Key Features of OECD Programme for International Student Assessment 2018 (PISA 2018)

PISA 2018 Results in Brief

<Regarding PISA 2018>

Since year 2000, the OECD Programme for International Student Assessment (PISA) has been implementing assessment in three domains, reading literacy, mathematics literacy, and science literacy (reading was the major domain in PISA 2018), to 15-year-old students who are at the end of compulsory education every three years. The mean score is designed to be able to be compared over the years. From the previous PISA 2015, the mode of assessment has changed to computer-based assessment (CBA).
In Japan, students in the grade equivalent to the first year of upper secondary school participated to the assessment, and PISA 2018 was implemented during the period between June and August 2018.

<Results in Japan>

Three domains

- Students in Japan continued to be on the world top level in mathematics and science. The OECD analyzed that they have solidly maintained its high level in terms of a long-term trend since the start of the assessment.
- In reading literacy, Japan was located in a group of countries that scored better than the OECD average, but the mean score and ranking of Japan statistically significantly declined compared to the previous assessment. In terms of a long-term trend, the OECD analyzed that Japan was one of the countries among the "Flat" type that showed no statistically significant change.

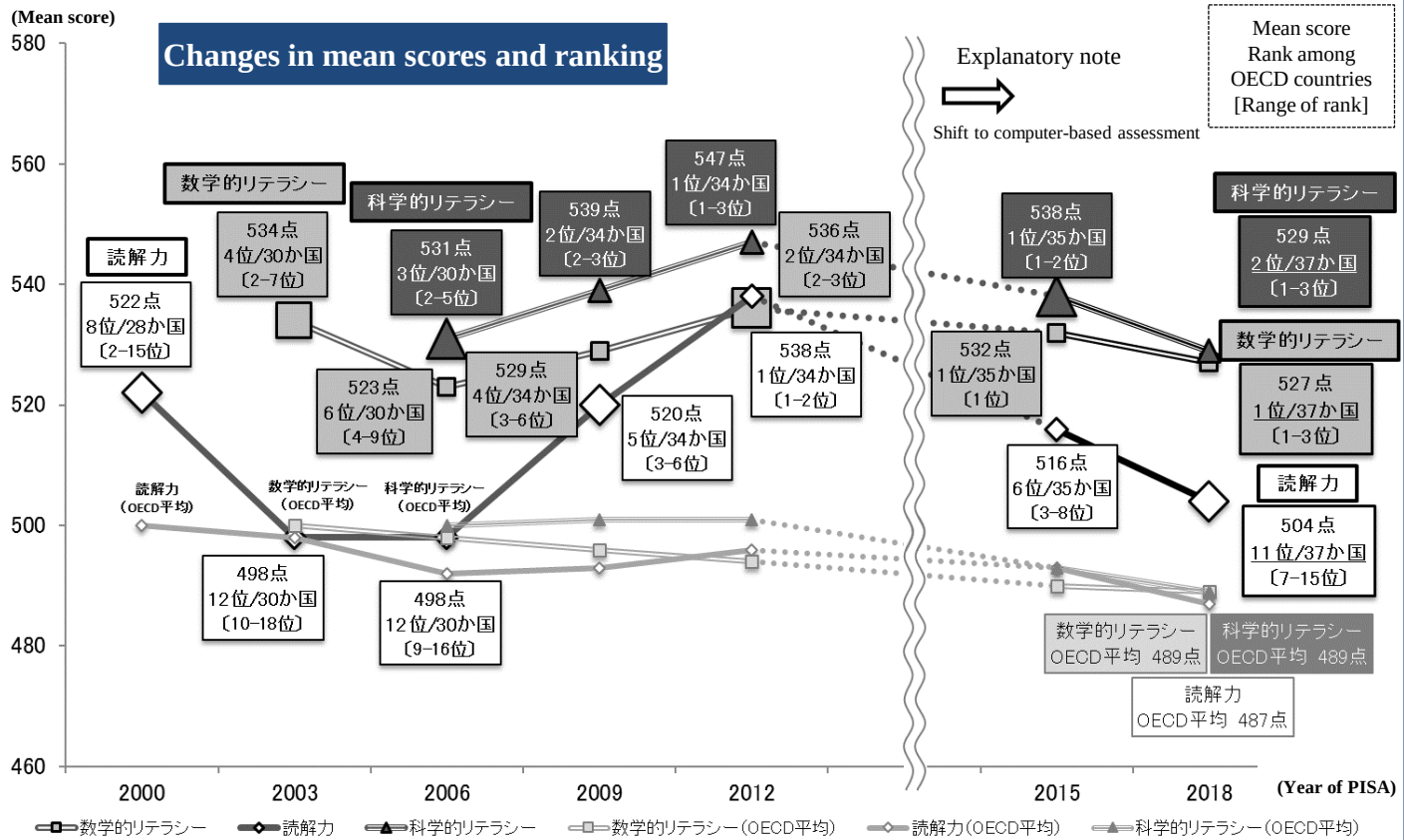
Reading

- Reading items which low percentage of Japanese students gave correct answer were, for example, items locating information from a text and items assessing the quality and credibility of a text.
- Students in Japan continue to have problem in explaining their own ideas using evidence so that other people can understand, in open ended-response items in reading.
- According to the student questionnaire, students in Japan tend to have a positive view towards reading. For example, the percentage of students in Japan who answered "Reading is one of my favourite hobbies" was higher than the OECD average. In addition, such students tend to have higher score in reading.

Questionnaire

- In Japan, just as in other OECD member countries, there was a tendency that the percentage of students with low level of proficiency is higher among students with a lower level of social, economic and cultural status.
- Regarding the students' use of ICT, the hours of its use in school lessons is shorter than other countries in Japan. In addition, although students use ICT for various purposes outside of school, their use tends to be biased toward chatting and playing video games.

Changes in mean scores and ranking



*Score points were converted by setting the OECD average in the assessment, in which each domain became the major domain (domain on which the assessment is focused) for the first time (2000 for reading, 2003 for mathematics, and 2006 for science), as the standard value (500 score points). For mathematics and science, results from the assessment, for which results can be compared are described on the graph. The symbols for each results are shown in a larger format for the year in which the relevant domain was the major domain.
*Wave lines are drawn between 2012 and 2015 because the ways of scaling and scoring were changed in PISA 2015 with the shift to computer-based assessment.
*The range of rank indicates Japan's range of upper and lower ranks among OECD countries in the mean score that are statistically plausible.

1. PISA 2018 Results

Comparison among OECD member countries (37 countries)

Countries surrounded by dotted lines are those that have no statistically significant difference from Japan's mean score.

	Reading	Mean score	Mathematics	Mean score	Science	Mean score
1	Estonia	523	**Japan**	**527**	Estonia	530
2	Canada	520	Korea	526	**Japan**	**529**
3	Finland	520	Estonia	523	Finland	522
4	Ireland	518	Netherlands	519	Korea	519
5	Korea	514	Poland	516	Canada	518
6	Poland	512	Switzerland	515	Poland	511
7	Sweden	506	Canada	512	New Zealand	508
8	New Zealand	506	Denmark	509	Slovenia	507
9	United States	505	Slovenia	509	United Kingdom	505
10	United Kingdom	504	Belgium	508	Netherlands	503
11	**Japan**	**504**	Finland	507	Germany	503
12	Australia	503	Sweden	502	Austria	503
13	Denmark	501	United Kingdom	502	United States	502
14	Norway	499	Norway	501	Sweden	499
15	Germany	498	Germany	500	Belgium	499
16	Slovenia	495	Ireland	500	Czech Republic	497
17	Belgium	493	Czech Republic	499	Ireland	496
18	France	493	Austria	499	Switzerland	495
19	Portugal	492	Latvia	496	France	493
20	Czech Republic	490	France	495	Denmark	493
	OECD average	487	OECD average	489	OECD average	489
	Reliable interval* (Japan) : 499-509		**Reliable interval (Japan) : 522-532**		**Reliable interval (Japan) : 524-534**	

Comparison among all participating countries and economies (79 countries/economies)

Countries surrounded by dotted lines are those that have no statistically significant difference from Japan's mean score.

