

## SKILLS MATTER: FURTHER RESULTS FROM THE SURVEY OF ADULT SKILLS

### ISRAEL

#### Key findings

- While the literacy and numeracy proficiency of adults in Israel is lower than the average across OECD countries, a proportion of adults in Israel similar to that on average across OECD countries performs at the highest levels in literacy and numeracy.
- Israel's 25-34 year-olds score closer to the OECD average in literacy and numeracy than 55-64 year-olds do.
- Workers in Israel use their skills as frequently as workers across participating OECD countries do.
- More than one in three adults in Israel score at the lowest levels in literacy, numeracy or both (below Level 2). A large proportion of adults shows poor proficiency in using common computer applications.
- The association between low performance and parents' low educational attainment is particularly strong in Israel.
- Israel shows one of the strongest positive associations between skills proficiency and wages and one of the largest wage penalties associated with skills mismatch.

#### The Survey of Adult Skills

The Survey of Adult Skills, a product of the OECD Programme for the International Assessment of Adult Competencies (PIAAC), provides a picture of adults' proficiency 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
- problem solving in technology-rich environments – the capacity to access, interpret and analyse information found, transformed and communicated in digital environments.

Proficiency is described on 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 are defined for problem solving in technology-rich environments (Levels 1 through 3 plus below Level 1).

The survey also provides a wide range of information about respondents' use of skills at work and in everyday life, their education, their linguistic and social backgrounds, their participation in adult education and training programmes and in the labour market, and other aspects of their well-being.

**The Survey of Adult Skills was conducted in Israel from 1 April 2014 to 31 March 2015.  
Some 5 538 adults aged 16-65 were surveyed in Hebrew, Arabic and Russian.**

The statistical data for Israel are supplied by and are under the responsibility of the relevant Israeli authorities. The use of such data by the OECD is without prejudice to the status of the Golan Heights, East Jerusalem and Israeli settlements in the West Bank under the terms of international law.

**Adults in Israel score below average in literacy and numeracy, but the share of high performers is similar to the average across participating countries/economies.**

**Some 8.1% of adults in Israel score at the highest levels, Level 4 or 5, in literacy. This is close to the average across OECD countries that participated in the survey (10.6%).** The proportion of adults in Israel who score at this level is similar to that observed in Austria, France and Ireland even though the average proficiency of adults in Israel is lower than in these countries. At Level 4, adults can integrate, interpret and synthesise information from complex or lengthy texts that contain conditional and/or competing information (for more details on what adults can do at each proficiency level, see the table at the end of this note).

**In most countries/economies, the largest proportion of adults scores at Level 3 in literacy (35.4 %), except in Israel, where the largest proportion of adults scores at Level 2.** This is similar to what is observed in France, Greece, Ireland, Italy, Lithuania, Northern Ireland (United Kingdom), Poland, Spain and Turkey. Adults performing at Level 3 can understand and respond appropriately to dense or lengthy texts, and can identify, interpret, or evaluate one or more pieces of information and make appropriate inferences using knowledge text structures and rhetorical devices.

In Israel (33.0%), as on average across OECD participating countries (33.9%), about one in three adults scores at Level 2 in literacy. The largest proportions of adults scoring at this level are found in Italy (42.0%), Turkey (40.2%), Lithuania (39.7%) and Spain (39.1%), although Austria (37.2%), the Czech Republic (37.5%), Ireland (37.6%) and Korea (37.0%) also show large shares of adults at this level. Adults performing at Level 2 can complete tasks that require the respondent to make matches between the text, either digital or printed, and information, and may require paraphrasing or low-level inferences.

**Israel has a large dispersion of proficiency scores, second only to Singapore among all participating countries and economies.** The difference in literacy scores between adults in the 75th percentile (those who perform better than 75% of all adults) and those in the 25th percentile (adults who perform better than 25% of all adults) is 61.7 score points, on average across OECD countries. In Israel, the difference is 73.9 points (and 77.0 points in Singapore).

