

SURVEY OF ADULT SKILLS
FIRST RESULTS

JAPAN

Key issues

- Adults in Japan display the highest levels of proficiency in literacy and numeracy among adults in all countries participating in the survey.
- The performance of Japanese adults in the assessment of problem solving in technology-rich environments is around average. In Japan, younger adults perform lower than the average in this domain.
- There is a relatively equitable distribution of proficiency in information processing skills across the Japanese adult population, with only small differences between groups such as the old and the young and the better and less well educated.
- Japanese women represent an underutilised resource of skill. They have high levels of proficiency in literacy and numeracy but have low rates of participation in the labour force.
- For these high levels of proficiency to translate into economic growth and well-being, competences must be put to their best use. Japanese employers do not appear to be making the best use of their workforce's competences. And returns to proficiency in terms of higher wages and employment rates are lower than in other participating countries.

The survey

The Survey of Adult Skills provides a picture of the proficiency of the adult population of working age in three key information processing skills:

- literacy – the ability to understand and respond appropriately to written texts
- numeracy – the ability to use numerical and mathematical concepts, and
- problem solving in technology-rich environments (the capacity to access, interpret and analyse information accessed, transformed and communicated in digital environments).

Proficiency is described in terms of a scale of 500 points divided into levels. Each level summarises what a person with a particular score can do. Six proficiency levels are defined for literacy and numeracy (Levels 1 through 5 plus below Level 1) and four for problem solving in technology-rich environments (Levels 1 through 3 plus below Level 1).

The survey also provides a rich array of information regarding respondents' use of skills at work and in everyday life, their education, their linguistic and social backgrounds, their participation in the labour market and other aspects of their well-being.

The Survey of Adult Skills was conducted in Japan from August 2011 to February 2012.

Some 5 200 adults aged 16 to 65 were surveyed.

Adults in Japan display the highest levels of proficiency in literacy and numeracy among adults in all countries participating in the survey. The performance of Japanese adults in the assessment of problem solving in technology-rich environments is around average.

Japan has the highest proportion of adults of working age (16-65 years) who are proficient at the highest three levels of *literacy* as measured by the Survey of Adult Skills among participating countries. **Some 48.6% of Japanese adults are proficient at level 3 in literacy and 22.6% of adults are proficient levels 4/5 in the same domain.**

Japanese adults achieve similar good outcomes in *numeracy*, with **43.7% proficient at Level 3 and 18.9% proficient at levels 4/5.**

And Japan also has by far the smallest share of adults scoring at Level 1 or below in both proficiency domains.

Problem solving in technology-rich environments represents the intersection of what are sometimes described as “computer literacy” skills (i.e. the capacity to use ICT tools and applications) and the cognitive skills required to solve problems.

The performance of Japanese adults in the assessment of problem solving in technology-rich environments is around average.

Some 26.3% of Japanese adults are proficient at Level 2 and 8.3% at Level 3. Japan is characterised by a relatively high proportion of adults who indicated that they had no prior experience with computers (10.2%). In addition, a comparatively large proportion of Japanese decided not to take the assessment on a computer even though they had some experience with the use of computers (15.9%). It is unclear why this was the case.

Younger adults perform lower than the average in problem solving in technology-rich environments.

Japanese aged 16-24 displayed higher levels of proficiency than their older compatriots in problem solving. However, relative to cohorts of the same age in other countries they performed less well. The share of Japanese 16-24 year olds proficient at levels 2 and 3 (45.8%) is below average and is some 16-18 percentage points lower than that of the best performing countries (Korea and Finland).

There is a relatively equitable distribution of proficiency in information processing skills across the Japanese adult population, with only small differences between groups such as the old and the young and the better and less well educated.

The overall strong performance of Japanese adults in literacy and numeracy reflects the strong performance of both young and older Japanese adults. **What distinguishes Japan from other countries is the very high levels of proficiency observed among the oldest age groups.**

- While the average proficiency of 16-24 year olds in both literacy and numeracy is among the highest in participating countries, it is similar to that of cohorts of the same age in Finland, Korea and the Netherlands. However, the average proficiency of 45-54 year olds and 55-65 year olds in Japan is well in excess of that of their counterparts in other countries.

Japanese adults who have tertiary level qualifications have higher levels of proficiency than their less well qualified peers but the gap in performance is small, suggesting that Japan has been successful in both achieving high levels of literacy for those with low levels of qualification as well as minimising disparities between the proficiency of the highly educated and adults with low levels of education

- In literacy, the advantage for a person with tertiary qualifications over a person who has completed less than upper secondary education is around 43.9 score points in literacy. This gap in performance is among the lowest among participating countries.
- The proficiency of Japanese adults with less than a full secondary education is the highest of all countries in the survey.

