



A Comparison of Mother-Tongue Curricula of Successful Countries in PISA and Turkey by Higher-Order Thinking Processes

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ARTICLE INFO

Article History:

Received: 11 Sep. 2017

Received in revised form: 26 Nov. 2017

Accepted: 08 Jan. 2018

DOI: 10.14689/ejer.2018.73.6

Keywords

Mother-tongue curricula, higher-order thinking, PISA, Turkey

ABSTRACT

Purpose: The purpose of the current study is to reveal general qualities of the objectives in the mother-tongue curricula of Hong Kong and Shanghai-China, South Korea, Singapore, and Turkey in terms of higher-order thinking processes specified by PISA tests. **Research Methods:** In this study, the researcher used a qualitative research design. Mother-tongue curricula were obtained from the official websites of the Ministries of National Education of the researched countries. The mother-tongue curricula of the countries are in an updated form at these official websites.

This data was considered in terms of the levels of high-order thinking processes determined by PISA 2015. The data were analyzed in accordance with the content analysis. **Findings:** Hong Kong and Shanghai-China, and South Korea had the objectives at levels 3 and 4 most, and the fewest at 1a and below. This indicated that the objectives of the mother-tongue of these countries were similar to each other as they reflected higher-order thinking processes at these levels. Singapore included 51 objectives at level 4, although it had the most objectives at level 2 and 3. On the other hand, Singapore had the most objectives at levels 5 and 6. Turkey had the most objectives at levels 2 and 3 and the fewest at level 6. Also, Turkey had the fewest objectives at levels 5 and 6 and the most objectives at levels 1b and below. **Implications for Research and Practice:** What can be suggested by the current study is to conduct research on how to better objectives for higher-order thinking processes in mother-tongue curricula of countries.

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Introduction

People's life experiences in different religious and cultural environments, and in different societies and nations have allowed their educational systems and curricula to become different. Advances in educational, developmental, scientific and technological areas have influenced nations and their educational politics in terms of quality, proficiency, equality, and internationalism (Scheurich et al., 2005). Particularly through globalization, and increasing the labor force to keep pace with the age of science and technology, countries have made attempts and innovations to raise individuals who have higher-order thinking, instead of individuals who have basic proficiencies, by changing educational politics because education is the source of change and progress in the world (Wall & Ryan, 2010). Since change and progress develop interactionally, advancements in education, on the one hand, have contributed to science and technology. On the other hand, advancements in science and technology have contributed to education (Barber & Mourshed, 2009). Countries that are conscious of this interactional reality attach significance to raising individuals who can handle knowledge critically, creatively and analytically. These individuals have higher-order thinking capacity thanks to budgets for educational systems, structured education curricula, and science-based practices.

Higher-order thinking is an intellectual style derived from basic thinking and based on reasoning. It requires consistency, connection and deep comprehension (De Bono, 2010). Clearly speaking, it involves cognitive skills such as decision-making, critical, analytic and relational thinking, being creative, analyzing and synthesizing, construing and inferring, self-regulation and self-assessment. Although education is a systematic teaching and learning process that promotes and structures an individual's knowledge, skills and attitudes in a planned and purposeful way (Scott & Evans, 2015), it is not that easy to make a person have higher-order thinking capacity through this system. Hence, if education is directed by the election and ruling politics of nations (Erginer, 2006), not supported by scientific and technological materials (Nickerson, 2009), not implemented in real life through activities and practices (Cer, 2016), qualitatively and quantitatively modified continuously in nursery, primary and secondary education by transition systems among levels (Cebi & Durmus, 2012), if there is an approach which makes students memorize mere information instead of generating it, and if students are assessed by information-based exams (Titiz, 2013), a higher-order-thinking person does not seem to appear, no matter how high-quality the educational system is. Thus, it is significant that nursery, primary and secondary levels of education, disciplines such as technology, psychology, program management and supervision, testing and evaluation, and learning practices inside and outside class be planned, organized, assessed and implemented in a way that will stimulate higher-order thinking.

Curriculum is broadly defined as the totality of student experiences providing decision-making for both learning and assessing (Demirel, 2015). Curriculum is accepted as a comprehensive and a multidimensional field of study, which encompasses objectives for individuals, the selected content to actualize these objectives, learning-teaching processes that indicate how the content will be given,

and assessment activities (Aykaç, 2005). The primary purpose of the mother-tongue curriculum is to improve learners' reading, speaking, writing, listening and grammar skills. Further, this curriculum will improve skills in seeking knowledge, exploring, interpreting and cognitive restructuring, and improve higher-order thinking skills such as organizing, classifying, questioning, relating, estimating, inferring, construing, analyzing-synthesizing and assessing (Wall & Ryan, 2010). Hence, it is suggested that nations develop these qualities in objectives, content, teaching-learning process, and assessing language teaching curriculum (Hirst, 2010). Such improvement in a mother-tongue yields more specific results for higher-order thinking skills, as shown in the Program for International Student Assessment (PISA).

The Program for International Student Assessment (PISA) held by the Organization for Economic Cooperation and Development is a year-by-year follow-up system of 15-year-old learners' improvement in basic knowledge and skills such as mathematics literacy, science literacy, and reading skills; it which allows participating countries to assess their education systems. It is not an international competition; through this triennial exam, students' lower- and higher-order thinking abilities are determined and ranked in order of success (OECD, 2016).

Regarding the research, comparing Turkey with the three most successful countries of each term according to PISA science scores from 2003 to 2012 revealed significant differences between Turkey and the countries examined in terms of economy, pre-school education, length of compulsory education, transition to secondary and higher education, teachers' education, teachers' decision-making power and in-service training (Bakir et al., 2015). Korean and Finnish mother-tongue curriculums, which are among the countries scoring the highest mark in reading in PISA testing, are similar. Different implementation of curriculums are applied in mother-tongue instruction regarding linguistic skills, objectives, content, learning-teaching processes and measurement-assessment. However, their contribution to higher-order thinking processes has not been determined (Yildiz, 2015). Reviewing other research, PISA tests were not observed to be associated with higher-order thinking processes examined in teacher training or with the mother-tongue curricula of the countries (Demir & Yavuz, 2014; Orakci, 2015; Yaman & Dagtas, 2015).

