

CANADIANS and 21st CENTURY SKILLS

Paper prepared in support of the work of
C21 Canada: Canadians for 21st Century Learning and Innovation
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INTRODUCTION

The release of OECD Programme for International Assessment of Adult Competencies (PIAAC) in October 2012 provides evidence and direction for the work of C21 and the learning movement in Canada. Recommendations are suggested based on the results.

Relevance of PIAAC results for the 21st century competencies in *Shifting Minds: A Vision and Framework for Learning in Canada* published by C21 Canada:

PIAAC aligns with:

Principle 2- The primary focus of Canadian education is to position learners for fulfillment and success in the modern world.

Principle 3 - Literacy, numeracy, science, life skills and 21st Century competencies must now be the foundational learning outcomes of Canada's public education systems.

C21 Canada has identified 7 competencies required for success in the modern world for individuals and for competitiveness and prosperity for Canada. PIAAC has data for some of the outcomes listed for the seven competencies which are quantifiable, particularly in an international context. (Table 1) Of the seven, only Creativity, Innovation and Entrepreneurship is not covered, due to the difficulty of measurement, rather than doubts of their importance.

Table 1: Evidence from PIAAC on outcomes listed for 21st Century competencies.

21 st CENTURY COMPETENCIES	TARGETED OUTCOMES	PIAAC MEASURES
Critical thinking and problem solving	The ability to acquire, process, interpret, rationalize and critically analyze large volumes of often conflicting information to the point of making an informed decision and taking action in a timely fashion.	Problem Solving in Technology Rich Environments (PS-TRE) Numeracy
Collaboration	The ability to interact positively and respectfully with others in creating new ideas and developing products.	Cooperative skills, influencing skills
Communication	High-level literacy skills, including strength in a person's mother tongue with multilingual capacity a definite asset. The ability to critically interpret and evaluate ideas presented through a variety of media and technologies.	Literacy PS-TRE
Character	Life-long learner Self-directed, adaptable and resilient Personal productivity Physical well being	Participation in adult education and training; Literacy gain/loss over life course Self organizing skills Self organizing skills Health
Culture and Ethical citizenship	Disposition and skills necessary for effective civic engagement.	Political efficacy and volunteering
Computer and Digital Technologies	The capacity to use computers and digital resources to access information and create knowledge, solutions, products and services.	PS-TRE

Generating evidence from PIAAC for C21 competencies:

The main questions than can be answered are:

- Do youth and Canadians of working age have adequate 21st Century skills?
- How do Canadian 21st Century skills compare with those in other countries?
- Are 21st Century skills used and valued in the economy and society?

To answer these questions, evidence from PIAAC for the work of C21 Canada can be gained by analyzing: Performance, Benchmarks and Validation.

Do youth and Canadians of working age have adequate 21st Century skills?

Performance: Is the performance level of 21st Century skills adequate among adults 16-65? Are these skills developed equally across the country? Are they developed to a desirable standard through compulsory education?

LITERACY

Average performance: Canadian performance of 273 (Scale 0-500, 5 levels) was just below the OECD average and it was at Level 2 which does not require complex inferences or specialized knowledge when integrating, interpreting or synthesizing knowledge. (C. p13)¹ Though the levels are not supposed to be normative, each country has to decide what level of proficiencies is desirable for compulsory education graduates as well as the work force, based on the ability to perform tasks associated with each level.

Table 2: Canadian performance in literacy

DOMAIN	DEFINITION OF DOMAIN	OECD AVERAGE	AVERAGE SCORE	CONFIDENCE INTERVAL	LEVEL
Literacy	Literacy is the ability to understand, evaluate, use and engage with <i>written texts</i> to participate in society, to achieve one's goals, and to develop one's knowledge and potential.	273.3	273.5	+/- 1.1	2

Range: The OECD average for the variation of scores within each population, as measured by the average score point difference between the 5th and 95th percentiles, is 151 points. In Canada, the difference is 163 points, or about three levels (Each level has 50 points). (C. p13)

Distribution: There were slightly more Canadians at Levels 4 and 5 than the OECD average but there were more Canadians at Level 1 and below Level 1 than the OECD average. Table 3 (C.p15-16)

¹References: C indicates the Pan Canadian report and I, the OECD International report and IK, the International Key Findings. The numbers indicate, the chart, table or page number.