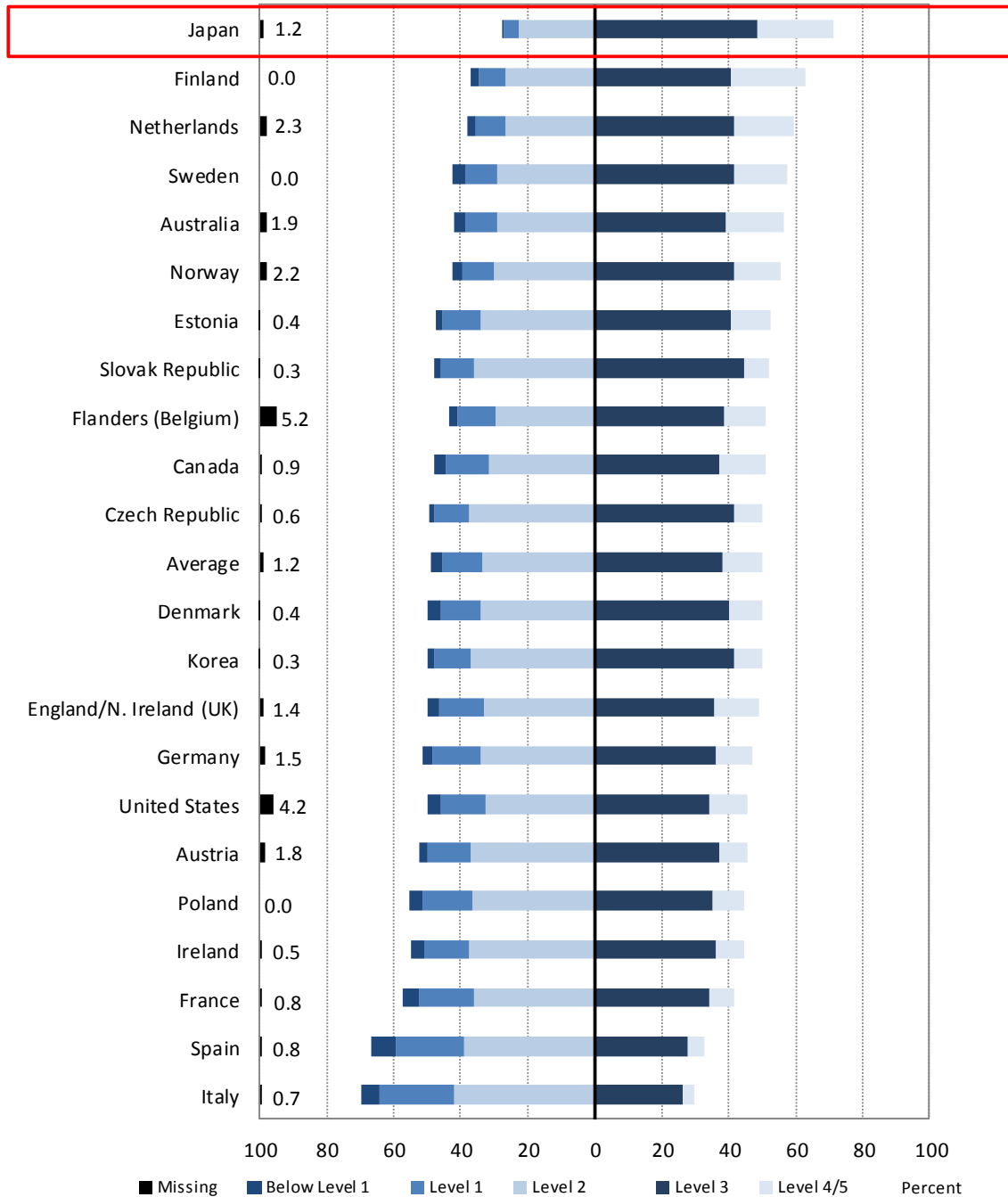
Japanese women represent an underutilised resource of skill. They have high levels of proficiency in literacy and numeracy but have low rates of participation in the labour force.

- Despite performing slightly less well than their male counterparts, **Japanese women still rank highest internationally in both literacy and numeracy proficiency**. In the context of extremely high inactivity rates among Japanese women, this points to the existence of an important untapped supply of high quality human capital in Japan. Policy settings need to help Japanese women reconcile work and family life through adequate childcare and taxation policies.

The impact of social background on proficiency is one of the smallest observed among countries in the survey.