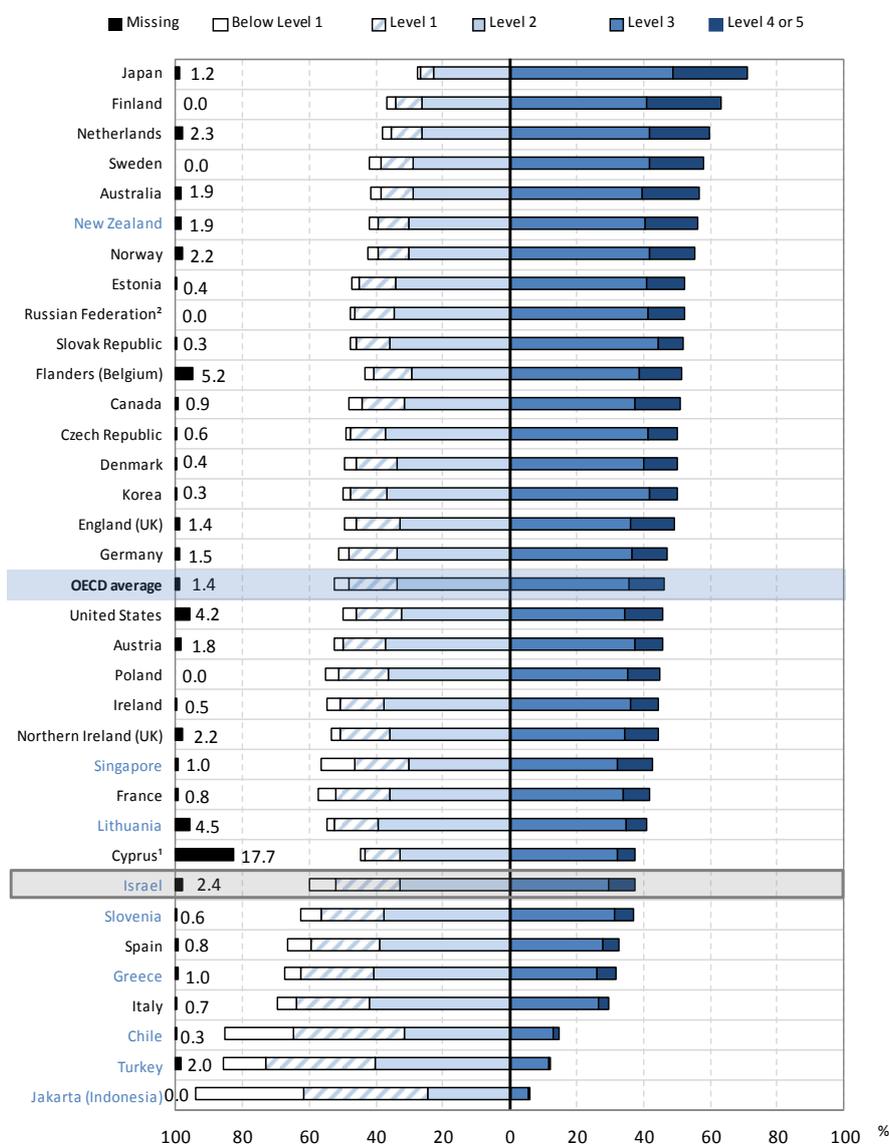
**Some 11.2 % of adults across all participating countries and economies score at Level 4 or 5 in numeracy; in Israel, 10.3% of adults score at this level,** a proportion slightly smaller than that observed in England (United Kingdom) (11.3%) and across participating OECD countries (11.2% on average), and larger than that in France (8.3%) and the United States (8.5%). At Level 4, adults can understand a broad range of mathematical information that may be complex, abstract or found in unfamiliar contexts.

**In several countries, the largest proportion of adults scores at Level 3 in numeracy; however, in Israel, as in England (United Kingdom), France, Greece, Italy, Ireland, Korea, Lithuania, Northern Ireland (United Kingdom), Poland, Spain, Turkey and United States, the largest proportion of adults scores at Level 2.** The Czech Republic, Japan and the Slovak Republic have the largest proportions of adults (more than 40%) scoring at Level 3. At Level 3, adults have a good sense of number and space; can recognise and work with mathematical relationships, patterns and proportions expressed in verbal or numerical form; and can interpret and perform basic analyses of data and statistics in texts, tables and graphs.

**Some 30.4% of adults in Israel score at Level 2 in numeracy, slightly below the OECD average of 33.0%.** At Level 2 adults can perform tasks requiring the application of two or more steps or processes involving calculation with whole numbers and common decimals, percentages and fractions; simple measurement and spatial representation; estimation; and the interpretation of relatively simple data and statistics in texts, tables and graphs.

**Figure 1. Literacy proficiency among adults**

Percentage of adults scoring at each proficiency level in literacy



**Note:** 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).

1. 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”.

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.

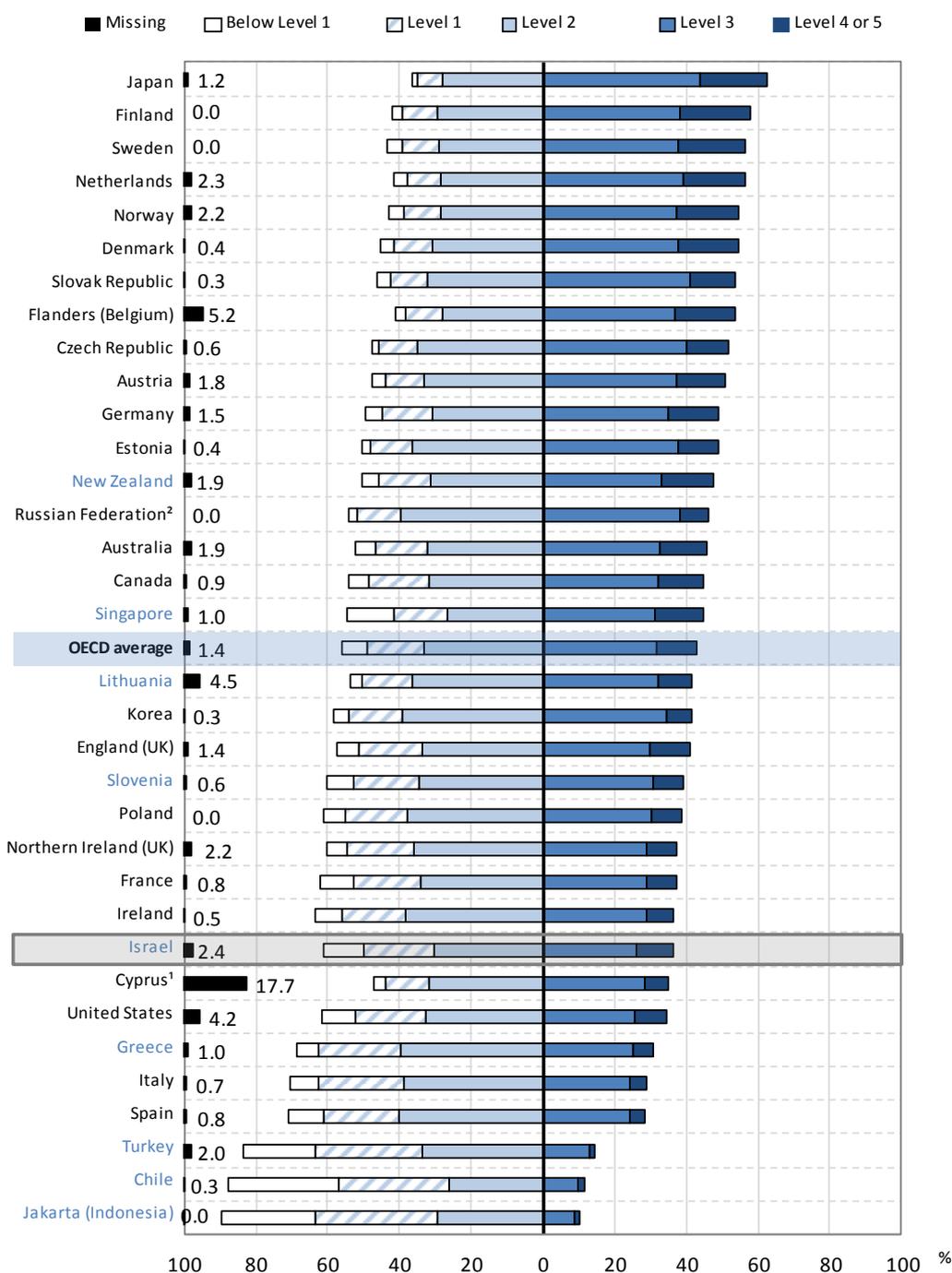
2. The sample for the Russian Federation does not include the population of the Moscow municipal area.