Significance and Aim of the Study

The current study first examined the mother-tongue curricula of Hong Kong and Shanghai-China, Singapore, South Korea, and Turkey by higher-order thinking processes. These countries were included these countries' proficiency levels gradually improved in reading comprehension skills. While Shanghai-China took place on the 5th (17.0%) and 6th (2.4%) level in 2009, as well as on the 5th (21.3%) and 6th (3.8%) level in 2012, Singapore got a percentage of 13.1 on the 5th and of 2.6 on the 6th level in 2009; in 2012 it got a percentage of 16.2 on the 5th and of 5.0 on the 6th level. As observed in the examples, these countries prioritize reading comprehension improvement (Titiz, 2013). Second, research on this subject has only been performed on education and mother-tongue curricula or on raising teachers

(Erdogan & Gok, 2011). The current study aimed to assess the mother-tongue curricula of these countries for their contribution to higher-order thinking processes based on PISA tests. Such assessment may not only suggest a general view of the objective aspect of the mother-tongue curricula of the countries, but it may also help determine their contribution to higher-order thinking processes. Last, the current study may reveal the condition of objectives in Turkish language curriculum regarding higher-order thinking processes by comparing it with mother-tongue curricula of other countries.

In the mother-tongue curricula of Shanghai, Hong Kong, Singapore, and Turkey:

1. How were the objectives classified by higher-order thinking processes specified by PISA?
2. What are the similarities and differences in general aims for higher-order thinking processes?
3. How frequently can objectives of communication/speaking and listening reflect higher-order thinking processes?
4. How frequently can objectives of reading and writing skills reflect higher-order thinking processes?

Method

Research Design

The current study was of a qualitative research design type which aimed to compare the mother-tongue curricula of Hong Kong and Shanghai-China, South Korea, Singapore, and Turkey by higher-order thinking processes. Qualitative research includes interpretation of various concepts, concerns, and processes and is best known to be used in observing people, phenomena and situations in situ (Punch, 2005). Qualitative research in these regards are research types in which data collection methods such as observations, interviews, document analysis and surveys are utilized and in which perceptions and phenomena are realistically analyzed (Yildirim & Simsek, 2011).

Research Instruments and Procedures

Document analysis, one of the methods of qualitative research, was utilized in collecting data. Written documents concerning phenomena and facts discussed are analyzed in this method (Yildirim & Simsek, 2011). The main priority was to reach primary and up-to-date references while conducting document analysis. In that regard, the mother-tongue curricula of the researched countries were from primary and secondary school levels. In other words, documents discussed in this study composed the overall primary and secondary school curricula of the five countries. The curricula were obtained from the official websites of the Ministries of Education of the researched countries (CLC, 2015; KLC, 2007; SELS, 2010; TTC, 2015). Data were

collected from these websites whether the objective aspect of mother-tongue curricula of Shanghai, Hong Kong, Singapore, and Turkey included higher-order thinking processes. In line with this purpose, the official websites, published reports, OECD reports and scientific research of these countries were the secondary data resource of the current study. Secondly, levels 5 and 6 specified by PISA 2015 were taken as the basis for higher-order thinking ability in analyzing higher-order thinking processes of the mother-tongue of the countries.

Data Analysis

Content analysis was used to analyze the obtained data. The procedure in content analysis is to gather homologous data within certain concepts and themes and paraphrase them in a way that readers can understand (Yildirim & Simsek, 2011). Content analysis was used in the current study to compare researched countries with each other by higher-order thinking processes.

Table 1

Summary Description of the Two Levels of Higher-Order Thinking in PISA 2015

Level 6
<p>Tasks at this level typically require the reader to make multiple inferences, comparisons, and contrasts that are both detailed and precise.</p> <p>They require demonstration of a full and detailed understanding of one or more texts and may involve integrating information from more than one text.</p> <p>Tasks may require the reader to deal with unfamiliar ideas in the presence of prominent competing information and to generate abstract categories for interpretations.</p> <p>Reflect and evaluate tasks may require the reader to hypothesize about or critically evaluate a complex text on an unfamiliar topic, considering multiple criteria or perspectives, and applying sophisticated understanding from beyond the text.</p> <p>A salient condition for access and retrieve tasks at this level is precision of analysis and fine attention to detail that is inconspicuous in the texts.</p>
Level 5
<p>Tasks at this level that involve retrieving information require the reader to locate and organize several pieces of deeply embedded information, inferring which information in the text is relevant.</p> <p>Reflective tasks require critical evaluation or hypothesis formulation, drawing on specialized knowledge.</p> <p>Both interpretative and reflective tasks require a full and detailed understanding of a text whose content or form is unfamiliar.</p> <p>For all aspects of reading, tasks at this level typically involve dealing with concepts that are contrary to expectations.</p>

In line with this purpose, the objectives of these countries in their mother-tongue programs are considered as units at the sentence level at which the research is to be coded. In this respect, the objectives of the mother-tongue programs of the countries surveyed are examined regarding whether the statements at levels 5 and 6 in PISA 2015 are appropriate. However, objectives that do not fit levels 5 and 6 are also classified according to the 1b and below, 1a, 2, 3, 4 levels determined in PISA 2015. These units are classified comparatively by coding according to the reflection levels

of higher-order thinking. Consequently, the classifications created by the researcher and the expert were found to be similar. This approach was preferred to reduce subjectivity in similarities and differences among the mother-tongue curricula of the countries and increase reliability. All research questions were assessed by another expert who was expected to give feedback on the data collected to record the findings and their analyses. Hence, every step of the research process was elaborately presented to the reader. The researcher hoped that the reader could visualize all components of the process by elaborate research reporting. Therefore, the researcher included direct citations in the results section. To ensure confirmability, the data, method and results sections are elaborately described, and raw data and codes are kept by the researcher within the research process.

Results

A Comparison of the Objectives of Mother-Tongue Curricula of the Target Countries by Higher-Order Thinking Processes in PISA 2015

As seen in Table 2, the objectives in mother-tongue curricula of the countries were classified by intellectual dimensions (OECD, 2016). Accordingly, Hong Kong, Shanghai, and South Korea had most objectives at levels 3 and 4, and the fewest at level 1a and below. This indicated that the objectives of the mother-tongue curriculum of these countries were similar as they reflected higher-order thinking processes at these levels. Singapore included 51 objectives at level 4, although it had most objectives at level 2 and 3. On the other hand, Singapore had the most objectives at levels 5 and 6 compared to other countries. Turkey had the most objectives at levels 2 and 3, and the fewest at level 6. Also, Turkey had the fewest objectives at levels 5 and 6, and the most objectives at 1b and below levels.

