

ASSESSMENT MATTERS!



11

BUT DO THEY KNOW THE VALUE OF MONEY?

These days, we hear a lot about the importance of having a variety of skills and of being literate in many different subject areas, for example, reading literacy, scientific literacy, mathematical literacy, as well as other forms of literacies, including financial literacy. The Organization for Economic Co-Operation and Development (OECD) defines financial literacy as “*knowledge and understanding of financial concepts and risks, and the skills, motivation and confidence to apply such knowledge and understanding in order to make effective decisions across a range of financial contexts, to improve the financial well-being of individuals and society, and to enable participation in economic life*” (OECD, 2016). In other words, in the context of the Programme for International Student Assessment (PISA), 15-year-old students are expected to know how to deal with money matters in their current daily lives as youths and in their future lives as adults.

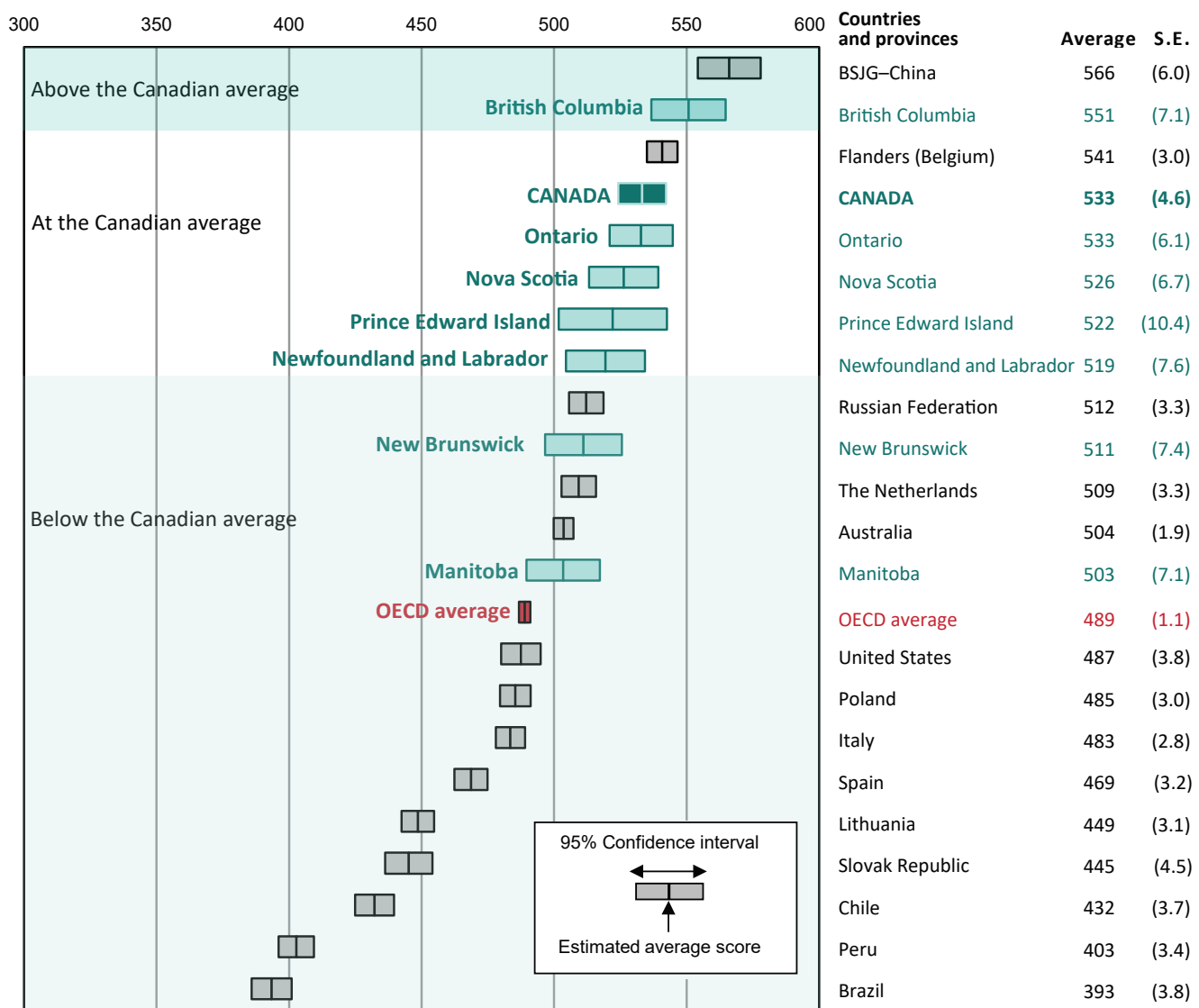
PISA assessed financial literacy for a first time in 2012, and the assessment was repeated in 2015. The PISA test covers a variety of content areas, cognitive processes, and contexts in which students are expected to demonstrate their knowledge and skills. The content domains consisted of the following areas: money and transactions (coins and notes, different ways of making payments, understanding bank statements), planning and managing finances (saving and spending, credit and debt, financial decision making), risk and reward (using credit, volatility of the market, exchange rates, investment and saving, diversification), and financial landscape (consumer rights