Countries and economies are ranked in descending order of the combined percentages of adults scoring at Level 3 and at Level 4 or 5.

**Source:** Survey of Adult Skills (PIAAC) (2012, 2015), Table A2.1 (<http://dx.doi.org/10.1787/888933366458>).

Figure 2. Numeracy proficiency among adults

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



**Note:** 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).

1. See note 1 under Figure 1.

2. The sample for the Russian Federation does not include the population of the Moscow municipal area.

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

Source: Survey of Adult Skills (PIAAC) (2012, 2015), Table A2.4 (<http://dx.doi.org/10.1787/888933366458>).

**Israel's 25-34 year-olds are more proficient than the adult population as a whole in all domains assessed, and are notably more proficient than the country's 55-65 year-olds; but they perform below the average of their counterparts in other OECD countries in literacy.**

**Israel's 25-34 year-olds perform better in literacy than any other age group. While these younger adults score 9.9 points below the OECD average for this age group in literacy, they perform far better than the country's 55-65 year-olds, who score 22.9 points below average for their age group.**

In numeracy, the score-point difference between Israel's 25-34 year-olds and the overall population is one of the largest – 13 points – observed across all participating countries/economies, but smaller than that observed in Korea (17 points). Israel's young adults have lower proficiency in numeracy than their counterparts in Finland, Japan and the Netherlands and higher proficiency than those in Chile, Greece, Italy and Spain.

Those adults who began working at a young age, particularly those working in low-skilled jobs, generally are less proficient than those who remain in education. This signals limited opportunities for young people to develop their information-processing skills outside of the education system.

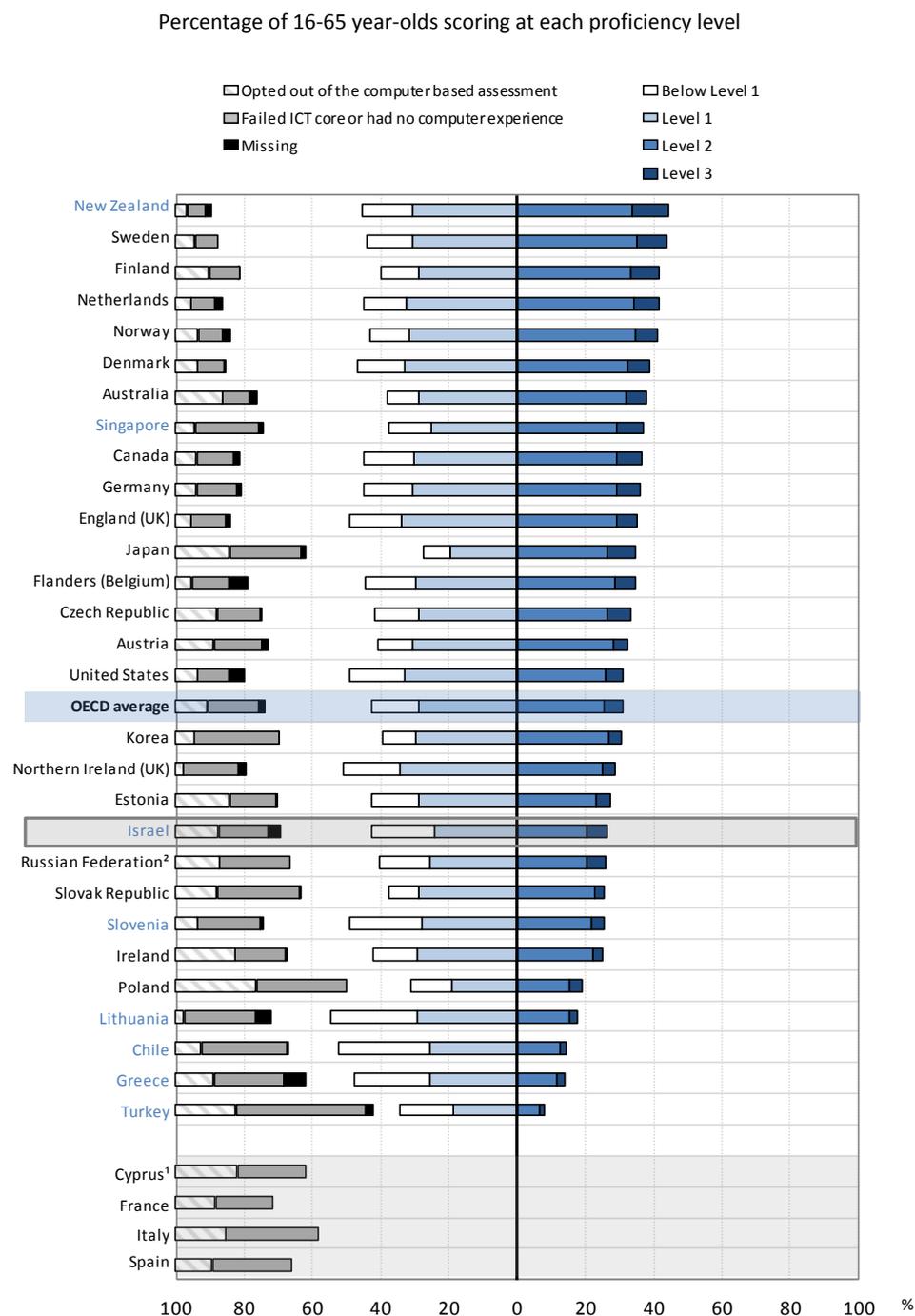
**As in most other countries, many adults in Israel have low proficiency in literacy and numeracy.**