Table 2

A Comparison of the Objectives of the Mother-Tongue Curricula of the Countries by Higher-Order Thinking Processes in PISA 2015

Countries	Hong Kong- China/Shanghai- China	South Korea	Singapore	Turkey
1b, below	14	15	22	30
1a	16 _b	17 _b	29	51 _a
2	23 _b	19 _b	66 _b	155 _a
3	52	34 _b	59	83 _a
4	58	44	51	43
5	23	20	29	17
6	21 _a	19	27 _a	6 _b
Total	207	107	283	385

*Hong Kong and Shanghai-China have the same mother-tongue curriculum.

A number of chi-square tests were conducted to determine whether there was a significant relationship between the countries and the number of objectives in the mother-tongue curricula. Bonferroni correction was performed to effectively control the Type 1 error rate in multiple comparisons of the performed chi-square tests. The results of the chi-square analyses were shown in Table 2. There was a significant relationship between objectives in the mother-tongue curricula of the countries. The objectives at level 1a in Turkey's mother-tongue curricula were significantly higher than Hong Kong-China/Shanghai-China ($\chi^2(1, N=67) = 18.28, p < .0001$) and South Korea, ($\chi^2(1, N=68) = 17.00, p < .0001$). The objectives at level 2 in Turkey's mother-tongue curriculum were significantly higher than Hong Kong-China/Shanghai-China ($\chi^2(1, N=178) = 97.88, p < .0001$), South Korea, ($\chi^2(1, N=174) = 109.30, p < .0001$) and Singapore ($\chi^2(1, N=221) = 35.84, p < .0001$). The objectives at level 3 in Turkey's mother-tongue curricula were significantly higher than South Korea, ($\chi^2(1, N=117) = 20.52, p < .0001$). The objectives at level 6 in Turkey's mother-tongue curricula were significantly higher than Hong Kong-China/Shanghai-China ($\chi^2(1, N=27) = 8.33, p < .0001$) and Singapore ($\chi^2(1, N=33) = 13.36, p < .0001$).

As can also be seen in Table 2, at levels 4, 5 and 6, 102 objectives out of 207 in the Chinese language curriculum, 83 objectives of 168 of South Korea, 107 objectives of 283 of Singapore and 66 objectives of 385 of Turkey were found to reflect higher-order thinking processes. Singapore (107), Hong Kong/Shanghai-China (102) had the most objectives, whereas Turkey (66) and South Korea (83) had the fewest.

A Comparison of the General Objectives of Mother-Tongue Curricula of the Target Countries by Higher-Order Thinking Processes

Analyzing the general objectives by the way they reflected higher-order thinking processes, first, it was found that four (31%) general objective statements, which were the third, seventh, eighth, and ninth items, were related to higher-order thinking, although there were 13 general objectives in the Turkish language curriculum. Besides, only one (25%) item from Hong Kong/Shanghai-China was related to higher-order thinking, although they had four general objectives in their mother-tongue curricula. This is also true for South Korea. Although the Korean language curriculum had three general objectives, only one (33%) item reflected higher-order thinking. Last, in Singapore's English language syllabus, listening and reading skills were made active along with higher-order thinking processes only through one item.

Table 3

Similarities and Differences in General Objectives of the Mother-Tongue Curricula of the Countries by Higher-Order Thinking Processes

Turkey
3. Improving skills of reasoning, comprehending, organizing, classifying, questioning, relating, criticizing, estimating, construing, analyzing, synthesizing and evaluating.
7. Improving basic skills such as scientific, positive, creative and critical thinking, self-expression, communicating, cooperating, problem-solving and assertiveness.
8. Improving skills of seeking and exploring knowledge, interpreting and cognitive restructuring.
9. Improving skills of obtaining, using and generating information through printed materials and multimedia sources.
Singapore
1. Listen, read, view critically and with accuracy and understanding a wide range of literary and informational/functional texts from print and non-print sources.
Hong Kong and Shanghai-China
3. Enhance positive thinking through higher-order thinking skills.
South Korea
2. Learners become completely familiar with information and skills which are required to understand and generate speeches and writing creatively and critically.

(CLC, 2015; KLC, 2007; SELS, 2010; TTC, 2015).

Second, Table 3 shows similarities and differences in higher-order thinking processes in the mother-tongue curricula of the countries. Hence, expanded explanations on the way Turkish students should have higher-order thinking abilities through their languages such as “*reasoning, comprehending, organizing, classifying, questioning, relating, criticizing, estimating, construing, analyzing-synthesizing and evaluating, scientific, positive, critical and creative thinking, self-expression, communicating, cooperating, problem solving, seeking and exploring, interpreting and cognitive restructuring*” can be observed in Table 3 through statements reflecting higher-order thinking. In the mother-tongue curricula of Hong Kong/Shanghai-China, a general statement, “*improving higher-order thinking,*” was included. Two dimensions of higher-order thinking were discussed through the statement “*creative and critical thinking*” in the Korean language curriculum, and the Singapore English language syllabus included the statement, “*read and view critically*” in all three objectives. Comparing curricula of all the countries by higher-order thinking processes, the Turkish language curriculum can be said to include the most statements.

A comparison of Objectives for Verbal Communication/Speaking-Listening Skills in the Mother-Tongue Curricula of the Target Countries by the Reflection of Higher-Order Thinking Processes

Upon reviewing objectives for verbal communication/speaking-listening skills in the mother-tongue curricula of the researched countries, for Turkey, 47 (47%) objectives out of 100 for verbal communication/speaking-listening skills in its mother-tongue curriculum; 45 (58%) objectives of Hong Kong/Shanghai-China out of 78; 31 (38%)_b objectives of South Korea out of 81, and 57 (45%)_a objectives of

Singapore out of 126 were observed to mostly reflect level 4 ($\chi^2(1, N=88)=7.68, p<.0001$), but not enough at level 5 and 6 (CLC, 2015; KLC, 2007; SELS, 2010; TTC, 2015). This condition indicates that the countries' objectives for verbal communication/speaking-listening skills at higher-order thinking levels were few and accumulated at level 4. Even half of the objectives in the mother-tongue curricula of the countries, except Hong Kong/Shanghai-China, for verbal communication/speaking-listening skills do not seem to reflect higher-order thinking. Besides, as seen through the examples in Table 4, objectives reflecting higher-order thinking for such skills seem to be repeated in primary and secondary education levels of the countries researched, except for South Korea. This condition shows that objectives of higher-order thinking processes for the same kind of verbal communication/speaking-listening skills were included in the mother-tongue curricula by ignoring different grade levels and without any modifications. Below are examples of objectives of higher-order thinking for verbal communication/speaking-listening skills in mother-tongue programs:

