	*PISA 2003*	*PISA 2006*	*PISA 2009*	*2000–2009*
Korea	34	33.4	33	30	- 4
General average	28.9	24.9	22.7	19.5	- 9.4

There is a continuous decline in the rate of correct answers to this question both for Korean students and in the general average. Unlike the case with the question coded R220Q01, the decline concerning Korean students is lower than the one in the general average.

There was a continuous and high-level decrease in all short-response questions that seek to measure students' ability to access and retrieve information. The increase in the questions related to the "integrate and interpret" and "reflect and evaluate" tasks despite the decline in this simple question format implies that there is a reverse aspect from the advanced to the basic level. Accordingly, it is necessary to observe how the focus in the curricula and textbooks is reflected on the aspects.

Multiple Choice Questions

There are nine simple multiple choice questions and one complex multiple choice question. Some multiple choice questions exhibited 16-percent increase while others showed 7-percent decrease. However, these decreases and increases do not have a typified outlook.

Multiple Choice Integrate and Interpret Questions

There is an increase regarding five of these questions and a decline concerning the two. Of these, 10-percent, 17-percent and 9-percent increases and 7-percent decline are striking. Despite these high increases and decreases, it is interesting to note that the rate of correct answers to these eight questions ranges between 70 and 93 percent.

The multiple choice question coded R067Q01 is related to the unit titled "Aesop's Fables" and aims to measure the skills for the "integrate and interpret" task (see Table 12).

Table 12.
Comparison of Correct Answers to the Question Coded R067Q01 by Year

	PISA 2000	*PISA 2003*	*PISA 2006*	*PISA 2009*	*2000–2009*
Korea	93.2	84.2	83.4	86.3	- 6.9
General average	88.4	89.2	88.1	88.8	+ 0.4

The question coded R067Q01 requires basic level inference about the content of the text titled "Aesop' Fables." Two questions about the same unit with an increase in the rate of correct answers (R067Q04 and R067Q05) are advanced level "reflect and evaluate" questions requiring students to write down their own ideas about the text. It is interesting to note that while the rate of correct answers to the "reflect and evaluate" questions in the same unit increases, there is a decline in this rate regarding the question coded R067Q01 which requires students to transfer their knowledge.

R220Q04 and R220Q06 are the questions regarding the educational continuous text titled "South Pole." Regarding the question coded R220Q04, there was a decline in the general average while the rate of correct answers by Korean students rose by 16%. Likewise, Korea's score rose by 10% in connection with the question coded R220Q06, but this figure was hardly 1% for the general average. That the difference between Korea's scores and the general average in connection with these two questions was more than 10% is remarkable.

Table 13.
Comparison of Correct Answers to the Question Coded R220Q04 by Year

	PISA 2000	*PISA 2003*	*PISA 2006*	*PISA 2009*	*2000–2009*
Korea	52.8	70.6	66.6	69.6	+ 16.8
General average	60.7	61.4	58.9	58.9	-1.8

Table 14.
Comparison of Correct Answers to the Question Coded R220Q06 by Year

	PISA 2000	*PISA 2003*	*PISA 2006*	*PISA 2009*	*2000–2009*
Korea	62	67.3	69.6	72.2	+ 10.2
General average	65.5	66.2	65.9	65.9	+ 0.4

Multiple Choice Access and Retrieve Questions

The increases regarding the two basic level "access and retrieve" questions (R227Q01 and R227Q02) were respectively 3.7% and 3.2%. Despite the overall decline in the "access and retrieve" questions, there were increases regarding these two questions. This is remarkable in that it contrasts with the overall decline regarding the "access and retrieve" questions although the increase was not considerably high.

Discussion and Conclusion

The rates of correct answers to the questions monitored since PISA 2000 indicate that the reading task level and the question format influence the reading achievement. In this context, the achievement level of Korean students increased in general regarding the advanced level "reflect and evaluate" and "integrate and interpret" questions. In particular, the success concerning the open constructed response "reflect and evaluate" questions indicates that Korean students were able to understand what they read and write down what they understood by adding their own ideas.

As noted in Kim (2007: 112), this result is parallel to the improvements Korea made to its curriculum. Indeed, the current Korean curriculum was improved to make sure that a text's meaning should be constructed with an approach where students are "active." Thus, reading was redefined as a process of actively *evaluating* the text and *reconstructing its meaning*. Kim *et. al* (2008: 59) maintained that with last two curricula that focused on the activities that enabled readers to "make decisions based on their views" and actively recreate meaning, there was a continuous increase in the students' reading achievements. On the other hand, Korean researchers (Kim, 2007: 124: Kim et. al, 2008. 59) stressed the importance of the current curriculum's focus on the 'linguistic performance' of students in the classroom environment for assessment and evaluation. Accordingly, they maintained that reading activity should be conducted in way to ensure that students can effectively create meaning from the text instead of finding and understanding the existing information in the text.

As underlined in the curriculum, this led to the designing of reading activity as integrated with writing. Thus, it is clear that Korean students' achievements regarding the open constructed response question format in PISA tests is closely related to the *integrated design of reading/writing* in Korean curriculum. Moreover, Lee (2009) stressed that the requirement in the university entrance examination in Korea for 'creating a written text by establishing logical connections based on the text provided' plays a significant role in helping Korean students to create new meaning in connection with the text.

Obviously, integrated design of reading and writing activities, the writing's being the way of expressing critical and creative ideas and the treating of writing as a major phrase in the university exam promote both reading and writing skills and critical and rational thinking. Yet, it should be remembered that the basic reading skills for remembering the information in the text is ignored. Interestingly, there was continuous decline in the rate of correct answers to some short response "access and retrieve" questions.

The fact that there was an increase regarding the "integrate and interpret" and "reflect and evaluate" questions in the face of a decline in the rate of correct answers to the short response "access and retrieve" questions which are about uncomplicated reading targets indicates that the focus in the curriculum has made a remarkable impact on the aspect, and therefore on the PISA results. In other words, improvements in the Korean curriculum have directly affected the PISA results, and even the aspects which are not the focus of the curriculum were reflected on the results. In this context, it can be suggested that the changes introduced/to be introduced to the Turkish education system may directly affect the PISA results.

In sum, it can be concluded that the progress Korea made in the reading scale between PISA 2000 and PISA 2009 is parallel to the improvements in the Korean education system. This parallelism is obvious in three respects:

- ✓ the Korean curriculum's emphasis on effective reading and creating own meaning makes a positive effect on the rate of correct answers to the advanced level PISA reading questions with "reflect and evaluate" and "integrate and interpret" tasks;
- ✓ there is an improvement in the open constructed question format in the PISA tests, and therefore, in the writing skills, as a result of the integrated design of reading/writing activities; and
- ✓ the "basic inference" process was ignored in the reading activities in the multifaceted meaning creation and, in this context, there is a decline in short response "access and retrieve" questions.

The above-mentioned findings lend support to the following conclusion: the increased utilization from the results of the PISA test, given the fact that it is a large-scale program benefiting from contemporary education systems, may contribute to the improvement of the reading process in particular and of the Turkish education system in general. In this context, to better understand the reasons for the placement of Turkish students at and below Level 2 in the PISA reading scale, the rate of correct answers by Turkish students in the reading domain should be discussed within the context of question format and reading task --as was the case with Korean students studied here-- and the results of this examination should be reported to the public.

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