**More than one in three adults in Greece (35.5%), Israel (36.3%), Italy (38.0%) and Spain (35.7%) are low performers in numeracy or literacy.** Low performers are adults who score below Level 2 in literacy, numeracy or both. The share of low performers reaches more than one in two adults in Turkey (56.9%), more than two in three in Chile (67.1%) and more than three in four in Jakarta (Indonesia) (77.8%). By comparison, in Finland and the Netherlands around 15% of adults are low performers while in Japan less than 10% of adults are low performers.

**A large proportion of adults in Israel have minimal familiarity with computers, and a large proportion have poor proficiency in accessing, analysing and communicating information using common computer applications.**

**Some 32.7% of adults in Israel do not have sufficient skills to solve problems in technology-rich environments.** These are adults who failed to show basic computer skills (i.e. who failed the ICT core test), or who fail to show mastery of basic problem-solving skills in technology-rich environments (below Level 1). This share is larger than the average across OECD countries (28.9%). By contrast, Israel has a larger share of adults who show the highest level of problem-solving skills (Level 3) than on average across participating OECD countries (6.4% in Israel compared to an average of 5.4%).

Figure 3. Proficiency in problem solving in technology-rich environments among adults



**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. Cyprus<sup>1</sup>, France, Italy, Jakarta (Indonesia), and Spain did not participate in the problem solving in technology-rich environments assessment. Results for Jakarta (Indonesia) are not shown since the assessment was administered exclusively in paper and pencil format.

1. See note 1 under Figure 1.

2. The sample for the Russian Federation does not include the population of the Moscow municipal area.

Countries and economies are ranked in descending order of the combined percentages of adults scoring at Level 2 and at Level 3.

Source: Survey of Adult Skills (PIAAC) (2012, 2015), Table A2.6 (<http://dx.doi.org/10.1787/888933366458>).

**Immigrants have poor literacy proficiency, but the score difference between them and native-born adults is smaller than in other countries.**

As a group, immigrants, particularly those who have been in the host country for less than five years, have low proficiency in literacy, both in absolute terms and relative to native-born adults. **Recently arrived immigrants in Israel, however, are as proficient as their counterparts on average across OECD countries; and the gap in literacy proficiency between immigrants and native-born adults in Israel is smaller than the average across all countries and economies** (14.6 score points in Israel compared to 23.6 score points on average). The largest gap in literacy proficiency between these two groups – more than 50 score points – is found in Finland and Sweden. Comparisons among the immigrant populations across countries must consider the different migration patterns and policies that govern immigration.

**Israel, along with Chile, France, Germany, Poland, Singapore, Slovenia and the United States, shows one of strongest associations between parents' educational attainment and literacy proficiency.**

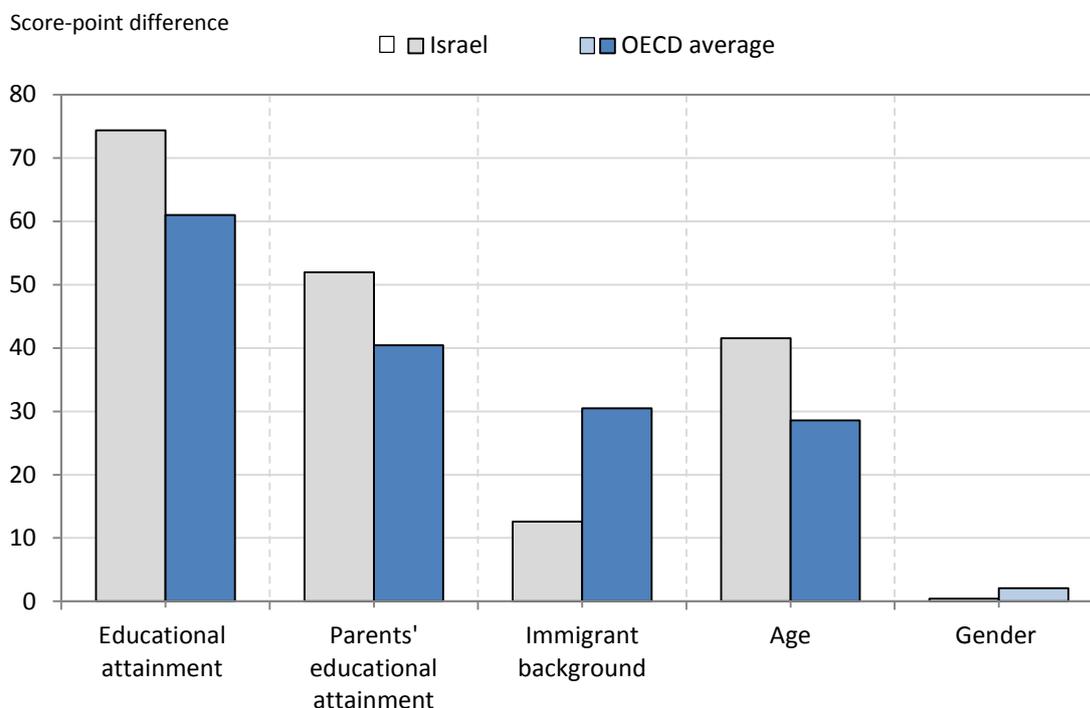
The impact of socio-economic status is strong in Israel. As in Chile, France, Germany, Poland and the United States, adults with at least one parent who attained tertiary education score higher than adults with parents who did not attain tertiary education. This relationship reflects the fact that children of adults who attained tertiary education are more likely to complete tertiary education themselves.