Literacy proficiency among adults

Percentage of adults scoring at each proficiency level in literacy



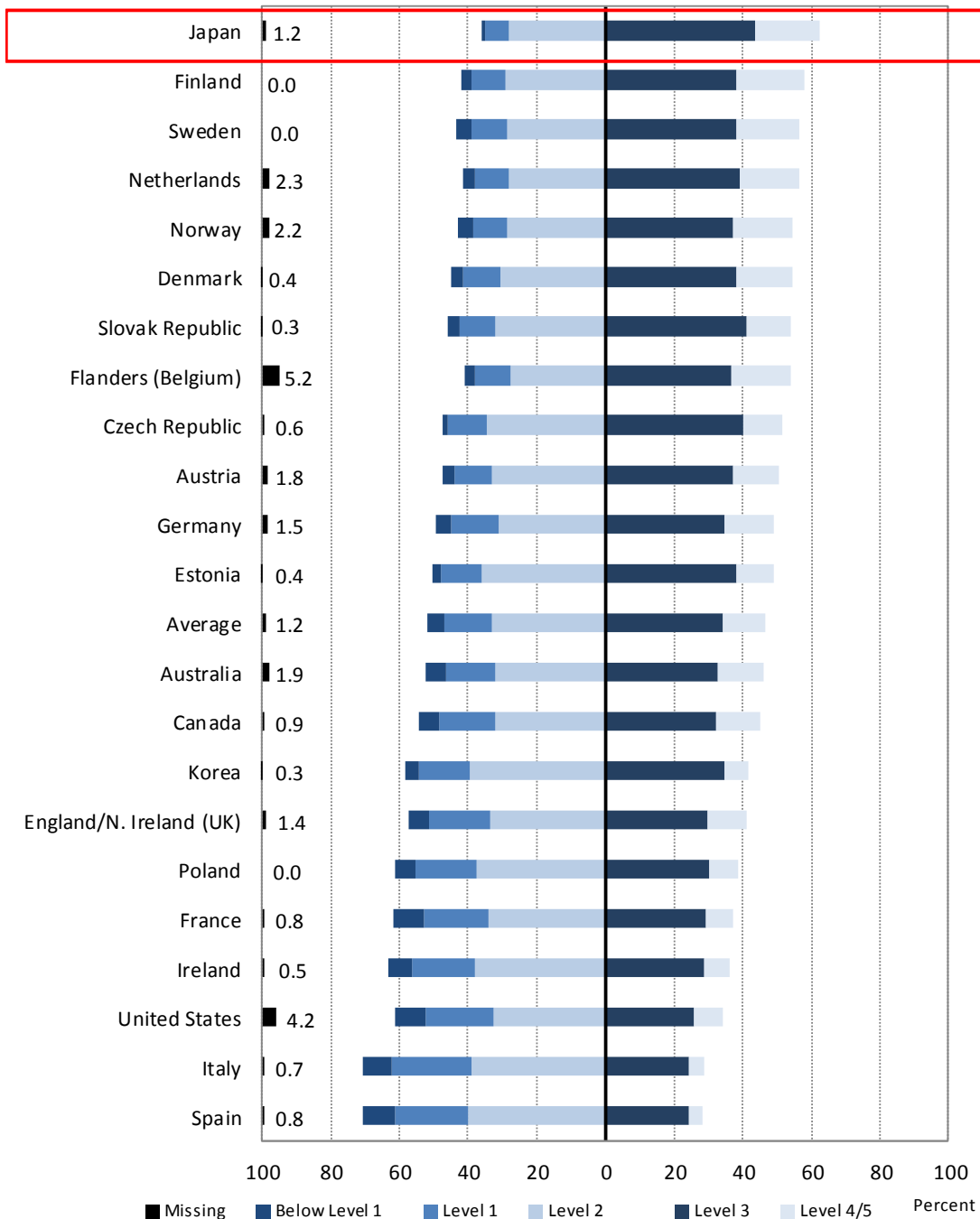
Countries are ranked in descending order of the combined percentage of adults scoring at Level 3 and Level 4/5

Notes: Adults in the missing category were not able to provide enough background information to impute proficiency scores because of language difficulties, or learning or mental disabilities (referred to as literacy-related non-response).

Source: Survey of Adult Skills (PIAAC) (2012), Table A2.1

Numeracy proficiency among adults

Percentage of 16-65 year-olds scoring at each proficiency level in numeracy



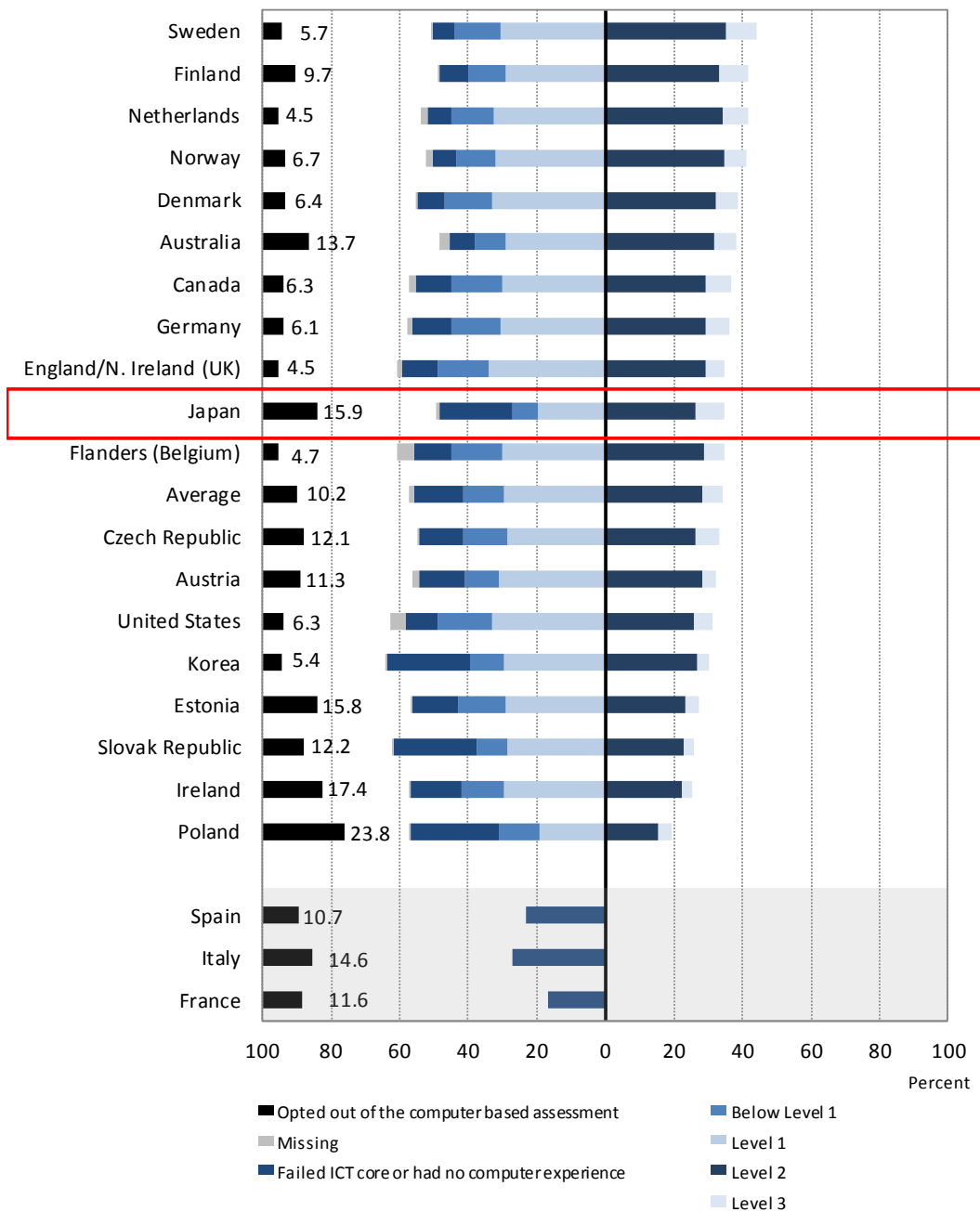
Countries are ranked in descending order of the combined percentage of adults scoring at Level 3 and Level 4/5