	Reading	Mean score	Mathematics	Mean score	Science	Mean score
1	Beijing/Shanghai/Jiangsu/Zhejiang	555	Beijing/Shanghai/Jiangsu/Zhejiang	591	Beijing/Shanghai/Jiangsu/Zhejiang	590
2	Singapore	549	Singapore	569	Singapore	551
3	Macau	525	Macau	558	Macau	544
4	Hong Kong	524	Hong Kong	551	Estonia	530
5	Estonia	523	Taiwan	531	**Japan**	**529**
6	Canada	520	**Japan**	**527**	Finland	522
7	Finland	520	Korea	526	Korea	519
8	Ireland	518	Estonia	523	Canada	518
9	Korea	514	Netherlands	519	Hong Kong	517
10	Poland	512	Poland	516	Taiwan	516
11	Sweden	506	Switzerland	515	Poland	511
12	New Zealand	506	Canada	512	New Zealand	508
13	United States	505	Denmark	509	Slovenia	507
14	United Kingdom	504	Slovenia	509	United Kingdom	505
15	**Japan**	**504**	Belgium	508	Netherlands	503
16	Australia	503	Finland	507	Germany	503
17	Taiwan	503	Sweden	502	Australia	503
18	Denmark	501	United Kingdom	502	United States	502
19	Norway	499	Norway	501	Sweden	499
20	Germany	498	Germany	500	Belgium	499
	Reliable interval* (Japan) : 499-509		**Reliable interval (Japan) : 522-532**		**Reliable interval (Japan) : 524-534**	

*Gray-colored countries/economies are non-OECD member countries/economies.

*The reliable interval indicates the range of score points in which the mean value of all the students (population) subject to the assessment is considered to exist. As PISA is a sample survey, the mean value must be considered within a certain range.

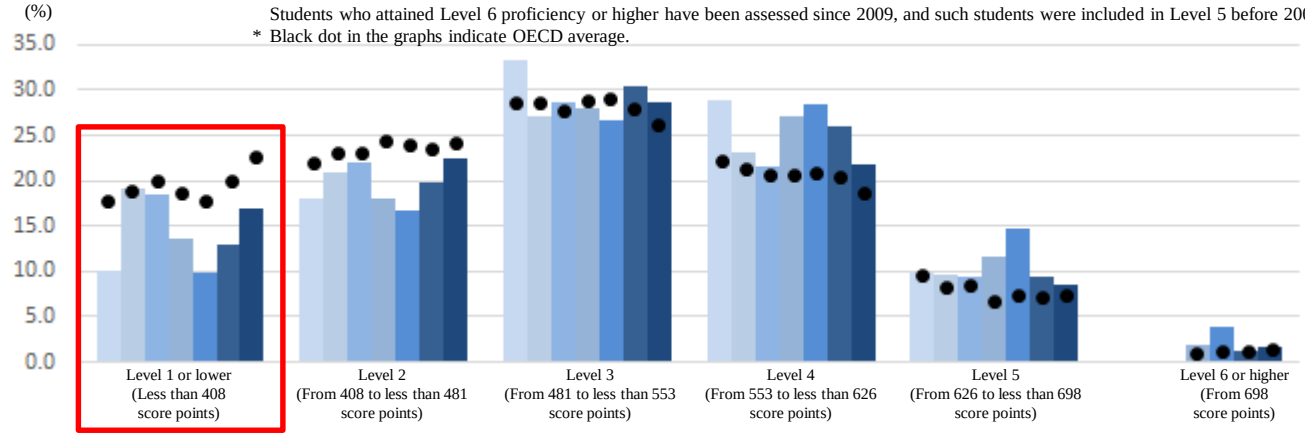
*Even countries with the same score points differ in the rank because their score points differ in decimal places.

2. Reading Literacy

Japan's results in reading literacy

- Japan's mean score in reading (504 score points) is among a group of countries that scored higher than the OECD average, but it has statistically significantly declined from the previous PISA 2015 (516 score points). Ranked 11th among OECD member countries (range of rank: 7th to 15th)
- The share of low-scoring students who attained Level 1 proficiency or lower have statistically significantly increased, and the OECD average also shows the same tendency.

* The higher the level of proficiency shows that, the student have attained a higher score points, and have sufficiently high proficiency in the relevant domain.
Students who attained Level 6 proficiency or higher have been assessed since 2009, and such students were included in Level 5 before 2006.
* Black dot in the graphs indicate OECD average.



*Figures in parentheses are Japan's mean scores in reading.

Long-term trend of the mean score of each country/economy

- According to the OECD analysis of the long-term trend of the mean scores between 2000 and 2018, Japan's reading performance is classified as countries/economies with no statistically significant change in average trend and falls under the "Flat" type among them.

	Increasingly positive	Steadily positive	Positive, but flattening
Countries/economies with a positive average trend	Reading score 2000 2003 2006 2009 2012 2015 2018 [Macau]	Reading score 2000 2003 2006 2009 2012 2015 2018 Estonia	Reading score 2000 2003 2006 2009 2012 2015 2018 Germany Poland
Countries/economies with no significant average trends	**Shallow U-shaped**	**Flat**	**Hump-shaped/gentle parabola**
	Reading score 2000 2003 2006 2009 2012 2015 2018 Ireland	Reading score 2000 2003 2006 2009 2012 2015 2018 Japan France Canada United States Italy United Kingdom	Reading score 2000 2003 2006 2009 2012 2015 2018 [Hong Kong] [Taiwan] OECD average
Countries/economies with a negative average trend	**Increasingly negative**	**Steadily negative**	**Negative, but flattening**
	Reading score 2000 2003 2006 2009 2012 2015 2018 Korea Netherlands	Reading score 2000 2003 2006 2009 2012 2015 2018 Australia New Zealand Finland	Reading score 2000 2003 2006 2009 2012 2015 2018 Sweden

*Countries/economies in brackets are non-OECD member countries/economies.

Definition of reading literacy

[Definition of reading literacy]
Understanding, using, evaluating, reflecting on and engaging with texts in order to achieve one's goals, to develop one's knowledge and potential and to participate in society

* The underlined words indicate changes introduced to PISA 2018 definition.

○ The phrase "written texts" was changed to "texts" because the assessment mode shifted to computer-based testing and design of items reflected the use of more digital texts. (Digital texts: Online texts in various forms (websites, web postings, emails, etc.))

○ The term "evaluating" was added to assess the student's capacity to consider the credibility of discussions and authors' points of view.

Capacities to be measured

(i) Locate information
- Access and retrieve information within a text
- Search and select relevant text

(ii) Understand
- Represent literal meaning
- Integrate and generate inferences

(iii) Evaluate and reflect
- Assess quality and credibility
- Reflect on content and form
- Detect and handle conflict

(The underlined parts indicate elements which were newly added to the definition in PISA 2018.)

Analysis of assessment results in reading

○ According to the analysis of factors that affect a decline in the mean score in reading, various factors, such as matters concerning students (interest/willingness, status of responding to open ended-response items, previous knowledge/ experience relating to the content of the subject texts, experience of reading lengthy texts on the computer screen, etc.) and items (composition, themes, kinds of texts, influence of translation, etc.), are considered to be potentially affecting in a composite manner.

○ In light of the results of PISA 2000, 2009, and 2018 (assessments in which the major domain was reading) for which the mean scores can be compared, the following can be said regarding three subscales for measuring reading performance.

- The mean score for the subscale "(ii) Understanding" is steadily high.
- The mean score for the subscale to "(i) Locating information" declined compared to the results of PISA 2009. In particular, the share of high-scoring students who attained Level 5 proficiency or higher decreased to the same level as the OECD average.
- The mean score for the subscale "(iii) Evaluating and reflecting" declined compared to the results of PISA 2009. In particular, "Assess quality and credibility" and "Detect and handle conflict" were added to the framework in PISA 2018, and the percentage of students who gave correct answer was low for items intended to measure these abilities.