Table 4

Examples of Objectives of Higher-Order Thinking for Verbal Communication/Speaking-Listening Skills in Mother-Tongue Programs

Turkey
1. Question the consistency of the information and thoughts in what is watched/listened (6 th , 7 th , 8 th grades).
2. Draw inferences about the way the action may develop and draw a conclusion by envisioning what they listen (2 nd , 3 rd , 4 th grades).
3. Analyze how sentences, acts, scenes or stanzas are related to the whole text and how these contribute to the storyline (6 th grade).
4. Draw inferences from simple images and summarize a situation by interconnecting them with each other (2 nd grade).
Singapore
1. Make predictions about subsequent action or activity by using prior knowledge, phonological cues, contextual clues (1 st , 2 nd , 3 rd , 4 th , 5 th , 6 th grades).
2. Deduce meaning of words from how they relate to one another (3 rd , 4 th , 5 th , 6 th grades).
3. Elaborate on/substantiate points using details, anecdotes, concrete examples, experiences and feelings (4 th , 5 th , 6 th grades).
4. Elaborate on, explain and/or justify the main idea of a paragraph by providing relevant factual information (5 th , 6 th grades).
South Korea
1. Discover lessons contained in a story after listening to moral speeches (3 rd grade).
2. Predict subsequent events when watching dramas (6 th grade).
3. Compare and understand online conversations with offline conversations (5 th grade).
4. Judge arguments in a discussion (5 th grade).
Hong Kong/Shanghai-China
1. Formulate questions, make predictions/estimations and hypotheses (1 st , 2 nd , 3 rd grades).
2. Work out the meaning of unknown words using contextual or pictorial clues (1 st , 2 nd , 3 rd grades).
3. Draw logical conclusions based on adequate data and evidence, and make predictions about consequences (4 th , 5 th , 6 th grades).
4. Understand and make deductions/inferences from sources (4 th , 5 th , 6 th grades).

(CLC, 2015; KLC, 2007; SELS, 2010; TTC, 2015).

A Comparison of Reading and Writing Skills in the Mother-Tongue Curricula of the Target Countries by Higher-Order Thinking Processes

First, upon reviewing the objectives of reading and writing skills in mother-tongue curricula of the researched countries, 51 (43%) objectives of 119 of mother-tongue curricula of Hong Kong/Shanghai-China, 43 (49%) objectives out of 87 of South Korea, 109 (52%) objectives of 208 of Singapore, and 102 (36%) objectives of 285 of Turkey were observed to mostly reflect level 4, and not to reflect levels 5 and 6 by higher-order thinking processes (CLC, 2015; KLC, 2007; SELS, 2010; TTC, 2015). As a result of the chi-square test, there was not a significant relationship between objectives of reading and writing skills in the mother-tongue curricula and the countries themselves. Based on these data, all mother-tongue curricula of the countries may be said not to have adequately reflected higher-order thinking processes in reading and writing skills as they did not in the objectives of verbal communication/speaking-listening skills. The fact that almost one-third of 285 objectives in reading and writing skills in the Turkish teaching curriculum was for higher-order thinking implies that two-thirds of the overall objectives of reading and writing skills reflected lower-order thinking processes. Second, except for Korea, objectives in mother-tongue curricula in reading and writing skills, which reflect higher-order thinking processes, were repeated without any modifications or considerations for different grade levels, as seen through the examples in Table 5. Below are examples of objectives reflecting higher-order thinking processes in reading and writing skills in the curricula of the countries:

Table 5

Examples of Objectives Reflecting Higher-Order Thinking Processes in Reading and Writing Skills in Mother-Tongue Curricula of the Countries

Turkey
1. Specify heroes in the text and compare them with each other (3 rd , 4 th , 5 th , 6 th grades).
2. Construe the text by referring to examples and details when necessary (4 th grade).
3. Make comparisons intertextually (4 th , 5 th , 6 th grades).
4. Deduce opinions, justifications appropriate to the writing objective (5 th , 6 th , 8 th grades).
Singapore
1. Organize facts, ideas and/or points of view in a way appropriate to the mode of delivery, purpose, and audience (1 st , 2 nd , 3 rd , 4 th , 5 th , 6 th grades).
2. Elaborate on, explain and/or justify the main idea of a paragraph by providing relevant factual, descriptive, emotive or sensory details and/or examples (5 th , 6 th grades).
3. Review and revise drafts to enhance relevance, focus, and clarity in the expression of meaning (1 st , 2 nd , 3 rd , 4 th , 5 th , 6 th grades).
4. Construct meaning from visual texts (1 st , 2 nd , 3 rd , 4 th , 5 th , 6 th grades).
South Korea
1. Write texts that interpret materials like paintings, pictures, graphs, or charts (3 rd grade).
2. Imagine situations described in an interesting text (2 nd grade).
3. Evaluate the appropriateness of a writer's suggested opinion (4 th grade).
4. Assess the reliability of information contained in an advertisement (5 th grade).
Hong Kong/Shanghai-China
1. Reproduce sentences based on teacher's model and use words (1 st , 2 nd , 3 rd grades).
2. Guess the meaning of unfamiliar words by using contextual or pictorial clues (1 st , 2 nd , 3 rd grades).
3. Work out the meaning of an unknown word or expression by using visual clues, context, and knowledge of the world (4 th , 5 th , 6 th grades).
4. Predict the likely development of a topic by recognizing key words, using personal experiences, and making use of context and knowledge of the world (4 th , 5 th , 6 th grades).

(CLC, 2015; KLC, 2007; SELS, 2010; TTC, 2015).

Discussion and Conclusion

The current study suggested that the mother-tongue curricula of Hong Kong/Shanghai-China, South Korea, Singapore, and Turkey embraced higher-order thinking objectives at level 4 and below, but they were inadequate in reflecting objectives of higher-order thinking processes at levels 5 and 6. Moreover, as a result of comparing objectives in the curricula of the countries with higher-order thinking processes specified by PISA tests (OECD, 2016), it was also found that these objectives showed parallelism with PISA results. That can be supported by the fact that objectives in mother-tongue curricula are basic variables in modifying skills, behaviors and thinking levels (Scott, 2016). Accordingly, students' higher-order thinking abilities in an intentional way render the reflection of objectives within curricula in higher-order thinking processes possible.