Table 3: Distribution of literacy scores in Canada compared to OECD averages

LEVEL	SCORE RANGE	% 16 to 65 years		LITERACY TASKS (ABBREVIATED)
		OECD	CANADA	
4&5	326-500	12	14	Search for and integrate information across multiple, dense texts; construct syntheses of similar and contrasting ideas or points of view; or evaluate evidenced based arguments. Application and evaluation of logical and conceptual models of ideas may be required to accomplish tasks. Aware of subtle, rhetorical cues and to make high-level inferences or use specialized background knowledge. Perform multiple-step operations to integrate, interpret, or synthesize information from complex or lengthy continuous, non-continuous, mixed, or multiple type texts. Complex inferences and application of background knowledge may be performed.
3	276-325	39	38	Dense or lengthy continuous, non-continuous, mixed, or multiple pages of text. Understanding text and rhetorical structures, especially navigating of complex digital texts. Identify, interpret, or evaluate one or more pieces of information, and varying levels of inference.
2	226-275	34	32	Texts may be digital or printed continuous, non-continuous, or mixed types. Make matches between the text and information, and paraphrasing or low-level inferences. Some competing pieces of information.
1	176-225	12	13	Relatively short digital or print continuous, non-continuous, or mixed texts to locate a single piece of information that is identical to or synonymous with the question or directive.
Below 1	0-175	3	4	Brief texts on familiar topics to locate a single piece of specific information. No competing information in the text and the requested information is identical in the question or directive. Only basic vocabulary.

Equality of performance across provinces and territories: The provinces were quite similar despite their differing education and labour policies and the difference between the highest and lowest scoring province was a fifth of a level. But there were large differences for the territories except Yukon. Northwest Territories lagged by half a level and Nunavut by a level. Table 4 (C. p14. Figure 1.1)

Table 4: Provincial average literacy scores and differences between them

PROVINCES	AVERAGE SCORE	Confidence Interval +/-	LEVEL	Absolute difference between highest provincial score and provincial score
Alberta	277.7	3.6	2 or 3	
Ontario	275.5	1.9	2 or 3	2.2
OECD	273.3	0.3	2	
Prince Edward Island	277.5	7.0	2 or 3	0.2
Yukon	277.2	22.0	2 or 3	0.5
British Columbia	274.8	3.5	2 or 3	2.9
Manitoba	273.9	3.9	2 or 3	3.8
Nova Scotia	273.9	3.3	2 or 3	3.8
Canada	273.5	1.1	2	
Saskatchewan	271.6	4.4	2 or 3	6.1
Quebec	268.6	1.5	2	9.1
New Brunswick	268.3	2.8	2	9.4
Newfoundland and Labrador	265.4	2.7	2	12.3
Northwest Territories	253.3	11.6	2	24.4
Nunavut	219.1	7.5	1 or 2	58.6

Note: Provinces and territories in green are above the OECD average, in white are the same as the OECD average and in pink are below the OECD average.

Change over time: The scale from the ALL survey (2003) was converted to the scale of the PIAAC survey (2012) to allow comparison but the results should be analysed further because the population composition

and the use of ICTs have changed over this time. In 2003, the literacy average score was 280 with 14% at Level 1 and below and 18% at Level 4 and 5 while in 2012, the average score was 273 with 17% at Level 1 and below and 14% at Level 4 and 5. These results suggest a decline in literacy performance in average and distribution. (C. Chart 4.1)

Compulsory education to Upper Secondary is the prime time for the development of foundational skills such as Literacy. This analysis is based on the transformation of the 1994 scale to that of 2012. It should also be noted that cohorts could be different in population composition and other characteristics. Given those caveats, performance at the age of Secondary school graduation appears to be declining. Table 5. (I.Table B5.1)

Table 5: Literacy scores at graduation ages from Upper Secondary in 2003 and 2012

AGE	1994		2012		DIFFERENCE BETWEEN 2012 and 1994		
	MEAN SCORE	SE	MEAN SCORE	SE	DIFFERENCE	SE	P value
16	286.7	7.7	268.4	4.1	-18.4	8.7	0.018
17	290.3	6.2	267.8	4.0	-22.5	7.4	0.001
18	295.8	5.5	273	4.5	-22.4	7.1	0.001

NUMERACY

Average performance: Canadian performance in Numeracy at 265 was below the OECD average of 269, and was at Level 2. Though the levels are not supposed to be normative, each country has to decide what level of proficiencies is desirable for compulsory education graduates as well as the work force, based on the ability to perform tasks associated with each level. Table 6