○ In addition, according to the analysis of the responses to individual items, students in Japan continue to experience problem in explaining their own ideas using evidence, in open ended-response items. Regarding wrong answers, students in Japan tended to have problem with stating their own ideas in a manner that other persons can understand, citing only a phrase from the text without giving a sufficient explanation.

An example of item with low correct answers among Japanese students

◆ **Item relating to [(i) Locating information] and [(iii) Evaluating and reflecting]** [New item in PISA 2018]

Students are required to locate necessary information from multiple texts that were transmitted from different places, such as from a product company and an online magazine, and then asked to explain how they would handle the issue, after assessing the quality and credibility of assertions and information while considering its intentions.

Unit

◆ Text 1: A Company website (Advertising the safety of a product)

Q1: Comprehend the meaning of sentences
Q2: Assess the quality and credibility of the statement (Open ended response)

◆ Text 2: Online magazine article (A different view on the safety of the product)

Q3: Reflect on the content and the manner of the text
Q4: Make assumption and locate a website which contains necessary information [Subscale to be measured: [i] Locate information]

◆ Comparing Texts 1 and 2

Q5: Identify differences between the texts
Q6: Assess the quality and credibility of information and explain the way to handle the situation using evidence from the text (open-ended response) [Subscale to be measured: [iii] Evaluate and reflect]

***In Items like Q4 and Q6, the percentage of students in Japan who gave correct answer was lower than the OECD average.**

Computer-based testing (PISA 2015 and 2018)

◆ Shift to Computer-Based Testing in PISA 2015.

Example of actions

- Read a lengthy text by scrolling
- Typing answers using a computer keyboard (typing Japanese sentences using alphabetical keyboards)
- Texts presented on multiple sheets (switching to another sheet by clicking on a website link or a tab)
- Selecting an answer by using a mouse or giving an answer by using a “drag and drop” function on a screen

*In mathematics, assessment is implemented on the computer by using items based on a conventional paper based items, and new items designed for computer-based assessment will be developed for the next PISA 2021.

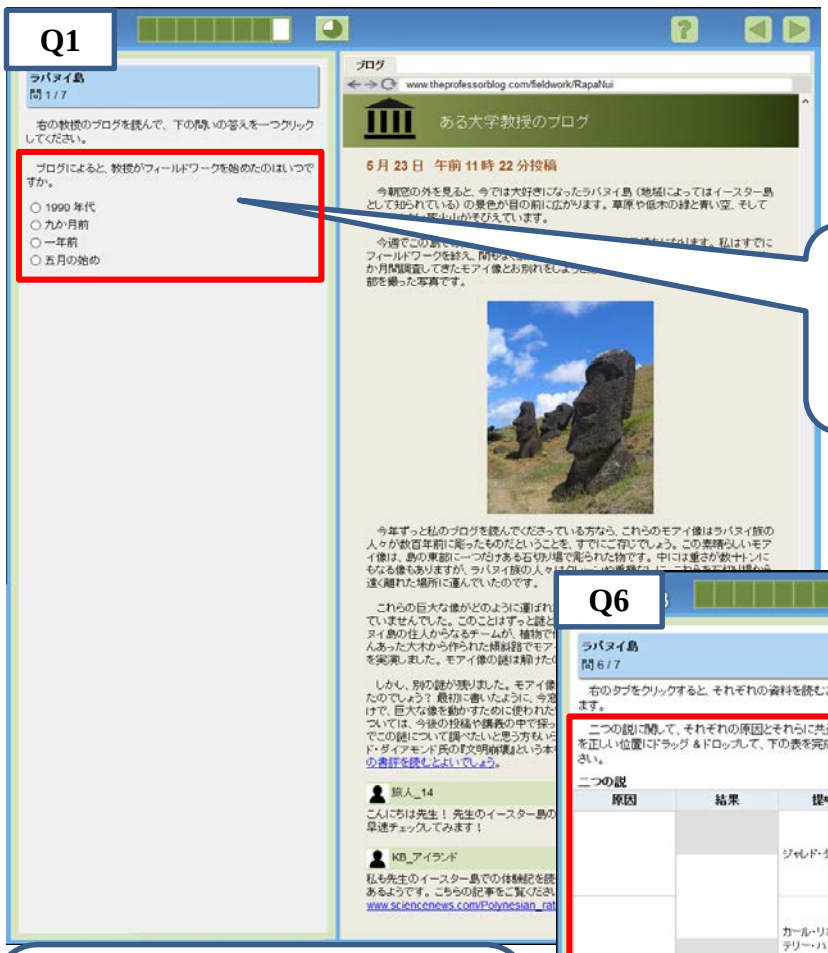
Design of assessment

- PISA requires students to complete answers by a group of items. Students cannot return to the previous group of items if they had moved to the next group after finishing the earlier group. Unlike in a paper-based assessment, students can neither grasp the whole composition of the items at the beginning nor go back to review the earlier answer at the end.

Features of Computer-Based Testing in reading literacy

- Use of online texts in various forms (web postings, emails, replies to participate in an online-forum, etc.) (in addition to conventional novels, drama scripts, biographies, academic papers, etc.)
- In PISA 2018, 173 items that accounted for about 70% of 245 items in total, were new items that were developed for computer-based testing. It is assumed that the number of items using digital texts in various forms (websites, web postings, emails, etc.), cultural backgrounds, concepts, vocabularies, etc., that are unfamiliar to students in Japan, have increased.

● Released unit for PISA 2018 (reading) [Rapa Nui Island]

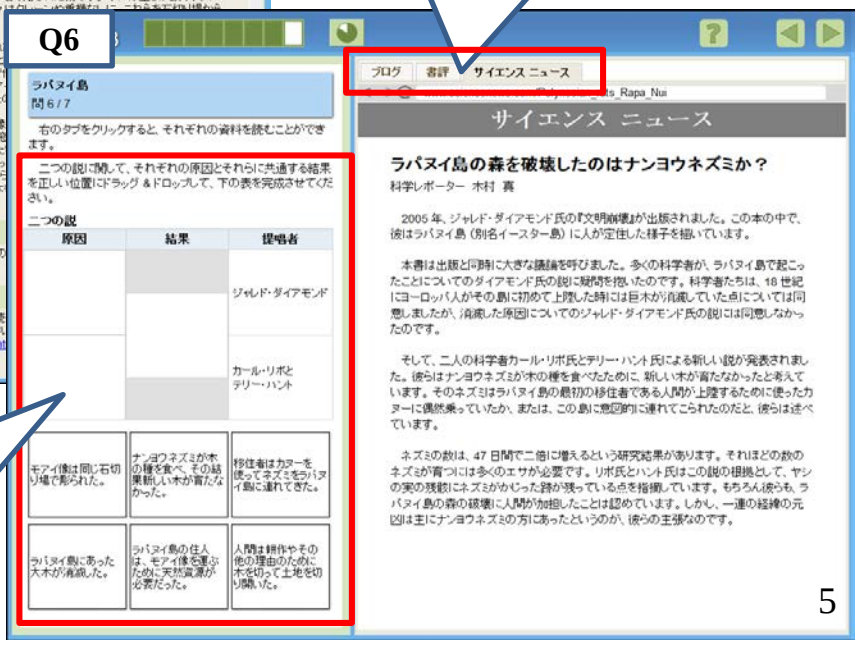


Composed of three kinds of texts

- **University professor's blog**
- **Book review**
- **An article on an online science magazine**

Q1 [Subscale to be measured: [i] Locate information]
After reading a university professor's blog by scrolling, students answer the time the field work started by selecting an answer.

Students click on a tab to choose a text to be displayed on the screen.