and responsibilities, understanding of the wider financial, economic, and social system). The cognitive processes included: identify financial information, analyze information in a financial context, evaluate financial issues, and apply financial knowledge and understanding. The contexts covered by the assessments pertained to: education and work, home and family, individuals, and society (OECD, 2017).

PISA 2015 marked the first time Canadian students participated in the financial assessment. Students from the following provinces took part in this assessment: Newfoundland and Labrador, Prince Edward Island, Nova Scotia, New Brunswick, Ontario, Manitoba, and British Columbia. The test consisted of a one-hour, computer-based test composed of 43 restricted-response and open-response questions.

Results from the 2015 assessment were released in 2017, and Canadian students performed very well in the global context (Scerbina, Kong, Deussing, O’Grady, Levesque, Trites, & Khan, 2017). Of the 15 countries and economies participating, only one outperformed Canada (BSJG–China), while another performed as well as Canada [Belgium (Flanders)]. Across participating provinces, students from British Columbia performed better than the Canadian average, while students from Manitoba and New Brunswick performed below the Canadian average. See Figure 1 for the results of the PISA 2015 financial literacy assessment.

FIGURE 1 Results for the PISA 2015 financial literacy assessment



There are five levels of performance in the assessment of financial literacy, and the OECD considers Level 2 as the baseline level of proficiency. Across all participating countries and economies, on average, 78 per cent of students reached at least the baseline level. By contrast, in Canada, 87 per cent performed at that level. In all participating provinces at least 82 per cent of student reached at least the baseline level.

In the five provinces where there were enough students to report results by language (Nova Scotia, New Brunswick, Ontario, Manitoba, and British Columbia), students in the English school systems performed better than those in the French school systems, with the smallest gap by language being in New Brunswick (35 points)

and the largest in Nova Scotia (79 points). Canadian results indicate that there is no gender gap in financial literacy, and that immigrant and non-immigrant students performed equally well on the assessment both in Canada overall and across all participating provinces.

Consistent with PISA results in the other domains, Canadian students who have at least one parent with tertiary education (college or university) and those from socioeconomically advantaged families performed better in financial literacy. Generally, the gaps by parental education levels and socioeconomic status were slightly smaller in Canada than internationally (Scerbina et al., 2017).

Sample items based on publicly available questions:


The following section presents sample items that were publicly released by the OECD following the completion of the 2012 and 2015 assessments. Although Canadian students did not respond to these specific items, these questions demonstrate the types of skills measured by the assessment.

Sample question to illustrate proficiency Level 1

PISA questions often refer to situations that take place in the fictional country of Zedland, where the Zed is the unit of currency.

QUESTION LEVEL 1: INVOICE

Sarah receives this invoice in the mail

				
Breezy Clothing		Invoice Invoice Number: 2034 Date issued: 28 February		
Sarah Johanson 29 Worthill Rd Kensington Zedland 3122		Breezy Clothing 498 Marple Lane Brightwell Zedland 2090		
Product code	Description	Quantity	Unit cost	Total (excluding tax)
T011	T-shirt	3	20	60 zeds
J023	jeans	1	60	60 zeds
S002	scarf	1	10	10 zeds
		Total Excluding Tax:	130 zeds	
		Tax 10%:	13 zeds	
		Postage:	10 zeds	
		Total Including Tax:	153 zeds	
		Already Paid:	0 zeds	
		Total due:	153 zeds	
		Date due:	31 March	

QUESTION

Why was this invoice sent to Sarah?


- A. Because Sarah needs to pay the money to Breezy Clothing.
- B. Because Breezy Clothing needs to pay the money to Sarah.
- C. Because Sarah has paid the money to Breezy Clothing.
- D. Because Breezy Clothing has paid the money to Sarah.

Correct answer: A

This item is an easy item, a Level-1 question on the financial literacy scale, which is below the Level 2 baseline. This item measures money and transactions. The students' main task is to know the purpose and demonstrate a basic understanding of an invoice. It involves having an awareness of the different forms and purposes of money and handling simple monetary transactions, such as everyday payments.