Notes: Adults in the missing category were not able to provide enough background information to impute proficiency scores because of language difficulties, or learning or mental disabilities (referred to as literacy-related non-response).

Source: Survey of Adult Skills (PIAAC) (2012), Table A2.5

Proficiency in problem solving in technology-rich environments among adults

Percentage of 16-65 year-olds scoring at each proficiency level



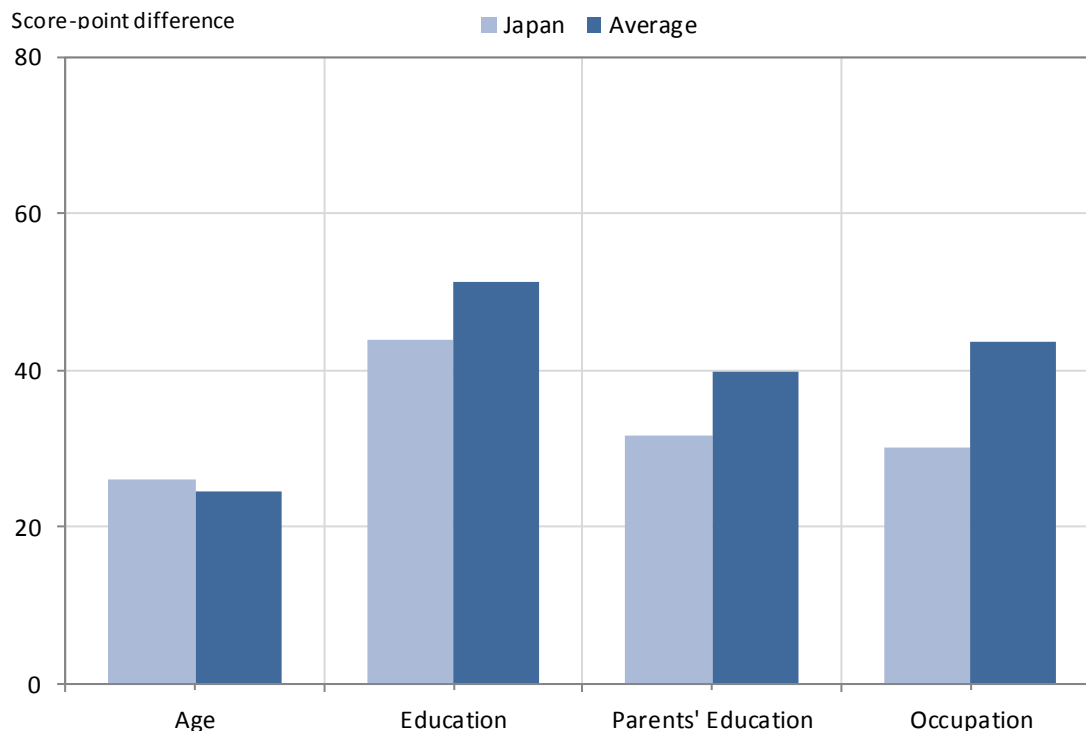
Countries are ranked in descending order of the combined percentage of adults scoring at Levels 2 and 3

Notes: Adults included in the missing category were not able to provide enough background information to impute proficiency scores because of language difficulties, or learning or mental disabilities (referred to as literacy-related non-response). The missing category also includes adults who could not complete the assessment of problem solving in technology-rich environments because of technical problems with the computer used for the survey. France, Italy and Spain did not participate in the problem solving in technology-rich environments assessment.