Q6 [Subscale to be measured: [ii] Understand]
Students complete the table by selecting causes and a result relating to the two theories, from answers and move them to the correct positions, by using “drag and drop” function.

Relationship between book-reading activities and reading performance

◆ OECD Trends, including Japan

○ The frequency of reading books is on the decrease compared to 2009, irrespective of the kind of books.
- Percentage of students who answered that they read books "Several times a month" or "Several times a week“

(e.g.) "Newspapers": Japan: 21.5% (36.0 points down); OECD average: 25.4% (37.1 points down)
"Magazines": Japan: 30.8% (33.8 points down); OECD average: 18.5% (40.4 points down)

○ Students who feel positive about reading and students who read books more frequently scored higher in reading. Among them, students who often read fiction, non-fiction, and newspapers scored high in reading.

◆ Features of Japan

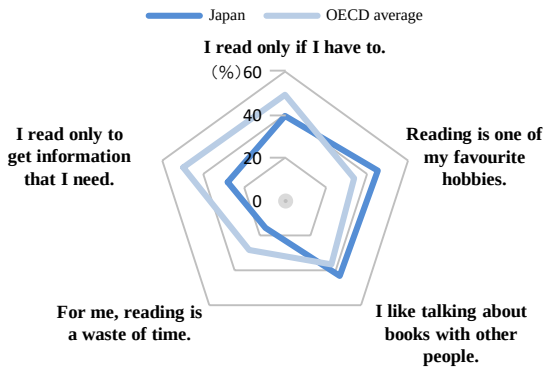
○ Compared to the OECD average, the percentage of students who feel positive about reading is higher in Japan.
- "Reading is one of my favourite hobbies": Japan: 45.2% (3.2 points up); OECD average: 33.7% (0.4 points up)
- "I read only if I have to": Japan: 39.3% (8.2 points down); OECD average: 49.1 % (7.8 points up)

○ Compared to the OECD average, the percentage of students who read comic books (“manga”) and fiction is higher in Japan. For all of newspapers, fiction, non-fiction, and comic books, students who read them often scored high in reading.

* "Reading" includes various reading materials, such as books and websites, and also includes reading on digital devices.
* As the student questionnaire for reading and language-of-instruction lessons is conducted only when reading is the major domain, the results are compared to the results of PISA 2009.

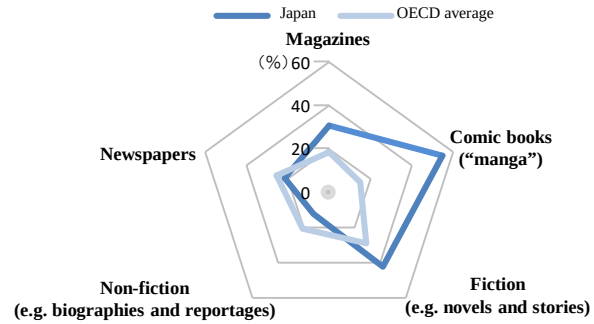
[Engagement with reading]

* Percentage of students who answered "Strongly agree" or "Agree" [Multiple answers allowed]



[Kinds of books students read/frequency]

* Percentage of students who answered "Several times a month" or "Several times a week" [Multiple answers allowed]

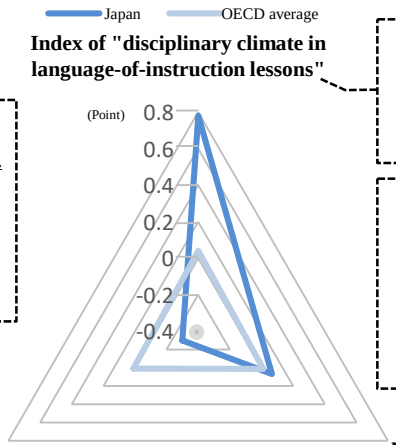


Language-of-instruction lessons

◆ The index values for language-of-instruction lessons are relatively good in Japan.

Japan's values for the index of "disciplinary climate in language-of-instruction lessons" and the index of "teacher support in language-of-instruction lessons" exceeded the OECD average, and climate in language-of-instruction lessons is relatively positive in Japan. On the other hand, Japan's value is lower than the OECD average in "students' perception of feedback from language-of-instruction teachers." This result can be considered to be affected by the fact that PISA is conducted during the period between June and August in the first year of high school, which is just after student’s entering the school.

The index values are calculated based on the percentage of students who answered items that constitute each index.



Index of "disciplinary climate in language-of-instruction lessons"

Higher values indicate a more positive disciplinary climate.
(Example items)
- Students deny that "Students don’t listen to what the teacher says."
- Students deny that "There is noise and disorder."

Higher values indicate a student’s higher perception of receiving feedback from teachers.
(Example items)
- Students agree that “ they receive feedback on their strength in the subject”
- Students deny that “they are told which areas they can still improve."

Index of "students' perception of feedback from language-of-instruction teachers"

Higher values in the index mean that students perceive their language-of-instruction teacher are providing support more frequently.
(Example items)
- Students affirm that "The teacher helps students with their learning."
- Students affirm that "The teacher continues teaching until the students understand."

Index of "teacher support in language-of-instruction lessons"

3. Mathematics and Science Literacies

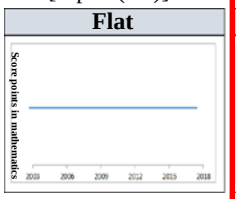
Mathematics

◆ **Japan continues to be world's top level in PISA 2018.**
The mean score for Japan is 527 score points.
Ranked 1st among the OECD member countries (range of rank: 1st to 3rd)

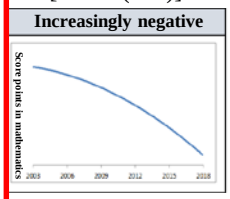
◆ **In terms of the long-term trend, Japan also maintains world's top level performance.**
The long-term trend of Japan's mean score for the period between 2003 and 2018 falls under the "Flat" type with no statistically significant rise or decline in score points type. Japan maintains the world's top level performance.

● **Status of the top three countries in PISA 2018 (OECD member countries)**

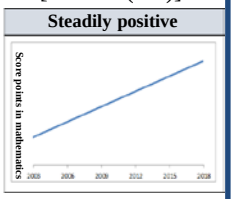
[Japan (1st)]



[Korea (2nd)]



[Estonia (3rd)]



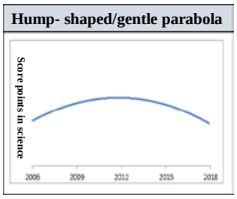
Science

◆ **Japan continues to be world's top level in PISA 2018.**
The mean score for Japan is 529 score points.
Ranked 2nd among the OECD member countries (range of rank: 1st to 3rd)
Compared to the previous assessment, the mean score of Japan significantly declined, but the top countries reflect a similar trend.

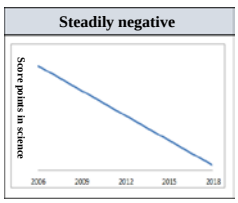
◆ **In terms of the long-term trend, Japan also maintains the world's top level performance.**
The long-term trend of Japan's mean score for the period between 2006 and 2018 falls under the "Hump-shaped" type with no statistically significant rise or decline in score points type. Japan maintains the world's top level performance.