As a result of the analyses, the mother-tongue curricula with the most objectives regarding higher-order thinking processes belonged to Singapore (56) and Hong Kong/Shanghai-China (44), while the mother-tongue curricula with the fewest objectives belonged to South Korea (39) and Turkey (23). When the objectives of the mother-tongue curricula of the countries were evaluated in total, the countries with the most objectives were Turkey (385) and Singapore (283), whereas the countries with the least objectives were Hong Kong/Shanghai-China (207) and South Korea (107). The majority of the 385 objectives of Turkey were at levels 2, 3 and 4, whereas the majority of the 207 objectives of Hong Kong and Shanghai-China were levels 3 and 4. From South Korea, 107 objectives were at levels 3 and 4, and 283 objectives of Singapore were on level 2. In other words, the mother-tongue curricula of Singapore and Hong Kong and Shanghai-China focused more on students' higher-order thinking skills, while the mother-tongue curriculum of Turkey aimed to improve students' lower-order thinking skills of students.

PISA Tests

Comparing objectives in the mother-tongue curricula of Hong Kong and Shanghai-China, South Korea, Singapore, and Turkey by the way they reflect higher-order thinking processes, it can be observed that there are specific similarities and differences among them regarding levels of objectives in their curricula. First, objectives in the curricula of Hong Kong and Shanghai-China (53) and South Korea (51) show similarities in that they reflect lower-order intellectual skills at levels 1b and below and 2, specified by PISA 2015. However, 117 objectives in Singapore's English language syllabus at levels 1b, 1a and 2 differed from 236 objectives in the Turkish language curriculum. In other words, Turkey and Singapore included too many lower-order thinking objectives, such as locating a single piece of explicitly stated information, shapes and familiar symbols, making simple connections between adjacent pieces of information, drawing inferences from a specific part of the text, at level 2 and below (SELS, 2010; TTC, 2015). Second, while objectives in the curricula of Hong Kong and Shanghai-China (110) and Singapore (110) at levels 3 and 4 showed similarity, they differed from South Korea (78) and Turkey (126). The curricula of the countries except for South Korea included objectives of skills such as

recognizing the relationship between several pieces of information that must meet multiple conditions, dealing with concepts that are contrary to expectations, generating abstract categories for interpretation, organizing and interpreting similarities and differences, hypothesizing about or critically evaluating a complex text on an unfamiliar topic taking into account multiple criteria or perspectives, and applying sophisticated understanding from beyond the text (CLC, 2015; SELS, 2010; TTC, 2015). Third, Hong Kong and Shanghai-China (44) and South Korea (39) included similar objectives at levels 5 and 6; they differed from Singapore (56) and Turkey (23). This means that while other researched countries had objectives (CLC 2015; SELS 2010; TTC 2015) which required critical evaluating and hypothesizing, Turkey had 17 objectives at level 5 and 6 at level 6, which clearly shows that Turkey had very few objectives at level 5 and 6, and thus was quite behind other countries.

The level of the objectives in the curricula of Hong Kong and Shanghai-China, Singapore and Turkey somewhat seemed to support reading comprehension proficiency level of these countries in PISA tests because Hong Kong and Shanghai-China, South Korea and Singapore had the most objectives at level 3 and 4 and had the fewest at level 1a and below. Furthermore, while these countries had fewer students at level 1a and below in all PISA tests from 2000 to 2015, which included objectives for reading comprehension proficiency, they had more students at levels 3 and 4 (OECD, 2000, 2004, 2006, 2010, 2014, 2016). Turkey, however, includes objectives at levels 2 and 3 in its curriculum and had students mostly at levels 2 and 3 in PISA tests. The fact that Turkey had more objectives at level 1a and below corresponds to the fact that it had more students in PISA tests (OECD, 2004, 2006, 2010, 2014, 2016).

General Objectives

Comparing the mother-tongue curricula of the countries, it can be observed that Hong Kong and Shanghai-China, South Korea and Singapore had one general objective reflecting higher-order thinking processes each, whereas Turkey had four general objectives. In addition, Hong Kong and Shanghai-China mentioned enhancing higher-order thinking in a single statement by not referring to reading, speaking, writing and listening skills, whereas South Korea mentioned critical and creative thinking processes within higher-order thinking by referring to linguistic skills. Turkey, however, with its four detailed objectives of higher-order thinking processes, asserted its national objectives for this matter. When profoundly viewed, all these objectives can be observed to correspond with higher-order thinking processes at level 4 and above, specified by PISA (OECD, 2016).

Although Turkey elaborately described its general national objectives for higher-order thinking processes in its curriculum, these objectives were not observed to be reflected in objectives in the curriculum. The fact that 47 objectives out of 100 in verbal communication/speaking-listening skills and 102 objectives out of 285 in writing skills in its curriculum are for higher-order thinking processes concretizes this fact. Besides, although Hong Kong and Shanghai-China, Singapore and South Korea have one statement about higher-order thinking in general objectives, these

objectives can be said not to reflect in objectives in their curricula, either (Table 4 and 5). Notably, the fact that these countries have few objectives at levels 5 and 6 seems to support this datum (Table 2).

Verbal Communication/Speaking and Listening Skills

Objectives for verbal communication/speaking and listening skills in the curricula of researched countries may be inadequate for reflecting higher-order thinking levels because objectives set in such a conception are few in the curricula of the countries and seem to be repeated at different grade levels. Moreover, although there are enough objectives for these skills at different grade levels in the curricula of these countries, 47 objectives of Turkey, 45 of Hong Kong/Shanghai-China, 31 of South Korea and 57 of Singapore reflect higher-order thinking processes. This may negatively affect both thinking processes generated by these skills and the quality of the mother-tongue curriculum because students' improvement in speaking and listening skills is possible with an enhancement in the quality of mother-tongue curricula (Grez & Valcke, 2010). Such upgrade may be provided by restructuring objectives for speaking and listening skills to be improved in the mother-tongue curriculum to enhance higher-order thinking ability (Hirst, 2010).