Sample question to illustrate proficiency Level 2

QUESTION LEVEL 2: INVOICE

				
Breezy Clothing		Invoice Invoice Number: 2034 Date issued: 28 February		
Sarah Johanson 29 Worthill Rd Kensington Zedland 3122		Breezy Clothing 498 Marple Lane Brightwell Zedland 2090		
Product code	Description	Quantity	Unit cost	Total (excluding tax)
T011	T-shirt	3	20	60 zeds
J023	jeans	1	60	60 zeds
S002	scarf	1	10	10 zeds
		Total Excluding Tax:	130 zeds	
		Tax 10%:	13 zeds	
		Postage:	10 zeds	
		Total Including Tax:	153 zeds	
		Already Paid:	0 zeds	
		Total due:	153 zeds	
		Date due:	31 March	

QUESTION

How much has Breezy Clothing charged for delivering the clothes?
Delivery charge in zeds:

.....

Correct answer: 10

This item is a Level-2 item on the financial literacy scale, which is the baseline level. The item measures money and transactions. The question requires students to identify and understand financial information on an invoice, a skill that would be necessary in students' future adult lives.

Sample question to illustrate proficiency Level 3

QUESTION LEVEL 3: SHARES

This graph shows the price of one Rich Rock share over a 12-month period.



QUESTION

Which statements about the graph are true?

Statement	Is the statement true or false?
The best month to buy the shares was September.	True / False
The share price increased by about 50% over the year.	True / False

Answer: True, False

This item is a Level-3 item on the financial literacy scale, which is above the baseline. The content area is risk and reward. The question requires students to interpret a line graph showing share prices over one year. The question also involves analyzing financial issues.

Sample question to illustrate proficiency Level 4

QUESTION LEVEL 4: PAY SLIP

Each month, Jane's salary is paid into her bank account. This is Jane's pay slip for July.

EMPLOYEE PAY SLIP: Jane Citizen	
Position: Manager	1 July to 31 July
Gross salary	2800 zeds
Deductions	300 zeds
Net salary	2500 zeds
Gross salary to date this year	19 600 zeds

QUESTION

How much money did Jane's employer pay into her bank account on 31 July?

- A 300 zeds
- B 2500 zeds
- C 2800 zeds
- D 19 600 zeds

Answer: B

This is a relatively hard question, at Level 4 on the financial literacy scale. The question is intended to measure money and transactions in the context of education and work, and the task involves identifying financial information. The main task is to read a pay slip and to recognize that an employee receives only the net salary, and not the gross salary.

Sample question to illustrate proficiency Level 5

QUESTION LEVEL 5: BANK ERROR

David banks with ZedBank. He receives this e-mail message.

Dear ZedBank member,

There has been an error on the ZedBank server, and your Internet login details have been lost.

As a result, you have no access to Internet banking.

Most importantly, your account is no longer secure.

Please click on the link below and follow the instructions to restore access.

You will be asked to provide your Internet banking details.

<https://ZedBank.com>

QUESTION

Which of these statements would be good advice for David?
Circle "Yes" or "No" for each statement.

Statement	Is this statement good advice for David?
Reply to the e-mail message and provide his Internet banking details	Yes / No
Contact his bank to inquire about the e-mail message	Yes / No
If the link is the same as his bank's website address, click on the link and follow the instructions	Yes / No

Answers: No, Yes, No

This is a difficult item, a Level-5 question on the financial literacy scale. The content being assessed is financial landscape, which comprises Internet banking. The content is relevant because students are likely to engage in Internet banking and/or conduct financial transactions over the Internet now or in the near future. The item focuses on students' ability to evaluate financial issues. Students were asked to provide individual written responses to these questions.

Sample question to illustrate proficiency Level 5

QUESTION LEVEL 5: NEW OFFER

Mrs Jones has a loan of 8000 zeds with FirstZed Finance. The annual interest rate on the loan is 15%. Her repayments each month are 150 zeds.

After one year Mrs Jones still owes 7400 zeds.

Another finance company called Zedbest will give Mrs Jones a loan of 10 000 zeds with an annual interest rate of 13%. Her repayments each month would also be 150 zeds.

QUESTION

If she takes the Zedbest loan, Mrs Jones will immediately pay off her existing loan. What are two other **financial** benefits for Mrs Jones if she takes the Zedbest loan?

1.
2.

This question is also rated Level 5 on the financial literacy scale. The content being assessed is planning and managing finances. Although 15-year-olds may not have experience borrowing money, it is important knowledge, since many young adults obtain loans from financial institutions. The item focuses on students' ability to analyze information in a financial context.