Source: Survey of Adult Skills (PIAAC) (2012), Table A2.10a

Synthesis of socio-demographic differences in literacy proficiency

Difference in literacy scores between contrast categories within various socio-demographic groups



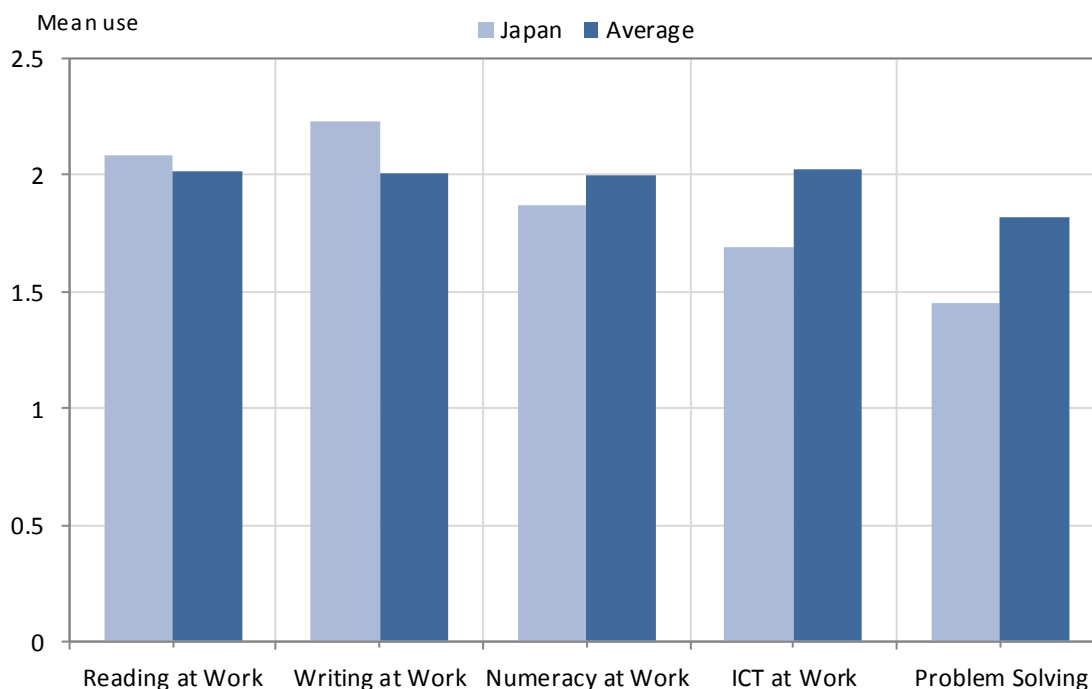
Notes: The estimates show the differences between the two means for each contrast category. The differences are: 16-24 year-olds minus 55-65 year-olds (age), tertiary minus less than upper secondary (education), at least one parent attained tertiary minus neither parent attained upper secondary (parents' education) and skilled minus elementary occupations (occupation).

Source: Survey of Adult Skills (PIAAC) (2012). Table A3.2(L). Table A3.6(L). Table A3.9(L). Table A3.15(L) and Table A3.19(L).

Japanese employers do not appear to be making the best use of their workforce's competences. This may partly be explained by the high incidence of duality in the labour market which makes it difficult for youth to find good-quality jobs.

- While Japan has the highest level of use of writing skills among countries in the survey, it is close to average for the use of numeracy and reading skills in the work place. The use of ICT and problem solving at work are also low when compared with the average performance of Japanese adults in problem solving in technology-rich environments.
- In line with this, **a sizeable share of Japanese workers – close to 10% – are in jobs for which their literacy competencies are higher than required.** This could be partly due to the existence of significant labour market duality in the country, whereby younger workers have difficulties finding good-quality jobs.

Average use of information-processing skills at work



Notes: Skills use indicators are standardised to have a mean of 2 and a standard deviation of 1 across the entire survey sample.

Source: Survey of Adult Skills (PIAAC) (2012). Table A4.1.

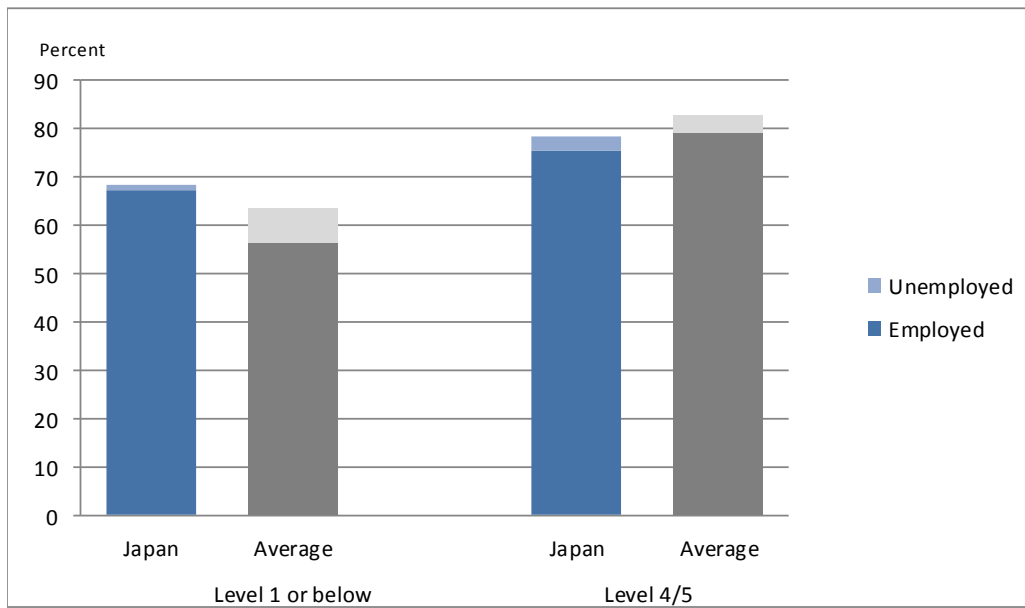
Having higher proficiency in information-processing skills has a positive effect on labour force participation and wages but the wage advantage of higher proficiency is more limited in Japan than in several other participating countries due to a more compressed wage distribution.