Reviewing objectives for verbal communication/speaking and listening skills, considering higher-order thinking processes specified by PISA, these objectives may be observed as mostly for level 4 (CLC, 2015; KLC, 2007; SELS, 2010; TTC, 2015). These objectives reflect skills such as making intertextual connections, comparing and contrasting, construing, evaluating the features of the text, organizing the text, interpreting the meaning of nuances of language, hypothesizing and critically evaluating (OECD, 2016). Hence, it is suggested that researched countries promote higher-order thinking processes generated by speaking and listening skills as appropriate to levels 5 and 6 though they are top-performing countries in PISA results. It is also suggested that Turkey effectively reflect its national objectives, which it included in its general objectives for higher-order thinking processes in objectives for speaking and listening skills, while restructuring its curriculum. Thus, Turkey may have consistency among its mother-tongue curriculum, general objectives, and speaking-listening in terms of higher-order thinking.

Reading and Writing Skills

Objectives for reading and writing skills in the mother-tongue curricula of the countries seem to be inadequate, as they are in verbal communication/speaking-listening skills. Although Turkey has 285 and Singapore has 208 objectives for reading and writing skills at different grade levels, only 102 of Turkey's objectives and 109 of Singapore's objectives reflect higher-order thinking processes. This indicates that objectives for higher-order thinking processes for these skills are few for the different grade levels of primary and secondary education in both countries' curricula. Accordingly, objectives of Hong Kong/Shanghai-China (51) and South Korea (43) for reading and writing skills that reflect higher-order thinking are not only few in number but also reflect thinking processes only at level 4, as do Singapore and Turkey (CLC, 2015; KLC, 2007).

In conclusion, objectives have qualities that directly affect students, teachers, content, learning-teaching processes and activities, and assessment (Demirel, 2015). Therefore, it is suggested that educational managers in the countries researched in this study attach importance to revising and restructuring the objectives for higher-order thinking processes at levels 5 and 6 in their mother-tongue curricula. This is expected to particularly help raise individuals who can prioritize skills such as decision-making, critical, analytic and relational thinking, creativity, analyzing and synthesizing, construing and inferring, self-regulation, and self-assessment.

References

- Aykac, N. (2005). *Ogretme ve ogrenme surecinde aktif ogretim yontemleri [Active teaching methods in teaching and learning process]*. Ankara: Naturel.
- Bakir, S., Demirel, H., & Yilmaz, Y. E. (2015). PISA scores from 2003 to 2012: A comparison of Turkey with the three countries which have been successful in each term in field of science. *Social and Behavioral Sciences*, 174, 2733-2742.
- Barber, M., & Mourshed, M. (2009). *Shaping the future: How good education systems can become great in the decade ahead*. Report on the International Education Roundtable, 7.
- Cebi, A., & Durmus, T. (2012). Turkiye ilkogretim Turkce dersi ogretim programi ile ABD Massachusetts İngilizce egitimi cerceve programinin karsilastirilmesi [A comparison of Turkish primary education Turkish curriculum with US Massachusetts English education curriculum]. *Journal of Educational and Instructional Studies in The World*, 2(1), 110-121.
- Cer, E. (2016). *Turkce ogretiminde etkinlikler [Activities in Turkish teaching]*. Ankara: Ani.
- Chinese Language Curriculum (CLC) (2015). *The government of the Hong Kong special administrative region of the people's republic of China*, China.
- De Bono, E. (2010). *Lateral thinking: A textbook of creativity*. London: Penguin.
- Demir, Y., & Yavuz, M. (2014). A comparative analysis of the english language curricula in Finland, Japan, South Korea, China (Shanghai) and Turkey. *Mediterranean Journal of Humanities*, IV (1), 115-128.
- Demirel, O. (2015). *Egitimde program gelistirme: Kuramdan uygulamaya [Curriculum development in education: From the theory to practice]*. Ankara: PegemA.
- Erdogan, T., & Gok, B. (2011). Comparison of Turkey, Finland and Ireland native language teaching programs. *Buca Egitim Fakultesi Dergisi*, 29, 1-19.
- Erginer, A. (2006). *Avrupa birligi egitim sistemleri ve Turk egitim sistemiyle karsilastirmalar [European union education systems and comparisons with Turkish education system]*. Ankara: PegemA.
- Grez, L. D., & Valcke, M. (2010). Learning and instruction of oral presentation skills. In Limon E. Kattington (Ed.), *Handbook of curriculum development* (pp. 177-209). New York: Nova Science Publishers.

- Hirst, P. H. (2010). *Knowledge and the curriculum: A collection of philosophical papers*. London: Routledge.
- Korean Language Curriculum (KLC) (2007). *Ministry of education and human resources development, Korea*.
- Nickerson, R. S. (2009). Technology in education: Possible influences on context, purposes, content, and methods. In R. S. Nickerson & P. P. Zodhiates (Eds.). *Technology in education: Looking toward 2020*. (pp. 34-55). New York: Routledge.
- OECD (2000). *PISA 2000 results*. OECD Publishing.
- OECD (2004). *Learning for tomorrow's world: First results from PISA 2003*. OECD Publishing.
- OECD (2006). *PISA 2006 results: Science competencies for tomorrow's world (Volume I)*. OECD Publishing.
- OECD (2010). *PISA 2009 results: What students know and can do: Student performance in reading, mathematics and science (Volume I)*. OECD Publishing.
- OECD (2014). *PISA 2012 results: What students know and can do – Student performance in mathematics, reading and science (Volume I)*. OECD Publishing.
- OECD (2016). *PISA 2015 results: Excellence and equity in education. Volume I*. Retrieved December 6, from <http://www.oecd.org/dataoecd>
- Orakçı, S. (2015). An analysis of teacher education systems of Shanghai, Hong Kong, Singapore, Japan and South Korea. *Asian Journal of Instruction*, 3(2), 26-43.
- Punch, K. F. (2005). *Sosyal araştırmalara giriş: Nicel ve nitel yaklaşımlar [Introduction to social research: Quantitative and qualitative approaches]*. Ankara: Siyasal Kitapevi.
- Scheurich, J. J., Skrla, L., & Johnson, J. (2005). Thinking carefully about equity and accountability. In L. Skrla, & J. J. Scheurich (Eds.). *Educational equity and accountability*. (pp. 13-29). New York: Routledge.
- Scott, D. (2016). *New perspectives on curriculum, learning and assessment*. New York: Springer.
- Scott, D., & Evans, C. (2015). The elements of a learning environment. In D. Scott & E. Hargreaves (Eds.). *Sage handbook on learning*. (pp. 12-33). London: Sage.
- Singapore English Language Syllabus (SELS) (2010). *Curriculum planning and development division, ministry of education, Singapore*.
- Titiz, M. T. (2013). *Ezbersiz eğitim yol haritası [Non-memorized education road map]*. Ankara: PegemA.
- Turkish Teaching Curriculum (TTC) (2015). *Millî Eğitim Bakanlığı Talim ve Terbiye Kurulu Başkanlığı [Ministry of National Education Ministry Education and Training Chair], Türkiye*.
- Wall, J., & Ryan, S. (2010). *Resourcing for curriculum innovation: Learning in a changing world*. Australia: ACER.