Across all countries that participated in the survey, proficiency peaks among 25-34 year-olds while the proficiency of 55-64 year-olds is generally the lowest of all age groups. This is true in Israel too. **The gap in proficiency between 25-34 year-olds and 55-64 year-olds in Israel is, at 42 score points, one of the largest across OECD participating countries.**

On average across countries, men have higher proficiency in numeracy than women. In Israel, men score 11.7 points higher than women in numeracy, similar to the average difference of 12.2 points. Chile, Germany and Turkey show the widest gender gaps in favour of men, and Norway, Sweden and the United States also show wider-than-average gender gaps in numeracy proficiency in favour of men. In literacy, the score gap between men and women is much smaller than that in numeracy. Women and men in Israel perform similarly in literacy.

Figure 4. **Synthesis of socio-demographic differences in literacy proficiency**

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



**Notes:** Statistically significant differences are marked in a darker tone. The estimates show the differences between the two means for each contrast category). The differences are: tertiary minus less than upper secondary (educational attainment), at least one parent attained tertiary minus neither parent attained upper secondary (parents' educational attainment), native born and native language minus foreign born and foreign language (immigrant background) and 25-34 year-olds minus 55-65 year-olds (age).

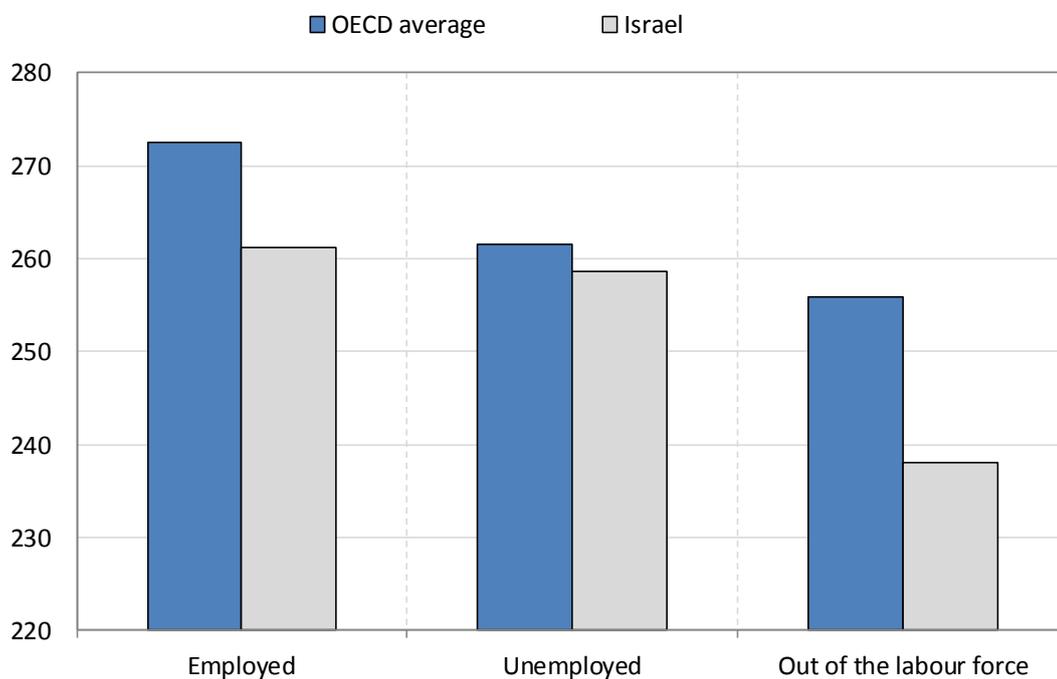
**Source:** Survey of Adult Skills (PIAAC) (2012, 2015), Tables A3.2(L), A3.5 (L), A3.9 (L), A3.12 (L) and A3.14 (L) (<http://dx.doi.org/10.1787/888933366463>).

**In Israel, higher proficiency in literacy and numeracy does not translate into a greater likelihood of being employed.**

In many participating countries, there is a positive relationship between proficiency and labour force participation and employment. Individuals with higher proficiency in literacy and numeracy have greater chances of being employed and less chance of being unemployed than individuals with lower proficiency, on average. Though this is observed in England (United Kingdom), Ireland, Lithuania, New Zealand, the Slovak Republic, Spain and Sweden, it is not the case in Israel. In Israel, after accounting for years of education, individuals with higher literacy proficiency do not have greater chances of being employed.