Table 6: Canadian performance in Numeracy

DOMAIN	DEFINITION OF DOMAIN	AVERAGE SCORE	CONFIDENCE INTERVAL	LEVEL
Numeracy	Numeracy is the ability to access, use, interpret and communicate mathematical information and ideas in order to engage in and manage the mathematical demands of a range of situations in adult life.	265.5	+/- 1.4	2/5

Range: The distribution of scores across each population shows that, on average for participating OECD countries, 166 points separate the 5th and 95th percentiles in numeracy. Canada's difference is 180 points, or about three and half levels. (C.p18)

Distribution: Canada had about the same proportion of high scorers as the OECD average but had 4% more adults who scored at Level 1 or below than the OECD average. Table 7 (C. p20)

Table 7: Distribution of Numeracy scores in Canada compared to OECD averages

LEVEL	SCORE RANGE	% 16 to 65 years		NUMERACY TASKS (ABBREVIATED)
		OECD	CANADA	
4&5	326-500	13	12	Understand complex representations and abstract and formal mathematical and statistical ideas, possibly embedded in complex texts. Understand a broad range of mathematical information that may be complex, abstract or embedded in unfamiliar contexts. Undertake multiple steps and choosing relevant problem-solving strategies and processes.
3	276-325	35	33	Understand mathematical information that may be less explicit, embedded in contexts that are not always familiar and represented in more complex ways. Require several steps and may involve the choice of problem-solving strategies and relevant processes.
2	226-275	33	32	Identify and act on mathematical information and ideas embedded in a range of common contexts where the mathematical content is fairly explicit or visual with relatively few distractors. Require the application of two or more steps or processes involving calculation with whole numbers and common decimals, percents and fractions.
1	176-225	14	17	Require the respondent to carry out basic mathematical processes in common, concrete contexts where the mathematical content is explicit with little text and minimal distractors. Require simple one-step or simple processes involving counting; sorting; performing basic arithmetic operations.

Below 1	0-175	5	6	Require the respondents to carry out simple processes such as counting, sorting, performing basic arithmetic operations with whole numbers or money, or recognizing common spatial representations in concrete, familiar contexts where the mathematical content is explicit with little or no text or distractors.
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Equality of performance across provinces and territories: The provinces were quite similar and the difference between the highest and lowest scoring province was higher than for literacy, just under two fifths of a level, despite differing education and labour policies. However, the difference for Northwest Territories was three fifths of a level and Nunavut was well over a level. Table 8 (C. p14. Figure 1.1)

Table 8: Provincial average Numeracy scores and differences between them

PROVINCE	AVERAGE SCORE	Confidence Interval +/-	LEVEL	Absolute difference between highest provincial score and provincial score
OECD	269.4	0.4		
Alberta	269.1	4.3	2	
British Columbia	266.3	3.6	2	2.8
Prince Edward Island	265.0	8.2	2	4.1
Yukon	263.1	17.9	2	6.0
Ontario	266.3	2.3	2	2.8
Canada	265.5	1.4	2	
Quebec	264.9	1.5	2	4.2
Manitoba	264.2	5.0	2	5.2
Saskatchewan	264.8	3.9	2	4.3
Nova Scotia	262.8	3.6	2	6.3
New Brunswick	255.7	3.3	2	13.4
Newfoundland and Labrador	251.9	3.1	2	17.2
Northwest Territories	239.4	13.0	2	29.7
Nunavut	200.5	8.0	1	68.5

Note: Provinces and territories in white are the same as the OECD average and in pink are below the OECD average.

Change over time: The scale from the ALL survey (2003) was converted to the scale of the PIAAC survey (2012) to allow comparison but the results should be analysed further because the population composition and the use of ICTs have changed over time. Canadians scored an average of 272 in 2003, with 18% at Level 1 or below, and 14% at Level 4 or 5. The average in 2012 was 266, with 23% at Level 1 or below, and 13% at Level 4 or 5. (C. Chart 4.1). Given the caveats, Canadian performance has declined.

PROBLEM SOLVING TECHNOLOGY RICH ENVIRONMENTS (PS-TRE)

Problem solving in technology rich environments is defined as the ability to use digital technology, communication tools and networks to acquire and evaluate information, communicate with others and perform practical tasks and was measured using a scale 0-500.