- In all participating countries, employment rates are much higher and inactivity rates much lower for adults scoring at Level 1 or below in the literacy, numeracy and problem solving in technology-rich environments.
- In Japan, the differences in employment rates across proficiency levels are among the smallest observed in the survey. This translates into a higher than average employment rate for respondents scoring at Level 1 or below – 67% – but a lower than average employment rate for those scoring at Level 4 or 5 – 75%. The difference between the two levels is a much smaller than, for example, in the United States where the employment rate gap between the same two levels is about 20 percentage points.
- **At 21%, the inactivity rate of highly proficient adults is comparatively high among the participating countries**, probably due to the low labour force participation rates of women at all levels of proficiency.

- The best paid Japanese workers scoring at Levels 4 or 5 in literacy earn about 70% more than the best paid workers scoring at Level 1 or below. However, there is significant overlap in the wage distributions at different levels of proficiency. For instance, in Japan, a median earner with Level 2 proficiency in literacy earns more than a low-paid worker with Level 5 proficiency. This is probably due to the compressed wage distribution and is also the case in Nordic countries as well as most Eastern European countries.

Employment status, by literacy proficiency level

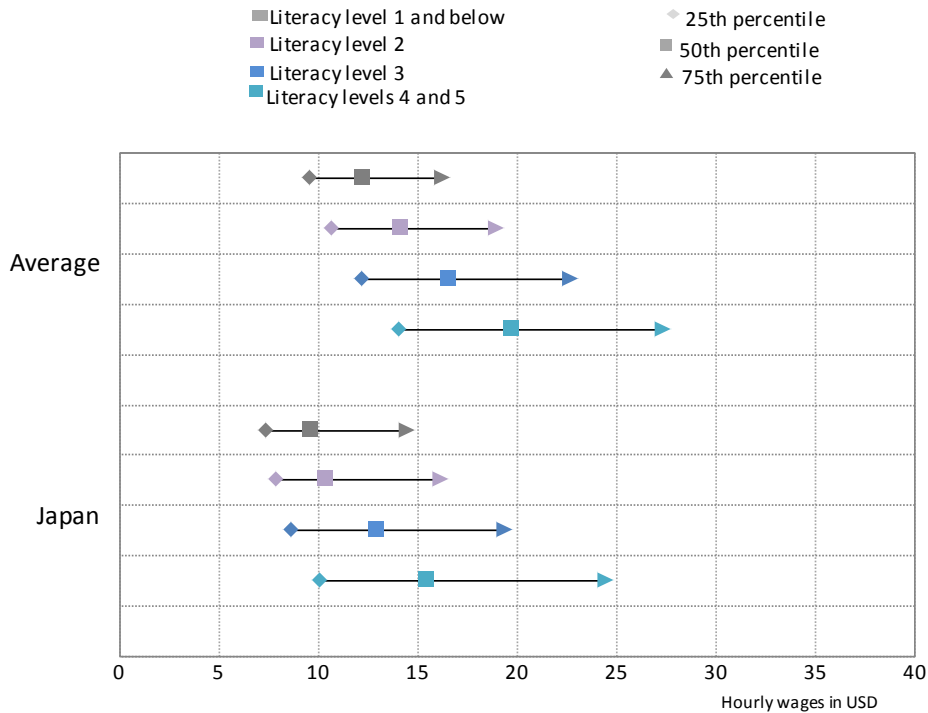
Percentage of adults in each labour market status



Source: Survey of Adults Skills (PIAAC) (2012), Table A6.3 (L)

Distribution of wages, by literacy proficiency level

25th, 50th and 75th percentiles of the wage distribution



Notes : Employees only. Hourly wages, including bonuses, in purchasing-power-parity-adjusted USD.

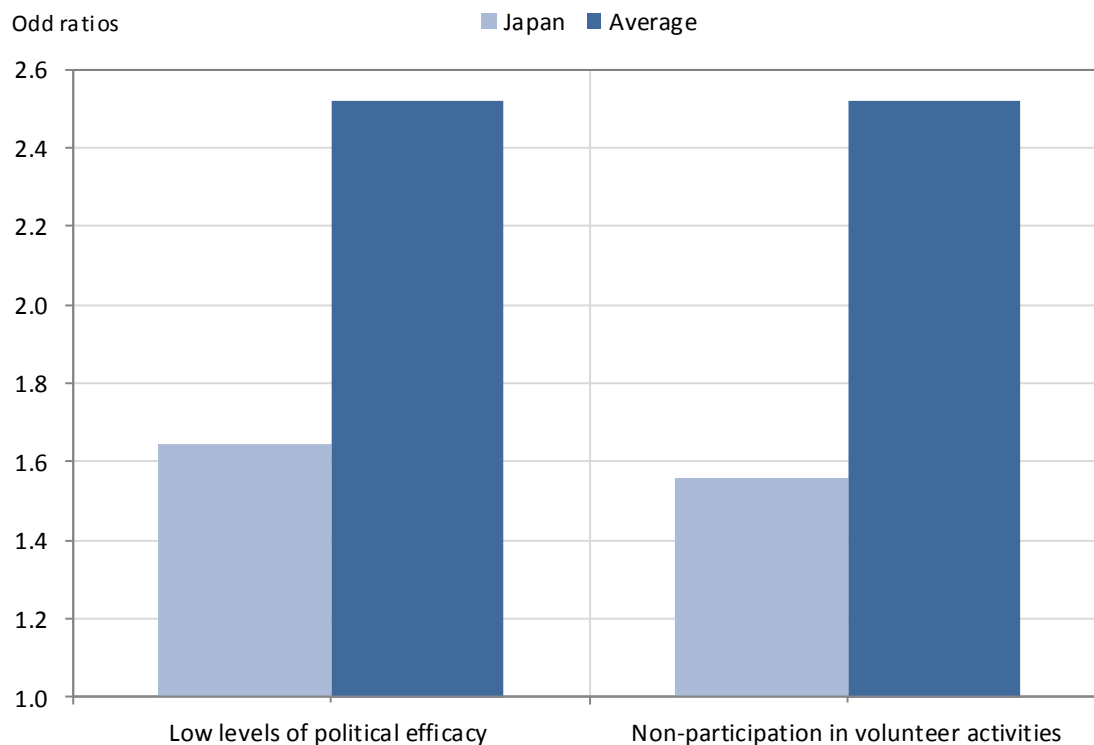
Source: Survey of Adults Skills (PIAAC) (2012), Table A6.4 (L).