Figure 5. **Literacy and employment status**

Mean literacy score by employment status



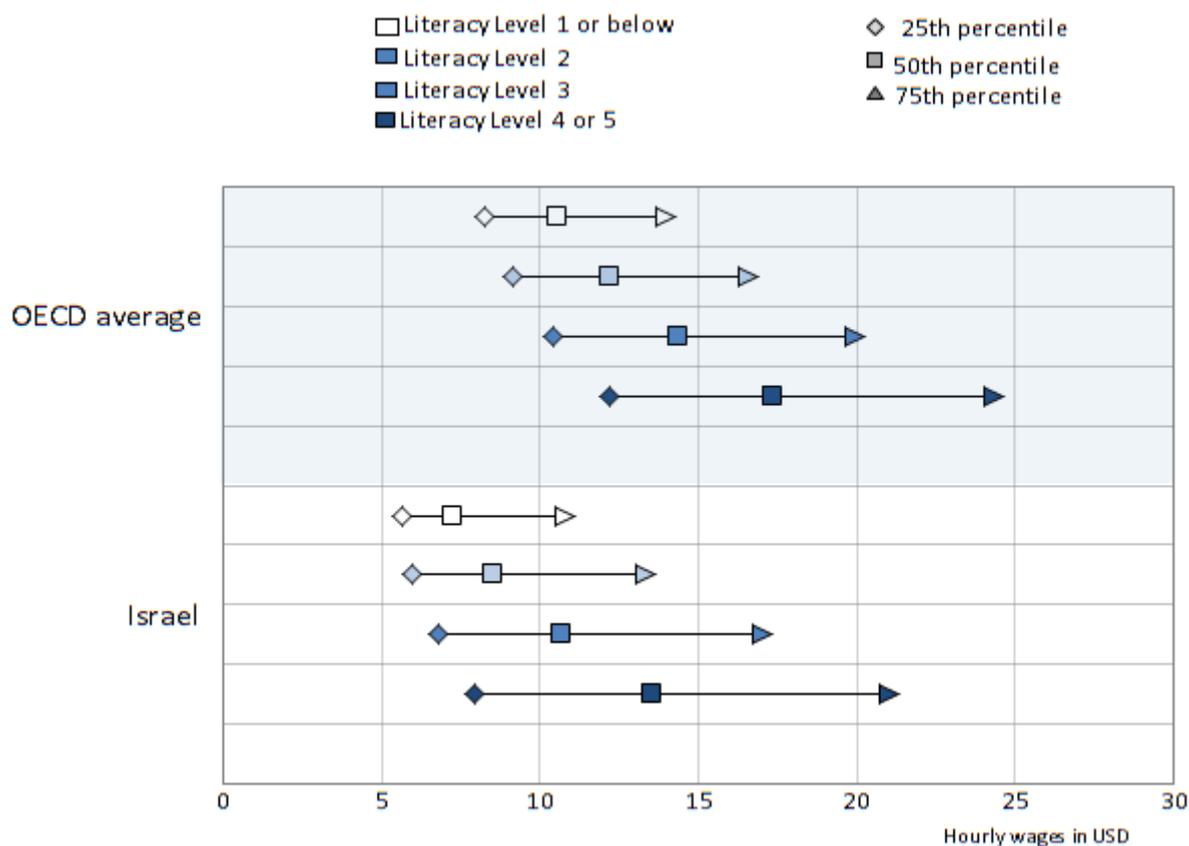
Source: Survey of Adult Skills (PIAAC) (2012, 2015), Table A5.1 (<http://dx.doi.org/10.1787/888933366489>).

**In Israel, the link between literacy proficiency and wages is particularly strong, even after accounting for years of education.**

Wages are affected by proficiency in information-processing skills. **In Israel, the best-paid workers who score at Level 4 or 5 in literacy earn about USD 10.2 more per hour than the best-paid workers who score at or below Level 1.** However, there is a slight overlap in the wage distributions at different levels of proficiency. For instance, in Israel, a median-paid earner with Level 2 proficiency in literacy earns slightly more than a low-paid worker with Level 4 or 5 proficiency. This is probably due to the large differences in wages earned by adults who score at Level 4 or 5, which is also observed in other countries.

Figure 6. **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 (2012).

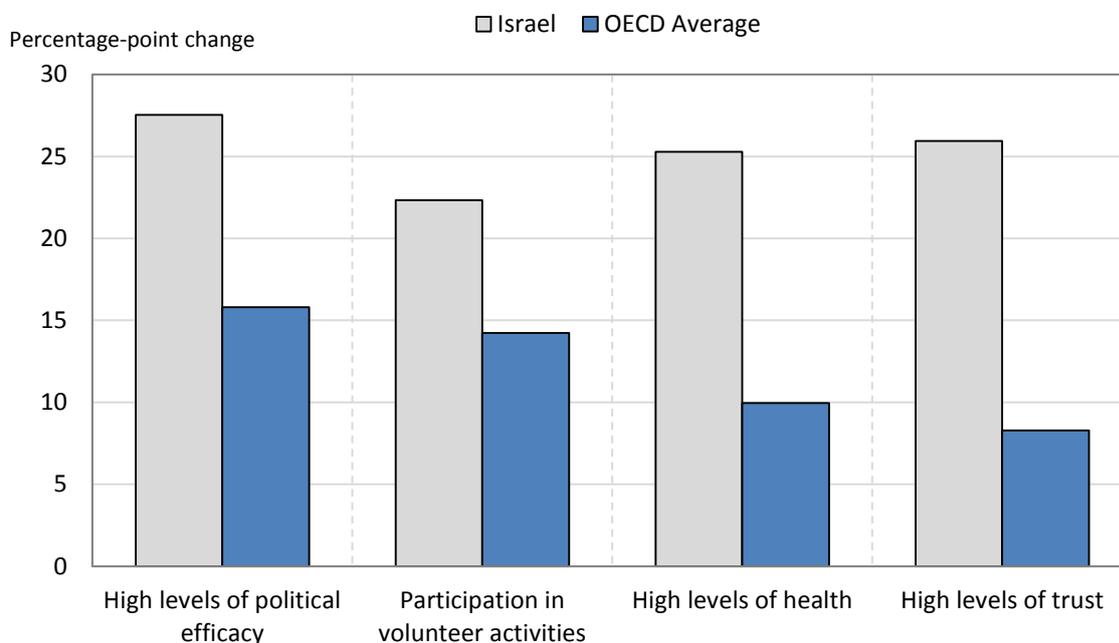
**Source:** Survey of Adults Skills (PIAAC) (2012, 2015), Table 5.3 (L) (<http://dx.doi.org/10.1787/888933366489>).