- Yaman, H., & Dağtas, A. (2015). Norvec ve Türkiye'deki anadili öğretim programlarının karşılaştırmalı olarak analiz edilmesi [Comparable analyzing of mother-tongue teaching curriculums in Norway and Turkey]. *Adıyaman Üniversitesi Sosyal Bilimler Enstitüsü Dergisi*, 8(19), 343-382.
- Yıldırım, A., & Simsek, H. (2011). *Sosyal bilimlerde nitel araştırma yöntemleri [Qualitative research methods in the social sciences]*. Ankara: Seçkin.
- Yıldız, D. (2015). A comparative investigation on Turkish, Korean and Finnish mother tongue course curriculums. *Education and Science*, 40(179), 89-110.

PISA'da Başarılı Olan Ülkelerle Türkiye'nin Anadili Programının Üst Düzey Düşünme Süreçleri Bakımından Karşılaştırılması

Atıf:

- Cer, E. (2018). A comparison of mother-tongue curricula of successful countries in PISA and Turkey by higher-order thinking processes. *Eurasian Journal of Educational Research*, 73, 95-112, DOI: 10.14689/ejer.2018.73.6

Özet

Problem Durumu: Üst düzey düşünme, eleştirel ve yaratıcı düşünmenin temelinden oluşan, akıl yürütmeye dayanan, bilgiler arasında tutarlılık, bağlantı ve derin kavrayış gerektiren ve bulgulara dayalı olarak sonuçların oluşturulduğu düşünme biçimidir. Bu tür düşünme biçiminin ortaya çıkartılmasında başat sorumluluklardan birisi de anadili programlarına düşmektedir. Bu bakımdan, ülkelerin anadili programlarını kazanım, içerik, öğrenme-öğretme süreci ve değerlendirme yönlerinden geliştirmeleri gerekmektedir. Çünkü anadili programlarındaki bu nitelik gelişimi, üst düzey düşünme becerisi yönünden PISA sınavları sonucunda kendini daha iyi belli etmektedir. Bu çalışmada, Şangay-Çin, Hong Kong-Çin, Singapur, Güney Kore ve Türkiye'nin anadili programları üst düzey düşünme süreçleri bakımından incelemiştir. Bu çalışmaya adı geçen ülkelerin seçilmesinin nedeni, PISA 2006'dan başlayarak okuduğunu anlama becerisi bakımından bu ülkelerin yeterlilik düzeylerinin sürekli olarak gelişmesidir. İkinci olarak, bu konuyla ilgili yapılan araştırmalar salt eğitim programları, anadili programları ya da öğretmen yetiştirme üzerine gerçekleştirilmiştir. Oysa bu çalışmayla ilk kez bu ülkelerin anadili programlarını PISA sınavları doğrultusunda üst düzey düşünme süreçlerine olan katkısı yönünden değerlendirilmektedir. Böyle bir değerlendirme, bu ülkelerin hem anadili programlarının kazanım boyutu ile ilgili genel bir görüş ortaya koyabilir hem de bu programların üst düzey düşünme süreçlerine olan katkısını belirleyebilir. Son olarak, bu çalışma, Türkiye'nin anadili programını diğer ülkelerin anadili programlarıyla karşılaştırarak Türkiye'nin anadili programında yer alan kazanımlarının üst düzey düşünme süreçleriyle ilgili durumunu ortaya çıkartacaktır.

Araştırmanın Amacı: Bu çalışmanın amacı, Şangay-Çin, Hong Kong-Çin, Singapur, Güney Kore ve Türkiye'nin anadili programlarında yer alan kazanımlarını PISA sınavlarıyla belirlenmiş üst düzey düşünme süreçleri bakımından karşılaştırarak bu kazanımların genel niteliklerini ortaya çıkarmaktır.

Araştırmanın Yöntemi: Şangay-Çin, Hong Kong-Çin, Singapur, Güney Kore ve Türkiye'nin anadili programlarının üst düzey düşünme süreçleri bakımından karşılaştırılmasını amaçlayan bu çalışmada nitel bir araştırma deseni kullanılmıştır. Araştırmanın verilerinin toplanmasında ise doküman incelenmesi kullanılmıştır. Araştırmada doküman incelemesi yapılırken güncel ve birincil kaynaklara ulaşılmaya çalışılmıştır. Bu yönüyle, bu çalışmada ilk olarak, araştırmaya konu olan ülkelerin anadili programları ilköğretim ve ortaöğretim düzeylerinde ele alınmıştır. Yani, bu çalışmada incelenen dokümanlar, beş ülkeye ait ilköğretim ve ortaöğretim programlarının tamamını oluşturmaktadır. Bu programlar, ilgili ülkelerin eğitim bakanlıklarının resmi bilgisayar adreslerinden elde edilmiştir. Başka bir söyleyişle, Şangay-Çin, Hong Kong-Çin, Singapur, Güney Kore ve Türkiye'nin anadili programlarındaki kazanımlarının üst düzey düşünme süreçlerini kapsayıp kapsamadığı ile ilgili bu adreslerden bilgiler toplanmıştır. Bu amaç doğrultusunda, verileri destekleyecek bir biçimde bu ülkelerin eğitim bakanlıkları ya da eğitim bürolarının bilgisayar sayfaları, bu kurumların yayımladıkları raporlar, OECD raporları ve bilimsel çalışmalar da bu araştırmanın ikincil veri kaynağını oluşturmuştur. İkinci olarak, ülkelerin anadili programları üst düzey düşünme süreçleri bakımından incelenirken PISA 2015'in belirlediği 5. ve 6. düzeyler (OECD, 2016), üst düzey düşünme yeterliliği olarak ele alınmıştır.