Japan stands out as a country in which proficiency in literacy has a weak association with the four social outcomes measured in the Survey of Adult Skills – trust in others, beliefs about impact on the political process, participation in voluntary and associative activities and self-reported health.

- Japanese adults proficient at Level 1 or below in literacy have similar chances of distrusting others as adults proficient at Level 4 or 5 and around 1.5 times the chance of reporting low levels of impact on the political process, low participation in volunteering activities and poor health.

Low literacy proficiency and negative social outcomes

Odds ratio showing the likelihood of adults scoring at or below Level 1 in literacy reporting low levels of political efficacy, or of not participating in volunteer activities (adjusted)



Notes: Reference group is adults scoring at Level 4/5 in literacy.

Source: Survey of Adult Skills (PIAAC) (2012), Table A6.9(L).

Key facts about the Survey of Adult Skills (PIAAC)

What is assessed

- The Survey of Adult Skills (PIAAC) assesses the proficiency of adults from age 16 onwards in literacy, numeracy and problem solving in technology-rich environments. These skills are “key information-processing competencies” that are relevant to adults in many social contexts and work situations, and necessary for fully integrating and participating in the labour market, education and training, and social and civic life.
- In addition, the survey collects a range of information on the reading- and numeracy-related activities of respondents, the use of information and communication technologies at work and in everyday life, and on a range of generic skills, such as collaborating with others and organising one’s time, required of individuals in their work. Respondents are also asked whether their skills and qualifications match their work requirements and whether they have autonomy over key aspects of their work.

Methods

- Around 166 000 adults aged 16-65 were surveyed in 24 countries and sub-national regions: 22 OECD member countries – Australia, Austria, Belgium (Flanders), Canada, the Czech Republic, Denmark, Estonia, Finland, France, Norway, Ireland, Italy, Japan, Korea, the Netherlands, Norway, Poland, the Slovak Republic, Spain, Sweden, the United Kingdom (England and Northern Ireland), and the United States; and two partner countries – Cyprus** and the Russian Federation
- Data collection for the Survey of Adult Skills took place from 1 August 2011 to 31 March 2012 in most participating countries. In Canada, data collection took place from November 2011 to June 2012; and France collected data from September to November 2012.
- The language of assessment was the official language or languages of each participating country. In some countries, the assessment was also conducted in widely spoken minority or regional languages.
- Two components of the assessment were optional: the assessment of problem solving in technology-rich environments and the assessment of reading components. Twenty of the 24 participating countries administered the problem-solving assessment and 21 administered the reading components assessment.
- The target population for the survey was the non-institutionalised population, aged 16 to 65 years, residing in the country at the time of data collection, irrespective of nationality, citizenship or language status.
- Sample sizes depended primarily on the number of cognitive domains assessed and the number of languages in which the assessment was administered. Some countries boosted sample sizes in order to have reliable estimates of proficiency for the residents of particular geographical regions and/or for certain sub-groups of the population such as indigenous inhabitants or immigrants. The achieved samples ranged from a minimum of approximately 4 500 to a maximum of nearly 27 300.
- The survey was administered under the supervision of trained interviewers either in the respondent’s home or in a location agreed between the respondent and the interviewer. The background questionnaire was administered in Computer-Aided Personal Interview format by the interviewer. Depending on the situation of the respondent, the time taken to complete the questionnaire ranged between 30 and 45 minutes.
- After having answered the background questionnaire, the respondent completed the assessment either on a laptop computer or by completing a paper version using printed test booklets, depending on their computer skills. Respondents could take as much or as little time as needed to complete the assessment. On average, the respondents took 50 minutes to complete the cognitive assessment.

**A. Note by Turkey

The information in this document with reference to “Cyprus” relates to the southern part of the Island. There is no single authority representing both Turkish and Greek Cypriot people on the Island. Turkey recognises the Turkish Republic of Northern Cyprus (TRNC). Until a lasting and equitable solution is found within the context of the United Nations, Turkey shall preserve its position concerning the “Cyprus issue”.