● **Status of the top three countries in PISA 2018 (OECD member countries)**

[Estonia (1st)/Japan (2nd)]



[Finland (3rd)]

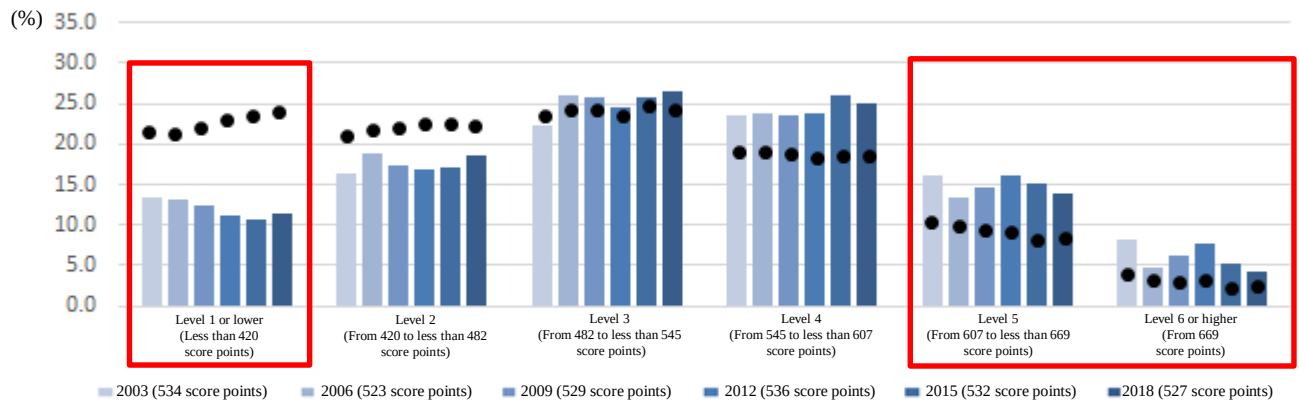


Changes in Japan by the level of proficiency

* The higher the level of proficiency is, the higher score points students attained, and higher levels of proficiency indicate that students have sufficiently attained capacities in the relevant domain.
* Black dots in the graphs indicate the OECD average.
* Comparison starts in the assessment year when each domain became the major domain for the first time.

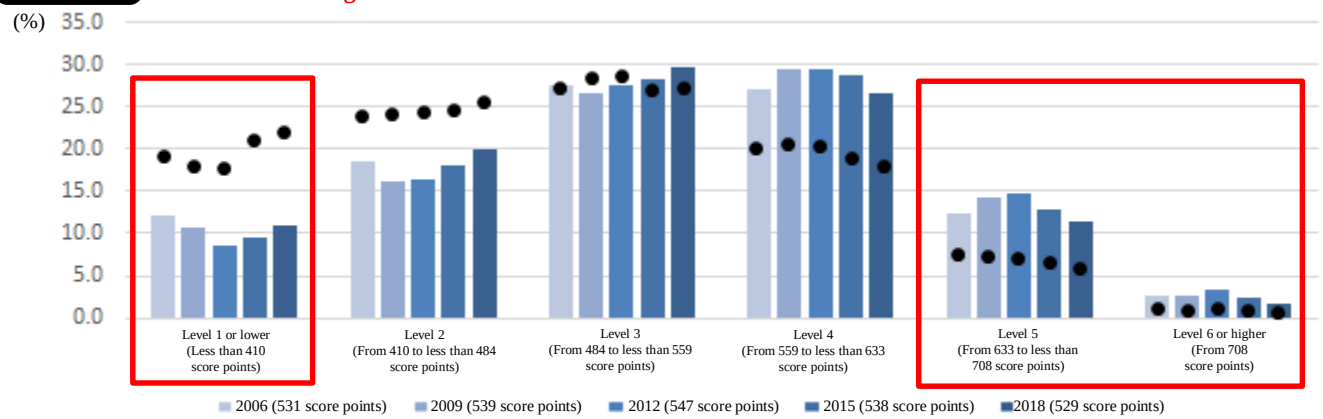
Mathematics

There are fewer low-scoring students with Level 1 proficiency or lower, and there are many high-scoring students with Level 5 or higher.



Science

There are fewer low-scoring students with Level 1 proficiency or lower, and there are many high-scoring students with Level 5 or higher.



4. Mean Score and Economic, Social and Cultural Status (ESCS)

◆ Economic, social and cultural status (ESCS)

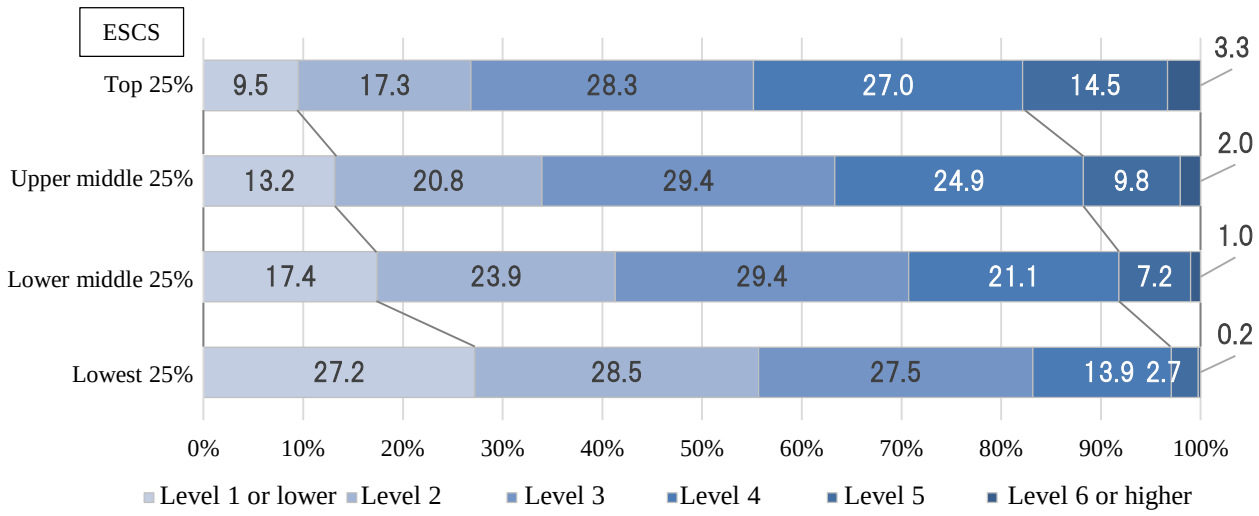
The OECD has developed the ESCS Index based on the questionnaire items concerning parents' academic background and household property. Students with a higher value in the index are deemed to be at a higher economic, social and cultural level. In PISA, students are divided into four groups based on the value in the ESCS index, and the relationship with score points in the three domains is analyzed.

◆ Relationship between ESCS and the share of students by the level of proficiency

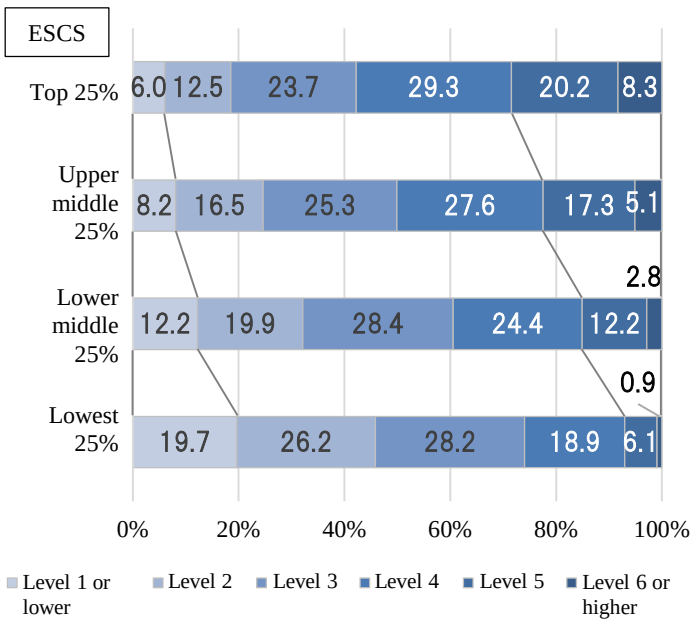
In Japan and the OECD average, the share of students with high level of proficiency is larger for students with higher level of ESCS and the share of low proficiency students was larger for students with lower level of ESCE.
Japan was one of the countries among OECD countries where the ESCS difference among the students was the smallest and the difference of students' ESCS had a lower impact on students' score points. PISA 2018 is in line with the trend observed from the beginning of PISA.