Bu çalışmada, elde edilen verilerin çözümlenmesinde içerik analizi kullanılmıştır. Bu çalışmada içerik analizi kullanılmasının amacı, Şangay-Çin, Hong Kong-Çin, Singapur, Güney Kore ve Türkiye'nin anadili programlarındaki kazanımlarını PISA 2015'te belirlenmiş olan üst düzey düşünme süreçleri bakımından inceleyerek ülkeleri birbirleriyle karşılaştırmaktır. Bu amaç doğrultusunda, bu ülkelerin anadili programlarında yer alan kazanımları, araştırmanın kodlama yapılacak tümce düzeyindeki birimleri olarak ele alınmıştır. Bu bakımdan, araştırmaya konu olan ülkelerin anadili programlarında belirtilen kazanımları PISA 2015'in 5. ve 6. düzeyde yer alan ifadelerine uygun olup olmaması bakımından karşılaştırmalı olarak sınıflandırılmıştır. Daha sonra, bu sınıflandırmalar hem araştırma konusuna aşına olmayan nitel araştırma konusunda deneyim sahibi başka bir uzman tarafından değerlendirilmiş hem de kodlamalar arasındaki farklılıklar için üçüncü bir alan uzmanından görüş alınmıştır. Sonuç olarak, araştırmacıyla her iki uzmanın yaptığı sınıflandırmaların birbirleriyle benzer olduğu görülmüştür. Bu yaklaşım, ülkelerin anadili programlarına yönelik ortaya çıkartılan benzerlik ve farklılıklardaki öznelliği azaltmak ve araştırmanın güvenilirliğini arttırmak amacıyla kullanılmıştır.

Araştırmanın Bulguları: Hong Kong-Çin, Şangay-Çin ve Güney Kore'nin anadili programlarındaki en çok kazanımın 3. ve 4. düzeylerde olduğu; en az kazanımın ise 1a ve aşağısındaki düzeylerde olduğu belirlenmiştir. Bu durum, bu ülkelerin anadili programlarındaki kazanımlarının bu düzeylerdeki düşünme süreçlerini yansıtması bakımından birbirleriyle benzer özellikler gösterdiğini ortaya koymaktadır. Singapur

ise, en fazla kazanımı 2. ve 3. düzeylerde bulundurmasına karşın 4. düzeyde de 51 kazanımı vardır. Bununla birlikte, Singapur diğer ülkelerle karşılaştırıldığında 5. ve 6. düzeylerde en fazla kazanıma sahip ülkedir. Türkiye'nin ise, anadili programındaki en fazla kazanımının 2. ve 3. düzeylerde; en az kazanımının ise 6. düzeyde olduğu görülmektedir. Aynı zamanda, diğer ülkeler ile karşılaştırıldığında 1b ve aşağısındaki düzeylerde en fazla kazanım ile 5. ve 6. düzeylerde en az kazanımın Türkiye'de olduğu görülecektir. Bununla birlikte, Hong Kong-Çin/Şangay-Çin'in anadili programında yer alan 207 kazanımından 5. ve 6. düzeyleri kapsayan 44 kazanımının; Güney Kore'nin anadili programında yer alan 168 kazanımından 5. ve 6. düzeyleri kapsayan 39 kazanımının; Singapur'un anadili programında yer alan 283 kazanımından 5. ve 6. düzeyleri kapsayan 56 kazanımının ve Türkiye'nin anadili programında yer alan 385 kazanımından 5. ve 6. düzeyleri kapsayan 23 kazanımının üst düzey düşünme süreçlerini yansıttığı belirlenmiştir. Üst düzey düşünme süreçleri bakımından en fazla kazanıma sahip olan anadili programı Singapur (56) ve Hong Kong-Çin/Şangay-Çin'e (44) ait olmasına karşın en az kazanıma sahip olan anadili programı Güney Kore (39) ve Türkiye'ye (23) aittir.

Araştırmanın Sonuçları ve Önerileri: Bu çalışma kapsamında ele alınan ülkelerin anadili programlarında yer alan kazanımlarını yeniden gözden geçirerek 5. ve 6. düzeylerle ilişkili üst düzey düşünmeyi ortaya çıkartacak nitelikteki kazanımlarla anadili programlarını yeniden yapılandırmaya önem vermeleri gerekmektedir. Özellikle bu yönde yapılacak değişiklikler karar verme, eleştirel, analitik ve ilişkisel düşünme, yaratıcı olma, çözümlenme ve birleşim yapma, kestirim ve çıkarımda bulunma, özdüzenleme ve değerlendirme yapma gibi becerileri önceleyen bireylerin yetiştirilmesine olanak sağlayabilir. Bu araştırmanın ilk sınırlılığı, ülkelerin anadili programlarında yer alan kazanımlarının üst düzey düşünme süreçlerini yansıtmaması bakımından incelenmiş olmasıdır. Bu yönde yapılacak çalışmalarda, ülkelerin anadili programlarındaki içerik, öğrenme-öğretme süreçleri, ölçme ve değerlendirme boyutlarının da üst düzey düşünme süreçlerini yansıtmaması yönünden ele alınması gerekmektedir. İkinci olarak, bu çalışmada üst düzey düşünme süreçleri Hong Kong-Çin/Şangay-Çin, Güney Kore, Singapur ve Türkiye'nin anadili programları kapsamında bulunmaya çalışılmıştır. İlerleyen çalışmalarda hem bu ülkelerin sayısı arttırılmalı hem de üst düzey düşünme süreçleri başka disiplinlere yönelik programlara da uygulanmalıdır. Son olarak, bu çalışmada ülkelerin anadili programlarındaki kazanımları PISA sınavlarında belirlenmiş olan okuduğunu anlama yeterlilik düzeylerine göre sınıflandırılmıştır. İlerleyen çalışmalarda, okuma yeterlilik düzeyini ölçen PIRLS sınavı da göz önünde bulundurularak bir sınıflandırma yapılması gerekmektedir. Bu çalışmayla sunulabilecek öneri ise, anadili programlarında yer alan alt ve üst düzey düşünme süreçleriyle ilgili kazanımların daha iyi nasıl uygulanabilirliğine ilişkin çalışmaların yapılmasıdır.

Anahtar Sözcükler: Anadili programı, üst düzey düşünce, PISA, Türkiye.