B. Note by all the European Union Member States of the OECD and the European Union

The Republic of Cyprus is recognised by all members of the United Nations with the exception of Turkey. The information in this document relates to the area under the effective control of the Government of the Republic of Cyprus.

Proficiency levels: Literacy and numeracy

Level	Score range	Literacy	Numeracy
Below Level 1	Below 176 points	Tasks at this level require the respondent to read brief texts on familiar topics and locate a single piece of specific information. There is seldom any competing information in the text. Only basic vocabulary knowledge is required, and the reader is not required to understand the structure of sentences or paragraphs or make use of other text features.	Tasks at this level require the respondent to carry out simple processes such as counting, sorting, performing basic arithmetic operations with whole numbers or money, or recognising common spatial representations.
1	176 to less than 226 points	Tasks at this level require the respondent to read relatively short digital or print texts to locate a single piece of information that is identical to or synonymous with the information given in the question or directive. Knowledge and skill in recognising basic vocabulary, determining the meaning of sentences, and reading paragraphs of text is expected.	Tasks at this level require the respondent to carry out basic mathematical processes in common, concrete contexts where the mathematical content is explicit. Tasks usually require one-step or simple processes involving counting; sorting; performing basic arithmetic operations; and identifying elements of simple or common graphical or spatial representations.
2	226 to less than 276 points	Tasks at this level require the respondent to make matches between the text, either digital or printed, and information, and may require paraphrasing or low-level inferences.	Tasks at this level require the application of two or more steps or processes involving calculation with whole numbers and common decimals, percents and fractions; simple measurement and spatial representation; estimation; and interpretation of relatively simple data and statistics in texts, tables and graphs.
3	276 to less than 326 points	Texts at this level are often dense or lengthy. Understanding text and rhetorical structures is often required, as is navigating complex digital texts.	Tasks at this level require the application of number sense and spatial sense; recognising and working with mathematical relationships, patterns, and proportions expressed in verbal or numerical form; and interpreting data and statistics in texts, tables and graphs.
4	326 to less than 376 points	Tasks at this level often require the respondent to perform multiple-step operations to integrate, interpret, or synthesise information from complex or lengthy texts. Many tasks require identifying and understanding one or more specific, non-central idea(s) in the text in order to interpret or evaluate subtle evidence-claim or persuasive discourse relationships.	Tasks at this level require analysis and more complex reasoning about quantities and data; statistics and chance; spatial relationships; and change, proportions and formulas. They may also require understanding arguments or communicating well-reasoned explanations for answers or choices.
5	Equal to or higher than 376 points	Tasks at this level may require the respondent to search for and integrate information across multiple, dense texts; construct syntheses of similar and contrasting ideas or points of view; or evaluate evidence based arguments. They often require respondents to be aware of subtle, rhetorical cues and to make high-level inferences or use specialised background knowledge.	Tasks at this level may require the respondent to integrate multiple types of mathematical information where considerable translation or interpretation is required; draw inferences; develop or work with mathematical arguments or models; and critically reflect on solutions or choices.

Description of proficiency levels in problem solving in technology-rich environments

Level	Score range	The types of tasks completed successfully at each level of proficiency
No computer experience	Not applicable	Adults in this category reported having no prior computer experience; therefore, they did not take part in the computer-based assessment but took the paper-based version of the assessment, which does not include the problem solving in technology-rich environment domain.
Failed ICT core	Not applicable	Adults in this category had prior computer experience but failed the ICT core test, which assesses basic ICT skills, such as the capacity to use a mouse or scroll through a web page, needed to take the computer-based assessment. Therefore, they did not take part in the computer-based assessment, but took the paper-based version of the assessment, which does not include the problem solving in technology-rich environment domain.
“Opted out” of taking computer-based assessment	Not applicable	Adults in this category opted to take the paper-based assessment without first taking the ICT core assessment, even if they reported some prior experience with computers. They also did not take part in the computer-based assessment, but took the paper-based version of the assessment, which does not include the problem solving in technology-rich environment domain.
Below Level 1	Below 241 points	Tasks are based on well-defined problems involving the use of only one function within a generic interface to meet one explicit criterion without any categorical or inferential reasoning, or transforming of information. Few steps are required and no sub-goal has to be generated.
1	241 to less than 291 points	At this level, tasks typically require the use of widely available and familiar technology applications, such as e-mail software or a web browser. There is little or no navigation required to access the information or commands required to solve the problem. The tasks involve few steps and a minimal number of operators. Only simple forms of reasoning, such as assigning items to categories, are required; there is no need to contrast or integrate information.
2	291 to less than 341 points	At this level, tasks typically require the use of both generic and more specific technology applications. For instance, the respondent may have to make use of a novel online form. Some navigation across pages and applications is required to solve the problem. The task may involve multiple steps and operators. The goal of the problem may have to be defined by the respondent, though the criteria to be met are explicit.
3	Equal to or higher than 341 points	At this level, tasks typically require the use of both generic and more specific technology applications. Some navigation across pages and applications is required to solve the problem. The task may involve multiple steps and operators. The goal of the problem may have to be defined by the respondent, and the criteria to be met may or may not be explicit. Integration and inferential reasoning may be needed to a large extent.

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**For more information on the Survey of Adult Skills (PIAAC)
and to access the full *OECD Skills Outlook 2013* report, visit:**

<http://skills.oecd.org/skillsoutlook.html>

www.oecd.org/site/piaac