● Share of Japanese students at each level of proficiency in the three domains by the level of ESCS (PISA2018)

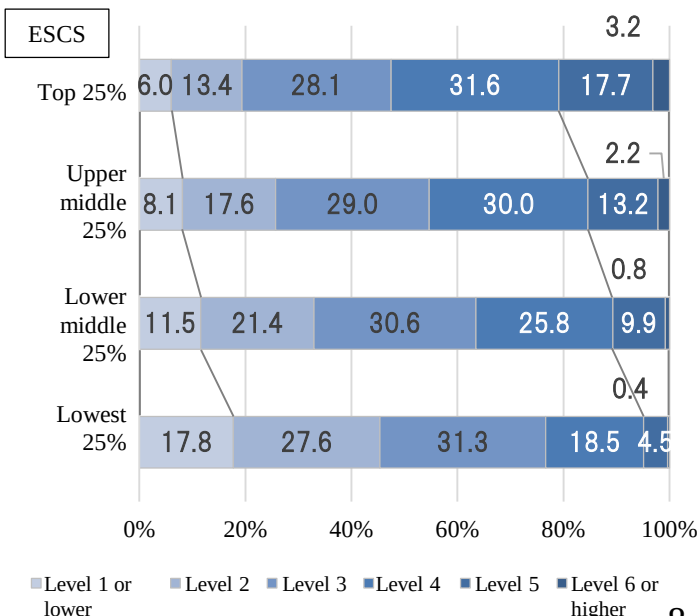
Reading



Mathematics



Science



5. ICT Survey

ICT Survey

Students were asked about their use of various digital devices, such as mobile phones, desktop/tablet computers, smartphones, and game consoles

Use of the Internet outside of school

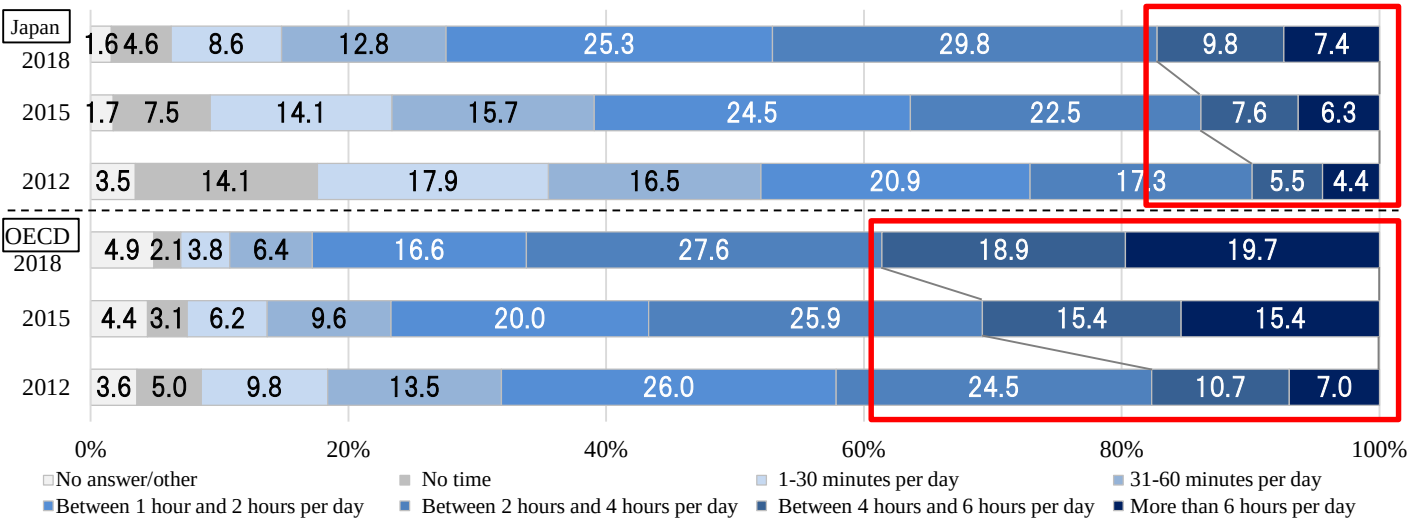
◆ **Trends in the hours of its use**

- In both Japan and the OECD average, the share of students who use the Internet for 4 hours or more outside of school during weekdays are increasing.
- Still, the share of Japanese students who use the Internet for 4 hours or more is lower than the OECD average.

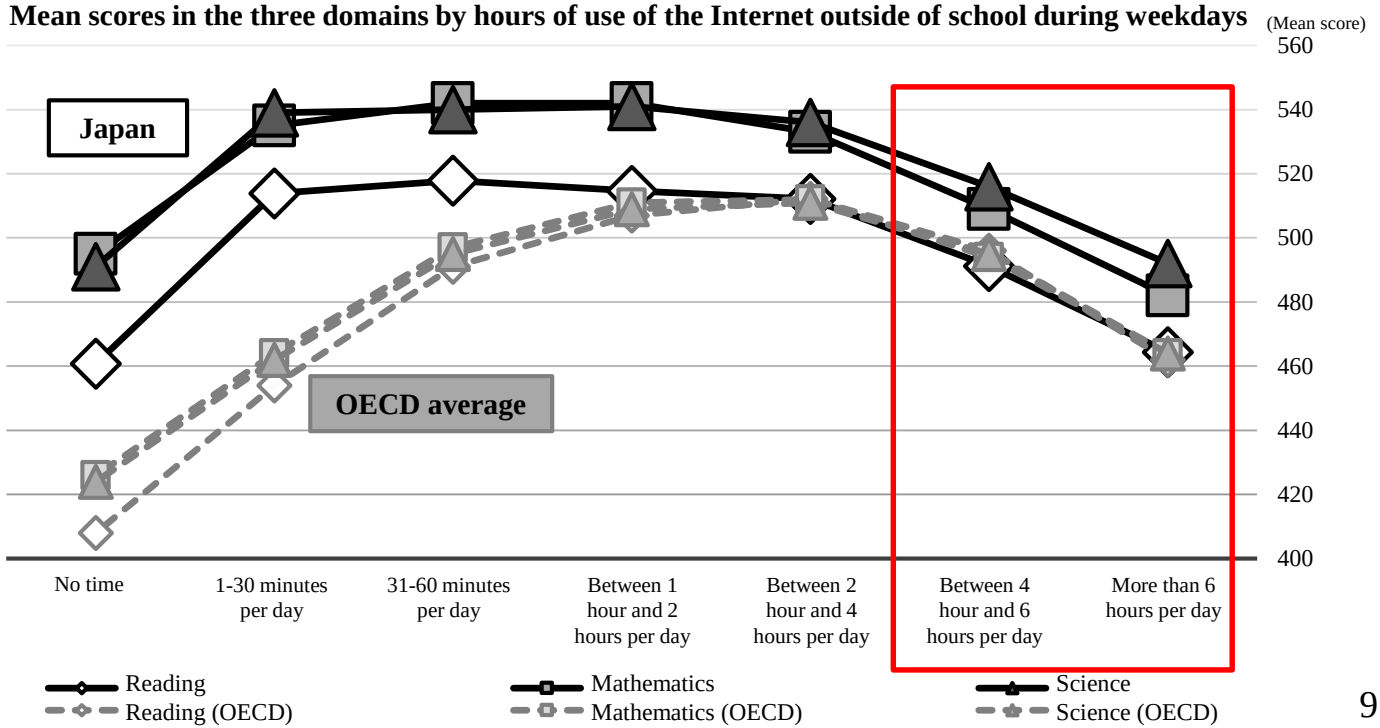
◆ **Relationship between the hours of its use and mean scores in the three domains**

- In both Japan and the OECD average, mean scores tended to decline for students who use the Internet for 4 hours or more outside of school in all the three domains.
- On the other hand, among users with for less than 4 hours, there was little difference in mean scores in the three domains between Japanese students who use the Internet for 30 minutes or more but less than 4 hours. However, for the OECD average, mean scores tend to be higher for students who use the Internet for longer time.