Strengths demonstrated by Canadian students on the PISA 2015 financial literacy assessment

This review is based on the statistical analysis of the performance of Canadian students on the 2015 version of the assessment. Results by province, language, and gender were analyzed. Also, anecdotal comments from the teachers who scored the assessment were considered.

As part of the assessment of the financial literacy skills of 15-year-olds, students had to demonstrate their alertness to possible fraud or security of information (e-mails or calls from people who claim to be from a reputable organization asking for money or personal information). A sample question related to this content area is given in the "Bank Error" scenario above. Canadian students across the country did fairly well on these types of assessment questions. Generally, they showed an understanding of and alertness to possible scams, fraud, and theft of personal information and their potential financial consequences. Although students in both the English and the French school systems did well on these types of assessment questions, those in the French school systems did not perform as well as their English counterparts. Results on these questions were about the same in all provinces, except for students in British Columbia who performed

better. Canadian females also performed slightly better than Canadian males on these items.

Students also had to show whether they were able to balance priorities and plan what items to spend money on. Students were assessed on buying versus renting; setting priorities when spending money; being financially responsible when spending money; planning a budget. For the most part, students across Canada showed that they were able to make financially sound decisions when spending their money. Although students in the French school systems did not perform as well as those in the English school systems, the difference was not as significant as in other financial literacy content areas. Again, on these assessment items, students in British Columbia performed better than the average, while those in Manitoba performed lower than in the other provinces. There was no significant difference in performance between Canadian females and males.

In real-life transactions, students are often presented with different options when buying a product. For example, they might be presented with various Internet packages,

phone plans, or on-line shopping delivery fees. To reflect these real-world circumstances, some of the PISA items measured students' ability to select the most financially responsible option in a given context. These types of assessment items proved to be slightly more difficult for students, although the results were still adequate. Again, students in the English school systems outperformed those in the French systems. Students in British Columbia performed better on these items than those in the other provinces. Students from Prince Edward Island, New Brunswick, and Manitoba performed lower than students from other provinces. The difference in performance

Possible areas for improvements for Canadian students

Another area of financial literacy in which 15-year-olds were assessed was their understanding of the purpose of insurance and their ability to recognize factors affecting insurance premiums (deductibles, cost, coverage, etc.). Canadian students did not perform very well on these types of questions. The results were similar for the English and French school systems, and there was little difference in performance among provinces except for Newfoundland and Labrador, where student performance was lower than that in the other provinces. There was also no difference in performance between females and males.

Items assessing planning and managing finances (saving and spending, credit and debt, financial decision making) were also more difficult for Canadian students. The performance of students was weaker on items that assessed bank loan structures (short-term versus long-term loans, calculating interest over a period of time, repayment options, etc.). The "New Offer" sample question above provides an example related to this content area. Students in British Columbia performed better than those in other provinces on these items, while students in Newfoundland and Labrador, Nova Scotia, and Manitoba did not perform as well. On average, males performed better than females on these items. Students across Canada also showed a weaker performance on items that dealt with bank accounts and interpreting bank statements. Students in British Columbia performed better than students from the other participating provinces, but the difference in performance between females and males on these questions was not significant. The results were similar for both language systems for all items in this content area.

Another content area that proved to be more difficult for Canadian students was that of risk and reward

between females and males was not significant for this type of question.

The PISA 2015 financial literacy assessment also asked students to consider that some purchases have ongoing costs, for example, a game console will need new games, or a motorbike will need fuel, tires, and service. Students performed well on these types of assessment questions, and there was little difference in performance between the two language systems. There was also little difference in performance among the provinces, as well as between females and males.

(using credit, volatility of the market, exchange rates, investment and saving, diversification). Overall, student performance was weakest on these types of assessment items across all provinces. Although some provinces did perform slightly better than others in some aspects of this content area (mostly exchange rates), Canadian 15-year-olds did not perform well on items covering these topics. This result was also the case for both males and females and for students from both language systems.

On the financial literacy assessment, some items were open-ended questions and required a written response (one or two sentences). In some cases, student responses were so poorly written that it made it difficult to score. In other words, students could not demonstrate their understanding of the financial literacy concepts because of their poor writing skills.

Some assessment items required students to apply previously learned mathematical skills, such as read and interpret various types of graphs (bar graphs, line graphs, etc.), calculate percentages, and estimate. A question related to such process skills is shown above in the problem called "Shares". Some of these questions were fairly simple, yet many Canadian students did not perform as well as expected. One possibility to explain this result is that students had difficulty transferring skills from one subject area to another.