Distribution: Because varying proportions of national populations took the Computer Based Assessment (CBA), information is presented on the proportions at each proficiency level. There are 3 levels and below level 1. (C. p23-25) While the proportion that scored at Level 3 is similar to the OECD average, the 15% who scored below level 1 are greater than the OECD average. 19% did not take the computer-based assessment for various reasons. Table 9 (C. Table 1.3)

Table 9: Distribution of PS-TRE scores in Canada compared to OECD averages

LEVEL	SCORE RANGE	% 16 to 65 years		PS-TRE (ABBREVIATED)
		OECD	CANADA	
3	341-500	6	7	Require the use of both generic and more specific technology applications. Involves multiple steps and operators. The goal of the problem may have to be defined and the criteria to be met may or may not be explicit. There are typically high monitoring demands. Unexpected outcomes and impasses are likely to occur. Require evaluating the relevance and reliability of information. Integration and inferential reasoning may be needed to a large extent.
2	291-340	28	29	Respondents 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. Some integration and inferential reasoning may be needed
1	241-290	29	30	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 to the information or commands required to solve the problem. The problem may be solved regardless of awareness and use of specific tools and functions. Goal readily inferred from the task statement. Problem resolution requires the application of explicit criteria. Only simple forms of reasoning, such as assigning items to categories are required.
Below level 1	0-240	12	15	Well-defined problems involving the use of only one function within a generic interface to meet one explicit criterion without any categorical, inferential reasoning or transforming of information. Few steps are required and no sub goal has to be generated.
Non-respondents		24	19	This category includes those individuals who did not report previous computer experience, did not pass the ICT core test, or opted not to be assessed by a computer-based test.

Relationship between education attainment and PS-TRE: There is a clear relationship in PS-TRE performance and level of education and these skills continue to grow after Upper Secondary education. However, Japan (13.9), Netherlands (14.2) and Finland (13.2) outperformed Canada at the Tertiary level. Table 10 (Table A3.10 (P))

Table 10: Percentage of Canadians 16-65 at each proficiency level in PS-TRE by level of educational attainment

EDUCATION	Did not do CBA		BELOW LEVEL 1		LEVEL 1		LEVEL 2		LEVEL 3	
	%	SE	%	SE	%	SE	%	SE	%	SE
Less than upper secondary	23.2	0.9	22.1	1.1	24.0	1.7	16.2	1.4	2.6	0.7
Upper secondary	10.7	0.5	16.2	0.8	32.5	1.1	26.9	0.9	5.2	0.5
Tertiary	6.2	0.4	11.5	0.5	30.4	1.0	36.3	0.9	10.3	0.7

Relationship of ability/experience with ICT and literacy and numeracy scores: There was a clear relationship between ability/experience with computers and literacy and numeracy performance. It should be noted, that such ability and experience is also related to education and age. Table 11 (C.Chart 1.5; I Table B2.5e)

Table 11: Relationship of ability/experience with ICT and literacy and numeracy scores, Canada

DOMAIN	NO COMPUTER EXPERIENCE			FAILED ICT CORE			Opted out of taking comp based assessment (CBA)			Took the computer based assessment (CBA)		
	%	MEAN	SE	%	MEAN	SE	%	MEAN	SE	%	MEAN	SE
Literacy	5	214.5	2.9	6	245.9	3.3	6	257.3	3.2	81	280.4	0.6
Numeracy	5	194.1	2.9	6	226.7	3.4	6	234.6	2.9	81	275.0	0.6

Note: 2% were non-respondents

Equality of performance across provinces and territories: The capacity/experience with computers varied widely among the provinces and territories, ranging from a high of 86% in Saskatchewan to 72% in Newfoundland to 49% in Nunavut. Table 12 (C. Chart 1.5)

Table 12: Number of adults who took the Computer based Assessment by province and territory

PROVINCE	No computer experience %	Failed ICT core %	Opted out of taking CBA %	Took the CBA %
Saskatchewan	4	6	3	86
Nova Scotia	4	6	5	84
Alberta	2	8	5	83
Yukon	8	2	4	82
Quebec	6	5	2	82
Ontario	4	5	7	82
British Columbia	4	8	7	80
Prince Edward Island	6	5	9	79
New Brunswick	7	6	9	77
Northwest Territories	7	10	7	76
Manitoba	5	6	12	75
Newfoundland and Labrador	9	6	12	72
Nunavut	16	8	25	49

LIFELONG LEARNING

The OECD estimates that on average there is a 7 point gain for each year of education. It also showed that across countries, Literacy scores peaked at age 30. Furthermore gains are rapid between the ages of 16 and 25 and the decline is slow until the age of 65.

