2

Assessing financial literacy in PISA 2015

The PISA 2015 assessment of financial literacy among 15-year-old students was the second of its kind. It assesses the extent to which students in 15 participating countries and economies have the knowledge and skills, acquired both in and outside of school, that are essential for making financial decisions and plans for their future. This chapter highlights the importance of financial literacy for students in their current lives and as they move into adulthood. It then describes students' exposure to financial education at school. The chapter concludes with a description of how financial literacy is defined and assessed in the 2015 financial literacy assessment, and presents sample test questions.

Over the past decades, developed and emerging countries and economies have become increasingly concerned about the level of financial literacy of their citizens, particularly among young people (OECD, 2014a). This initially stemmed from concern about the potential impact of shrinking public and private welfare systems, shifting demographics, including the ageing of the population in many countries, and the increased sophistication and expansion of financial services. Many young people face financial decisions and are consumers of financial services in this evolving context. They are likely to face growing complexity and risks in the financial marketplace as they move into adulthood.

These challenges have led to the recognition that better knowledge and understanding of financial concepts and risks could help improve financial decision making among adults and young people, in both their current and future lives. As a result, financial literacy is now globally recognised as an essential life skill. Financial education is acknowledged as a complement to financial consumer protection, inclusion and regulation, as a way to improve individual decision making and well-being, and to support financial stability and development. This recognition is reflected in the 2012 G20 leaders' endorsement of the OECD/International Network on Financial Education (INFE) High-level Principles on National Strategies for Financial Education (G20, 2012; OECD/INFE, 2012) and in the 2013 call for a Policy Handbook on the Implementation of National Strategies for Financial Education, complementing the Principles by supporting their implementation in interested countries (OECD/INFE, 2015).

This chapter begins by providing a rationale for the financial literacy assessment in PISA 2015, highlighting that many students in the participating countries and economies already have a bank account, hold prepaid debit cards and earn money from work. The chapter asserts that students will need to have financial knowledge and skills to be able to conduct financial operations at work and in everyday life in their future, as shown in the OECD Survey of Adult Skills (OECD, 2016a). Students' exposure to financial education at school is also discussed. The chapter then describes how financial literacy is defined and assessed in the PISA 2015 financial literacy assessment, and presents some test questions.

What the data tell us

- People engage in basic financial activities from a young age. PISA data reveal that, on average across 10 participating OECD countries and economies, about six in ten students have a bank account and/or a prepaid debit card or earn money from some type of work activity. PIAAC data reveal that more than one in three 16-24 year-olds in Australia, the Netherlands and the United States reported that they read bills, invoices, bank statements or other financial statements at least once a week in their everyday life.
- Seven out of the 15 participating countries and economies – Australia, Brazil, Canada, the Netherlands, the Russian Federation, Spain and the United States – developed a national strategy for financial education specifically addressing young people among their target audiences.
- Most of the participating countries and economies – Australia, the Flemish Community of Belgium, Brazil, Canada, China, Italy, Lithuania, the Netherlands, Peru, the Russian Federation, the Slovak Republic, Spain and the United States – started introducing financial topics in the curriculum or have developed financial education pilot programmes in school.

THE IMPORTANCE OF FINANCIAL LITERACY FOR YOUNG PEOPLE

Policy makers are increasingly recognising the importance of developing financial literacy skills among young people. Many young people already face financial decisions and are consumers of financial services, such as choosing among mobile phone plans or using a savings account. As they approach the end of compulsory education, young people in school also have to decide, with their parents, whether to continue with post-compulsory education and how to finance such education (Box IV.2.1). As they become young adults, they will soon have to perform more financial operations and engage in financial activities, both as part of their work and in everyday life.

PISA data indicate the extent to which 15-year-old students are already using money and are involved in financial decisions. Figure IV.2.1 shows that, on average across 10 participating OECD countries and economies, about six in ten students have a bank account and/or a prepaid debit card. More than half of students in Australia, the Flemish Community of Belgium, the participating Canadian provinces (British Columbia, Manitoba, New Brunswick, Newfoundland and Labrador, Nova Scotia, Ontario and Prince Edward Island), Italy, the Netherlands, Spain and the United States have a bank account and/or a prepaid debit card (Table IV.5.10). Moreover, students also earn some money from small jobs outside of school hours, from occasional jobs, such as babysitting or gardening, or from helping in family businesses.

Box IV.2.1 **Financial literacy needs for choosing student loans**

Students nearing the end of compulsory education will soon be taking decisions that will have significant consequences for their adult lives, such as deciding whether to continue their studies or whether to enter the labour market. In some countries, this decision also includes how to finance tertiary education and whether to take a student loan. Tuition fees in tertiary education vary considerably across countries, making loans more or less relevant. Among the countries participating in the PISA 2015 financial literacy assessment, average annual fees for a bachelor's degree are over USD 4 000 in Australia and Canada, and over USD 8 000 in the United States (OECD, 2016b).