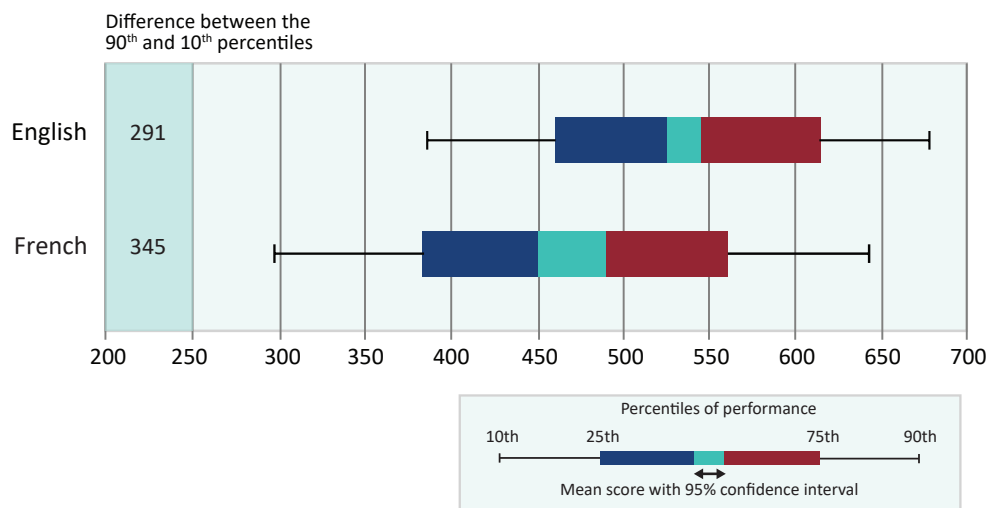
Only a few items assessed knowledge of personal income taxes. It is therefore difficult to provide accurate information on this particular area of assessment. However, the performance of students indicated that their knowledge on personal income taxes was limited.

Differences between students by language of the school system

As mentioned earlier, students in the English school systems generally performed better than those in the French school systems. Although it is difficult to pinpoint the reasons for these differences, it is important to note that students in the English school systems also performed better on questions in the Reading domain on this PISA assessment. Students from the English school systems outperformed their French counterparts by 49 points in Reading, while in financial literacy the difference was 64 points. Furthermore, on items where partial credit was given for selecting the correct answer and full credit

was given to students who could explain their answers, considerably more English students received full credit in comparison to the French students, suggesting that the English students were more successful at explaining and justifying their answers. There is also wider disparity between high achievers and low achievers in French (minority) school systems compared to those in English school systems. As shown in Figure 2 below, low achievers in the French school systems achieved a much lower score in financial literacy (298) compared to the English school systems' low achievers (387).

FIGURE 2 Comparison of financial literacy results in English- and French-language school systems



Differences in performance between males and females

As reported in the Canadian report of the PISA 2015 results (Scerbina et al., 2017), there is no overall gender difference in performance in financial literacy. Despite female students showing a slightly stronger performance on assessment items that measured students' understanding and alertness to possible scams, fraud, and stealing of personal information and their potential

financial consequences, and males performing slightly better on items assessing planning and managing finances, the gender differences at the item level were marginal. In the other content areas, there was no noticeable pattern in performance that could provide additional information regarding gender differences.

Implications for policy, curriculum, and instruction

Overall, Canadian students' performed well in the PISA 2015 financial literacy assessment in comparison to other participating countries. However, there are some areas of concern. In order for 15-year-old students to become financially responsible citizens, they must be able to balance their priorities and plan what to spend money on; remember that some of the purchases have ongoing costs;

be alert to possible fraud; know what risk is and what insurance is meant for; and make informed decisions about credit. Students should be able to accomplish these tasks regardless of their educational background or abilities, language of instruction, or the province they live in.

Provincial curricula in financial literacy should consider addressing the following areas:

- The difference in achievement between language groups
- The disparity between low achievers and high achievers, paying particular attention to improving the performance of low achievers
- The difference in results among Canadian provinces
- The relatively weak performance of students in the content area of risk and reward (using credit, volatility of the market, exchange rates, investment and saving, diversification)
- A better understanding of factors affecting insurance premiums (deductibles, cost, coverage, etc.)
- Knowledge regarding planning and managing finances (saving and spending, credit and debt, financial decision making, loans)
- The ability of students to provide a rationale through written response
- A review of curricula to ensure that knowledge on issues related to personal income taxes is adequately covered
- The ability of students to transfer knowledge and skills across curricula (e.g., interpret graphs, calculate percentages, estimate)

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