**The link between higher literacy proficiency and certain positive social outcomes is as strong in Israel as on average across OECD countries.**

In most participating countries and economies, adults proficient in literacy at or below Level 1 are more likely than adults with Level 4 or 5 proficiency to distrust others, believe they have little impact on the political process, not participate in volunteer activities and self-report poor health. In Israel, these relationships are similar to or stronger than the average across OECD countries.

Figure 7. **Literacy proficiency and positive social outcomes**

Difference between the percentage of adults with high proficiency (Level 4 or 5) and the percentage of adults with low proficiency (Level 1 or below) who reported high levels of trust and political efficacy, good to excellent health, or participating in volunteer activities



**Note:** All differences are statistically significant.

**Source:** Survey of Adult Skills (PIAAC) (2012, 2015), Table A5.14(L) (<http://dx.doi.org/10.1787/888933366489>).

### **In Israel, workers whose skills are not well-matched with their jobs bear a large wage penalty.**

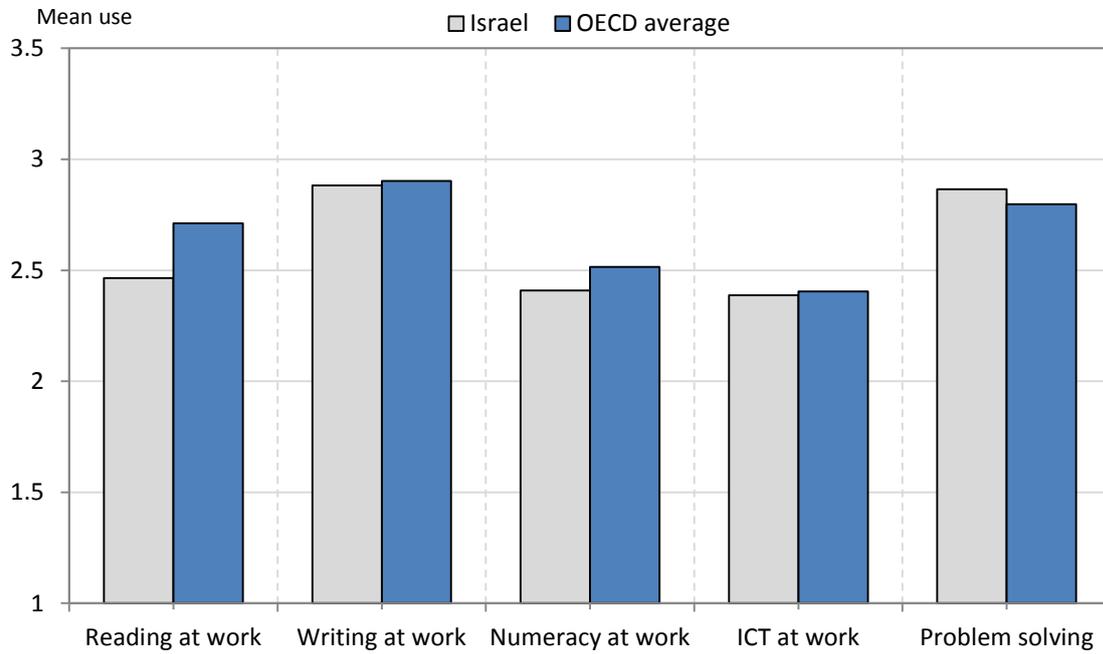
The Survey of Adult Skills also collected information about the use of information-processing and other generic skills in the work-place. Linked with data about workers' proficiency in these skills, this information provides a picture of the match – or mismatch – between workers' skills and the tasks they are asked to perform in their jobs.

Workers in Israel write, solve problems and use computers as or more frequently than workers across participating OECD countries do, but they read and use mathematics slightly less than the average across OECD countries. Israel has one of the largest proportions (32.5%) of overqualified workers – workers whose educational qualifications are higher than those required to get their current job. Israel also has a smaller percentage (7.7%) of workers whose proficiency in literacy is below the minimum required for their job (underskilled) than on average across participating OECD countries.

In Israel, workers who are mismatched with their jobs suffer one of the largest wage penalties observed across all participating countries/economies. Overqualified workers earn 26.9% less than workers who are well-matched with their jobs, overskilled workers earn 15.7% less than workers who are well-matched, and workers who are mismatched by field of study earn 7.0% less. These mismatch penalties in Israel contrast to OECD average wage penalties of 14.4%, 2.9% and 2.6% for overqualified, overskilled and field-mismatched workers.