How have the literacy scores of those who were of Secondary school age in 1994 changed 18 years later? (I. Table B5.2) The scores are at Level 3 and the gains are higher each year during education compared to the working years. Table 13

Table 13: Literacy scores of adults 16-18 in 2003 and their scores in 2012, Canada

1994			2012			DIFFERENCE		
AGE	MEAN SCORE	SE	AGE	MEAN SCORE	SE	DIFFERENCE	SE	P VALUE
16	287.7	7.7	34	292.9	4.0	6.2	8.7	0.237
17	290.3	6.2	35	293.8	4.1	3.5	7.4	0.316
18	295.8	5.5	36	294.0	4.2	-1.8	6.9	0.398

How do Canadian 21C skills compare with those in other countries?

BENCHMARKING

Literacy at the end of Upper Secondary: Compulsory education policies are the key means for developing foundation skills. If these are achieved to an adequate level at graduation from Upper Secondary, then individuals benefit in terms of future learning and success in the labour market. (I. Figure 5.2 (L)).

In the top scoring countries of Australia, Finland, Japan and Netherlands, individuals have Literacy scores well over Level 3 at the age of graduation from Upper Secondary, but Canadian youth are barely at Level 3 only at 18 and 19 years. The difference between Canadian scores and the top score is almost three fifths of a level. Table 14

Table 14: Literacy scores at age of graduation in Canada and top scoring countries

COUNTRY	GRADUATION AGE FROM UPPER SECONDARY			
	16	17	18	19
Canada	267.75	271.22	277.28	277.30
Australia	279.88	281.58	283.15	285.00
Finland	286.70	290.75	294.44	297.79
Japan	293.38	295.17	296.86	298.44
Netherlands	286.71	289.74	293.00	295.00

Literacy scores and educational attainment: Literacy scores are correlated with educational attainment and countries that achieve higher scores at lower levels of education give their citizens a head start. In the top performing countries, even adults with Lower than Upper Secondary education score at Level 3 while this is not the case in Canada. Those with Tertiary education in the top scoring countries have scores above 300. The learning gain between upper secondary and tertiary education is about the same, so higher scores through compulsory education in Canada could enhance scores. Table 15 (I B3.17 (L))

Table 15: Literacy performance of adults 16-65 by educational attainment (adjusted for Socio-demographic characteristics)

COUNTRY	EDUCATIONAL ATTAINMENT			
	LOWER THAN UPPER SECONDARY	UPPER SECONDARY	TERTIARY	DIFFERENCE: TERTIARY AND UPPER SECONDARY
	LITERACY SCORE	LITERACY SCORE	LITERACY SCORE	SCORE POINTS
Canada	246.0	273.2	291.0	17.8
Japan	283.5	299.0	316.2	17.2
Finland	282.3	295.3	315.2	19.9
Australia	279.4	297.3	311.5	14.2
Netherlands	280.7	301.5	320.2	18.7

Lifelong learning: Higher initial scores are a major predictor of the learning and performance trajectories over time. Among youth 16-25, Canadian performance was about half a level lower compared to the top scoring Finland and Netherlands while among older workers, the difference was lower, about a fifth of a level compared to Australia. Older workers in Netherlands, Australia and Japan maintained average performance at Level 3. Canadian adults did not lose as many points over time as Finland, Japan or the Netherlands, indicating more lifelong learning through training and experience. Table 16 (I B3.17 (L))

Table 16: Literacy performance of youth 16-25 and older workers 55-65 in Canada compared to top scoring countries (adjusted)

COUNTRY	16-24	DIFFERENCE COMPARED TO CANADA	55-65	DIFFERENCE COMPARED TO CANADA	LOSS OVER TIME
	MEAN LITERACY SCORE	SCORE POINTS	MEAN LITERACY SCORE	SCORE POINTS	SCORE POINTS
Canada	283.5		266.4		17.1
Japan	301.2	17.7	276.0	9.6	25.2
Finland	307.9	24.4	265.9	-0.5	42.0
Australia	296.0	12.5	284.3	17.9	11.7
Netherlands	311.4	27.9	278.0	11.6	33.4