Hours of use of the Internet outside of school during weekdays (trends)



Mean scores in the three domains by hours of use of the Internet outside of school during weekdays



Use of digital devices in and outside of school

◆ **The length of time which digital devices are used in school lessons (language-of-instruction, mathematics, and science) are short in Japan. It was the shortest among OECD member countries.**

The share of students who replied "No time" accounted for about 80%, which is the highest among OECD countries.

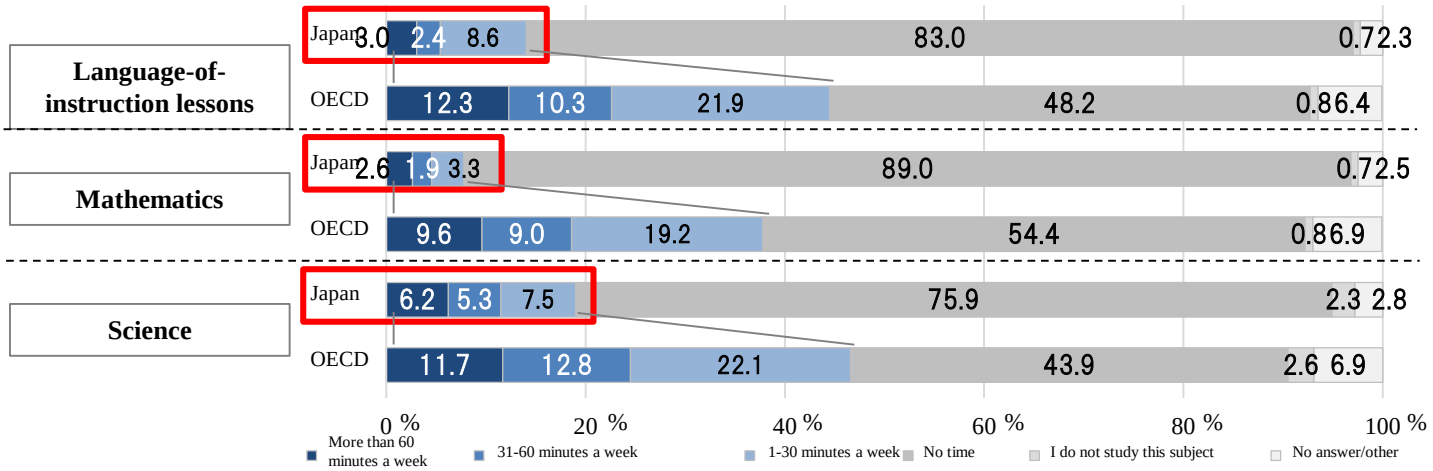
◆ **Just as in other OECD member countries, students in Japan use digital devices for various purposes outside of school.**

○ The share of students who frequently use online chatting or games (one-player games/collaborative online games) is higher in Japan than other countries, and has shown a notable growth.

- The increase of share of students who answered "Every day" or "Almost every day" (compared to PISA 2012)
- "Chatting online": Japan: 60.5 points; OECD average: 15.4 points
- "Playing one-player games": Japan: 21.3 points; OECD average: 7.1 points
- "Playing collaborative online games": Japan: 19.4 points; OECD average: 7.9 points

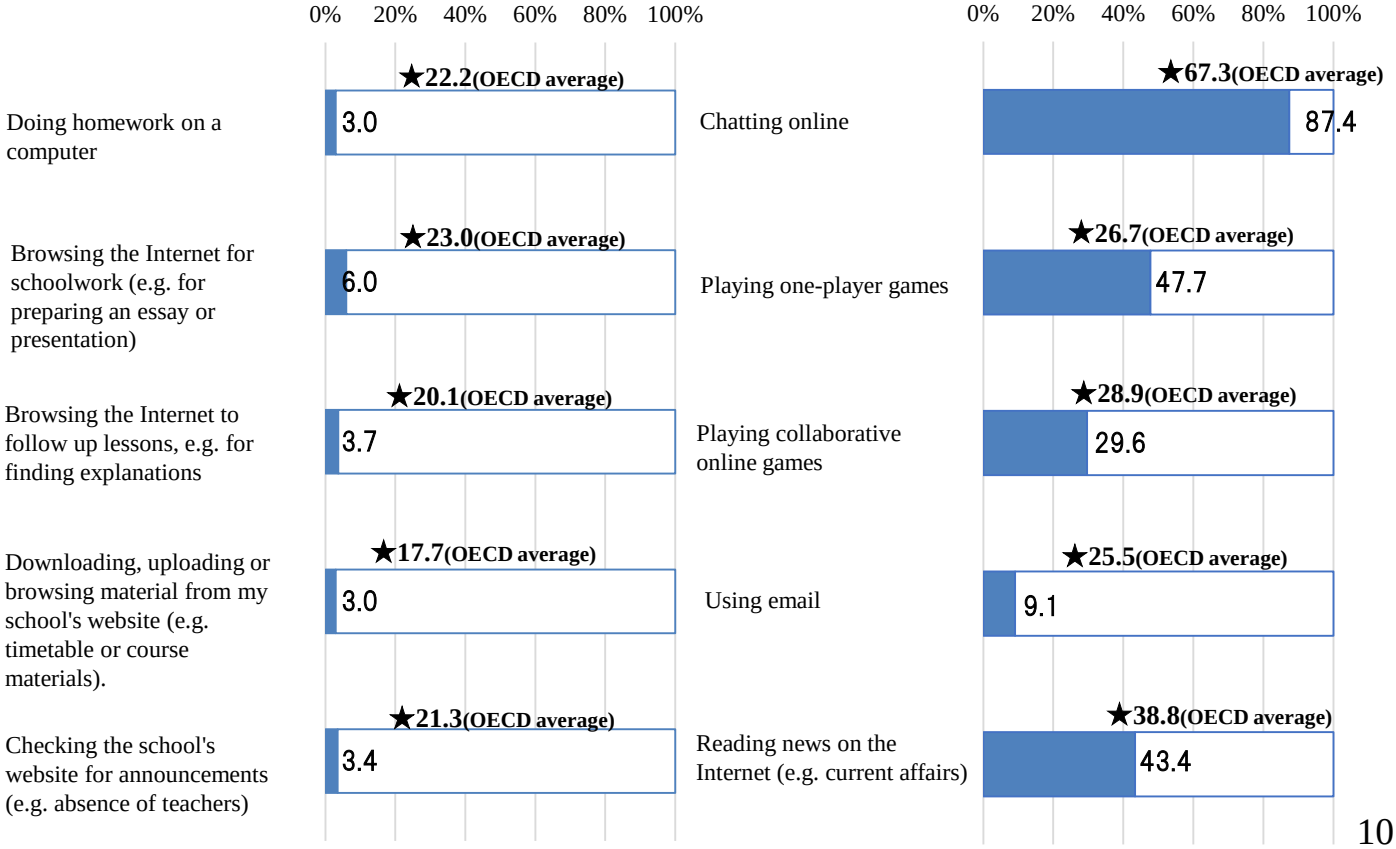
○ Japan is the least among OECD member countries in terms of the frequency of doing homework on a computer.

Average length of time digital devices are used during classroom lessons in a week



Use of digital devices outside of school during weekdays

(Blue bars and stars indicate the total of students who answered "Every day" or "Almost every day" for Japan and the OECD average, respectively.)



Measures Taken by the Ministry of Education, Culture, Sports, Science and Technology Based on PISA Results

1. Implementation of the New Course of Study that Addresses the Issues identified in PISA Results

The Ministry of Education, Culture, Sports, Science and Technology is steadfastly implementing the New Course of Study that addresses issues identified by PISA results and promotes various measures to support the efforts of the Boards of Education, schools, and school staffs.