Figure 8. **Information-processing skills used at work**

Average skills use, working population aged 16-65



**Notes:** For reading, writing, numeracy and ICT skills, skills use indicators are scales between 1 "Never" and 5 "Every day". Problem-solving skills use refers to respondents' answers to "How often are you usually confronted with more complex problems that take at least 30 minutes to find a good solution?". The set of possible answers also ranges between 1 "Never" and 5 "Every day".

**Source:** Survey of Adult Skills (PIAAC) (2012, 2015), Table A4.1 (<http://dx.doi.org/10.1787/888933366479>).

## 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 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, that are 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

- The Survey of Adults Skills was conducted over two rounds of data collection.
- In the first round, around 166 000 adults aged 16-65 years in 24 countries were surveyed – Australia, Austria, Belgium, Canada, Cyprus,\* the Czech Republic, Denmark, Estonia, Finland, France, Germany, Ireland, Italy, Japan, Korea, the Netherlands, Norway, Poland, the Russian Federation,\*\* the Slovak Republic, Spain, Sweden, the United Kingdom and the United States. In all but three countries, data collection covered the entire national population. In Belgium, data were collected in Flanders; in the United Kingdom, data were collected in England and Northern Ireland (data are reported separately for England and Northern Ireland in the report). In the Russian Federation, the data do not cover the Moscow municipal area.
- Data collection for Round 1 of the Survey of Adult Skills took place from 1 August 2011 to 31 March 2012 in most participating countries. In Canada, data were collected from November 2011 to June 2012; and France collected data from September to November 2012.
- Nine countries took part in the second round of the assessment: Chile, Greece, Indonesia, Israel, Lithuania, New Zealand, Singapore, Slovenia and Turkey. A total of 50 250 adults were surveyed. In all countries except Indonesia the entire national population was covered. In Indonesia, data were collected in the Jakarta municipal area only.
- Data collection for Round 2 of the Survey of Adult Skills took place from April 2014 to end-March 2015. The duration of fieldwork varied from around 100 to 330 days, depending on the country.
- The language of assessment was the official language(s) of each participating country/economy. In some countries, the assessment was also conducted in widely spoken minority or regional languages.
- The target population for the survey was the non-institutionalised population of 16-65 year-olds residing in the country or region at the time of the data collection, irrespective of nationality, citizenship or language status. The achieved national samples ranged from a minimum of approximately 4 000 persons to a maximum of nearly 27 300 persons.
- The survey was conducted under the supervision of trained interviewers usually in the respondent’s home. 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 the respondent's computer skills. Respondents could take as much or as little time as needed to complete the assessment. On average, respondents took 50 minutes to complete the cognitive assessment.
- Identical instruments were used in Rounds 1 and 2 of the survey. The one exception was in Jakarta (Indonesia) where, since only paper-based instruments were used, additional test items were added to the paper-based instruments used in the other countries.

### Comparing the results of countries/economies in Round 1 and Round 2

Identical data-collection instruments and methodology were used in Rounds 1 and 2 of the survey. The one difference is that data collection for Rounds 1 and 2 occurred some three years apart. The difference in reference dates for the two rounds of the study is unlikely to have an impact on the proficiency of the adult populations in Round 1 countries/economies compared to that of adults in Round 2 countries/economies. However, data were collected at different points in the economic cycle in the two rounds; this may have some effect on the relationships observed between proficiency and labour market outcomes and jobs characteristics, in particular, in the countries/economies in the two different rounds.

### Notes

\* See note 1 under Figure 1.

\*\* The data from the Russian Federation are preliminary and may be subject to change. Readers should note that the sample for the Russian Federation does not include the population of the Moscow municipal area. The data published, therefore, do not represent the entire resident population aged 16-65 in Russia but rather the population of Russia excluding the population residing in the Moscow municipal area.

More detailed information regarding the data from the Russian Federation as well as that of other countries can be found in the *Technical Report of the Survey of Adult Skills, Second Edition* (OECD, forthcoming).

### References and further reading

OECD (forthcoming), *Technical Report of the Survey of Adult Skills, Second Edition*.

OECD (2016a), *Skills Matter: Further Results from the Survey of Adult Skills*, OECD Skills Studies, OECD Publishing, Paris, <http://dx.doi.org/10.1787/9789264258051-en>.

OECD (2016b), *The Survey of Adult Skills: Reader's Companion, Second Edition*, OECD Skills Studies, OECD Publishing, Paris, <http://dx.doi.org/10.1787/9789264258075-en>.

OECD (2016c), *Survey of Adult Skills (PIAAC)* (Database 2012, 2015), [www.oecd.org/site/piaac/publicdataanalysis.htm](http://www.oecd.org/site/piaac/publicdataanalysis.htm).

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**Description of proficiency levels in 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 at this level 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	Tasks at this level 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	Tasks at this level 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	Tasks at this level 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.

**Contacts:**

Andreas Schleicher  
Director  
Directorate for Education and Skills  
**Email:** [Andreas.SCHLEICHER@oecd.org](mailto:Andreas.SCHLEICHER@oecd.org)  
**Telephone:** +33 6 07 38 54 64

Stefano Scarpetta  
Director  
Directorate for Employment Labour and Social Affairs  
**Email:** [Stefano.SCARPETTA@oecd.org](mailto:Stefano.SCARPETTA@oecd.org)  
**Telephone:** +33 1 45 24 19 88

Guillermo Montt  
Analyst  
Directorate for Employment Labour and Social Affairs  
**Email:** [Guillermo.MONTT@oecd.org](mailto:Guillermo.MONTT@oecd.org)  
**Telephone:** +33 1 45 24 92 92

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