Participation in adult education and training: Canadian participation in adult education and training was higher than that of Japan and Australia but well below the rate of Finland and the Netherlands. The participation rate was higher if the proficiency level of the worker was higher. Table 17 (I, Table A5.7(L), Table A5.9 (L))

Table 17: Distribution of literacy proficiency scores, and percentage of adults participating in adult education and training during year prior to the survey

COUNTRY	MEAN LITERACY SCORES		PARTICIPATION IN ADULT EDUCATION AND TRAINING	
	MEAN	SE	MEAN	SE
Canada	273.6	0.6	57.8	0.5
Japan	296.2	0.7	42.1	0.7
Finland	287.5	0.7	66.0	0.6
Australia	280.4	0.9	55.2	0.7
Netherlands	284.0	0.7	64.5	0.6

Are 21C skills used and valued in the economy and society?

VALIDATION

Literacy, Numeracy and PS-TRE: The distribution and use of these skills is related to the distribution of both economic and social wellbeing in society. The median hourly wage of those with literacy Level 4/5 is 60% higher than those with Level 1 or below. Those with higher literacy are more likely to engage in further education and training while those with low literacy are more than twice as likely to be unemployed. Furthermore, per capita incomes are higher in countries with larger proportions of working age adults with high levels of literacy and numeracy. (IK, p6)

Influencing, cooperating and self-organizing skills: Influencing, cooperative skills and self organizing skills are valued and rewarded in the labour market and it appears that there is little difference in the demand for these skills among Canada and top performing countries in their respective economies. Table 18 (I Table A.2)

Table 18: Mean use of generic skills at work in Canada and top performing countries

COUNTRY	INFLUENCING SKILLS	COOPERATIVE SKILLS	SELF ORGANIZING SKILLS
Canada	2.1	2.6	3.3
Japan	1.8	2.6	2.8
Finland	2.2	2.1	3.2
Australia	2.3	2.7	3.3
Netherlands	1.9	2.2	3.0

There is high use of these skills among professionals and managers in particular. (I A. 4.18) The use of these skills also correlates with education. (I Table A4.12a). Influencing and self organizing skills are more heavily used by prime age workers than the young or old while it is the reverse for cooperative skills in Canada. Table 19. There does not appear to be a gender difference (I A 4.9a)

Table 19: Mean use of generic skills by age group, Canada

AGE GROUP	INFLUENCING SKILLS	COOPERATIVE SKILLS	SELF ORGANIZING SKILLS
16-24	1.7	2.8	2.6
25-54	2.2	2.6	3.4
55-65	2.0	2.3	3.3

Impact of low literacy on volunteer activities, political efficacy and health: In Canada, compared to those with literacy at Level 4/5, those with Level 1 or below have three times the odds of not participating in volunteer activities, twice the odds of low political efficacy and twice the odds of fair or poor health. Table 20 (I A6.9 (L)

Table 20: Likelihood of working age adults scoring at or below Level 1 in literacy reporting low levels of volunteer activities, political efficacy and health, Canada

DO NOT PARTICIPATE IN VOLUNTEER ACTIVITIES ODDS RATIO	LOW LEVELS OF POLITICAL EFFICACY ODDS RATIO	FAIR TO POOR HEALTH ODDS RATIO
3.5	2.4	2.3

Note: Odds ratios are adjusted for age, gender, educational attainment and immigrant and language background. Reference group is Level 4/5. Adults with missing data on the proficiency scale are included in the analysis as a separate category for which a coefficient is estimated but not reported.

RECOMMENDATIONS:

- **Set Level 3 as the target for Literacy and Numeracy:** Benchmarking has shown that top performing countries achieve an average score in Literacy and Numeracy. High performance in literacy and numeracy is associated with higher per capita GDP and higher earnings.
- **Aspire to Level 3 performance in Literacy and Numeracy at graduation from Upper Secondary:** Upper Secondary graduates in top performing countries have an average score in Literacy and Numeracy at Level 3. Those at this level are more likely to have further education and training and slower loss of skills with age.
- **Improve problem solving in technology rich environments:** Almost a fifth of the population did not use the computer based test and 15% scored below Level 1. The use of ICT at work is likely to grow and this skill is a necessity.

REFERENCES:

OECD (2013), *OECD Skills Outlook 2013: First Results from the Survey of Adult Skills*, OECD Publishing. <http://dx.doi.org/10.1787/9789264204256-en>
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