(1) Enhancement of lessons from the perspective of subjective, interactive, and deep learning

- Support will be provided, for example, by accumulating good examples and providing information so that learning that puts emphasis on having students understand the value of learning, shape ideas through careful examination of information, and find problems and think of solutions thereto can be enriched through improvement of lessons from the perspective of subjective, interactive, and deep learning

(2) Development of reading literacy and other language abilities

(i) Enrichment of instruction in Japanese language lessons throughout elementary and secondary schools

- Solid acquisition of vocabulary necessary for the accurate understanding of texts and the manner of dealing with information (utilization of dictionaries and encyclopedias, etc.)
- During “reading” instruction, emphasis will be on (a) interpreting the content through understanding the composition of a text, development of logic, and manner of expression, (b) understanding the content in light of the relationship between a text and a figure, and (c) having one's own idea based on what one understood by reading a text and expressing it.
- Emphasis on language activities, such as reading various kinds of texts and discussing about it or describing it in writing.

(ii) Enhancement of curriculum management with aim of developing student’s language abilities

- More opportunities to experience interpreting graphs and figures and reading real-life texts (newspapers, public relations magazines, etc.) and enhancement of language activities according to the nature of each subject for solid acquisition of vocabulary that supports learning in each subject (utilization of dictionaries and encyclopedias, etc.)
- Enhancement of language activities in Period for Integrated Study (Period for Inquiry-Based Cross-Disciplinary Study), Inquiry-Based Study of Science and Mathematics, by using more research papers and reports
- Encouragement of reading through morning reading activities in schools, and improvement of a language environment, including improvement and utilization of school libraries, etc.

(3) Development of the students’ capacity to utilize information

- Introduction of programming education from the elementary school and promotion of use of computers in learning activities at school
- Development of the abilities to acquire information by appropriately using computers, to organize and compare information, to transmit and communicate information, and to save and share data, etc. and the acquisition of basic operational skills necessary for such activities
- Promotion of education on information morals concerning appropriate use (length of time, SNS, etc.) of smartphones, etc. in collaboration with households and communities

(4) Enhancement of science and mathematics education

- Enrichment of opportunities to utilize knowledge and skills in various situations and activities to think and solve problems statistically during mathematics education
- Enrichment of activities that put emphasis on the relationship with real life situations and society and scientific inquiry activities, including experiment and observation, during science education

(5) Improvement of guidance utilizing the outcome of National Assessment of Academic Ability

- Improvement of guidance that develops staffs’ ability to utilize knowledge and skills in various real-life situations and the ability to develop and put into practice visions to solve various problems, evaluate and to make improvements based on the understanding of the status of students' learning from the results of the National Assessment of Academic Ability

2. Measures to Accelerate Introduction of the ICT Environment in Schools

(1) Measures to accelerate introduction of the ICT environment in schools

Allocation of one computer per learner and introduction of a high-speed/high-capacity communication network to all classrooms in schools will be promoted

(2) Development and implementation of "Policy to Use Cutting-Edge Technology to Support New Age Learning"

Experiments concerning effective uses of cutting-edge technology at school and introduction of the ICT environment at school necessary for learning in a new age will be promoted.

3. Building of a Safety Net by Ensuring Educational Opportunities for All Students

(1) Provision of opportunities for high-quality education with the aim of narrowing the gap between social, economic and cultural status

Measures such as a tuition free education or reduction of family burden of education expenses in a continuous manner from early childhood to the higher education stage and measures to improve the quality of education will be steadily introduced so that anyone can receive high-quality education of his/her own choice without being influenced by the economic condition of his/her household

(2) Enhancement of efforts in which schools, households, and communities collaborate with each other

Support for efforts in which schools, households, and communities collaborate with each other, such as integrated promotion of "community school" and "community-school cooperative activities," promotion of support for parents’ education in communities, and promotion of various activities outside schools

[Reference] Outline of PISA (Programme for International Student Assessment)

Outline of PISA

- ○ PISA is designed to assess to what extent 15-year-old students at the end of compulsory education can apply their knowledge and skills to problems they face in various real-life situations.
- ○ PISA has been implemented every three years since 2000 in relation to three domains, reading, mathematics, and science. In each PISA, one of the three domains is intensively assessed in rotating order as the major domain.
- ○ Items are not released to the public (only some items in the major domain are released) in order to see the trends in score points by using the same items for a longer period of time.
- ○ Multiple item forms (36 kinds in PISA 2018) that differ in the combination of items in each domain are used. Students solve one of those item forms in 2 hours.
- ○ The assessment mode has shifted from paper-based assessment to computer-based assessement in PISA 2015.
- ○ The way results are shown: The mean score of each country/each year is calculated by considering the mean score of OECD member countries in the year when each domain became the major domain for the first time (2000 for reading, 2003 for mathematics, and 2006 for science) as the standard value (500 score points) and making adjustments to make it possible to compare the results in different assessment years. In the case of comparing mean scores, it is important not only to see difference in value but also to confirm whether there is a statistically significant difference (significant difference).

PISA 2018

- ◆ The major domain is reading literacy. The "multistage adaptive testing," in which items that differ in the level of difficulty are automatically set depending on the status of students' answers, and items to grasp the "fluency of reading" were introduced in order to increase the accuracy of measurement of the level of proficiency in reading literacy.
- ◆ About 600,000 students participated from 79 countries/economies. In Japan, about 6,100 students from 183 schools in the first year of upper secondary schools, the latter half course of schools for secondary education or colleges of technology, who were randomly selected nationwide based on international standards participated in PISA 2018. (Implemented during the period between June and August 2018)

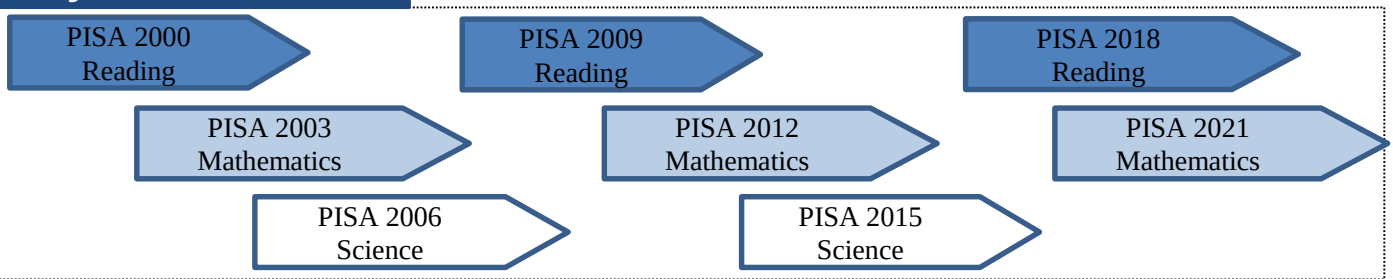
Definition of the core domains

◆ **Reading literacy**
Understanding, using, evaluating, reflecting on and engaging with texts in order to achieve one's goals, to develop one's knowledge and potential and to participate in society

◆ **Mathematical literacy**
An individual's capacity to formulate, employ and interpret mathematics in a variety of contexts. It includes reasoning mathematically and using mathematical concepts, procedures, facts and tools to describe, explain and predict phenomena. It assists individuals to recognise the role that mathematics plays in the world and to make the well-founded judgments and decisions needed by constructive, engaged and reflective citizens.

◆ **Scientific literacy**
To "explain phenomena scientifically," "evaluate and design scientific enquiry," and "interpret data and evidence scientifically" as the ability to engage with science-related issues, and with the ideas of science

Major domain in PISA



Information on PISA

☞ National Institute for Educational Policy Research, ed., Knowledge and Skills for Life 1 to 3 (Gyosei) and Knowledge and Skills for Life 4 to 7 (Akashi Shoten)

☞ Website

- National Institute for Educational Policy Research (http://www.nier.go.jp/kokusai/pisa/)
- OECD（http://www.oecd.org/pisa/）