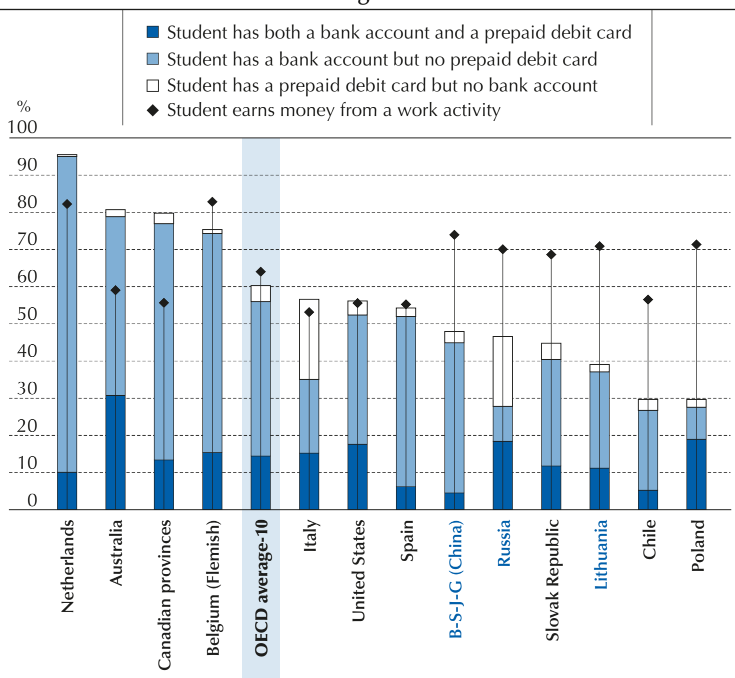
Countries differ significantly in the extent to which student loans are offered and used, and in how they work. Depending on national student loans characteristics, students intending to take a loan may have to choose between public and private loans and between different repayment methods (based on fixed instalments or contingent on earnings). Students and their families should also be aware of any special conditions on public or state-guaranteed loans, such as reduced interest rates, favourable repayment system or remission/forgiveness mechanisms. Depending on the combination of these features, students and their families would need to be proficient in financial literacy to make a choice.

Among the countries participating in the PISA 2015 financial literacy assessment, almost eight in ten students in Australia at bachelor's, master's or doctoral levels had a public student loan in 2013/14; in the United States, 62% of bachelor's-degree students and 67% of master's-degree students had a public student loan in the same period (OECD, 2016b).

As a result of taking loans, most students are in debt at graduation. In the Netherlands, students graduate with an average debt of about USD 18 000, and in Canada, students graduate with an average debt of about USD 12 000 (OECD, 2016b). The extent to which this can be a problem mostly depends on the amount of debt, the uncertainty of graduates' earnings and employment prospects, and the conditions for repayment of the loans.

Figure IV.2.1 ■ **Students who use a basic financial product and/or earn money from work**

Percentage of students



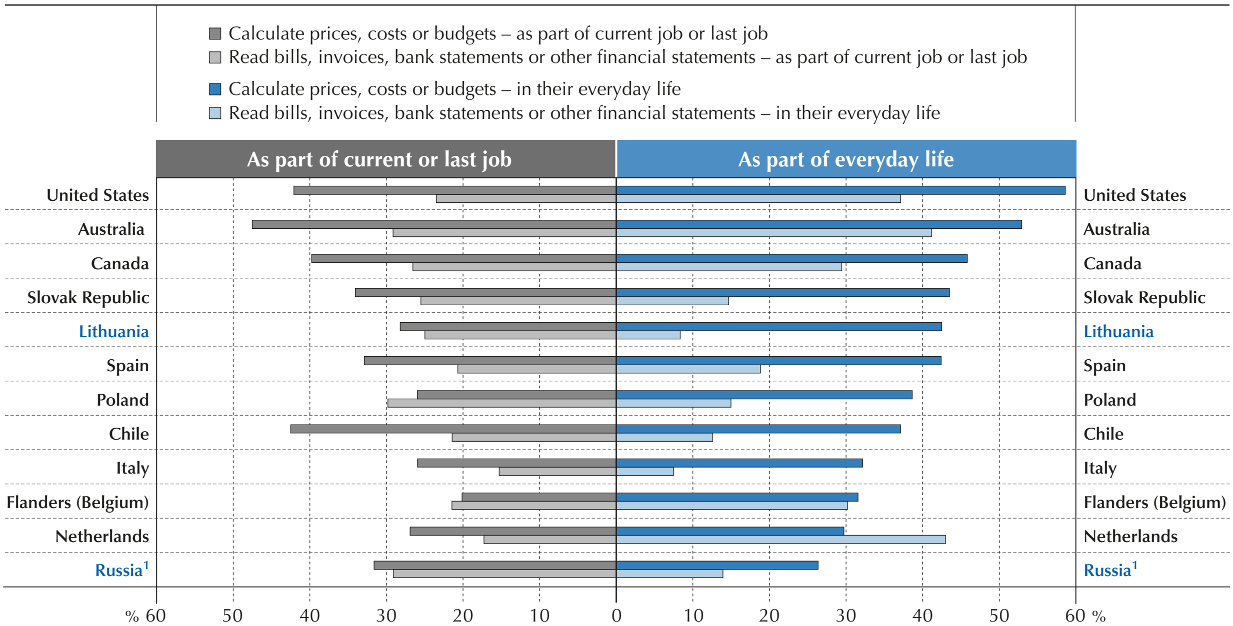
Note: Work activities include working outside school hours, working in a family business and occasional informal jobs.
Countries and economies are ranked in descending order of the percentage of students who have a bank account and/or a prepaid debit card.
Source: OECD, PISA 2015 Database, Tables IV.5.10 and IV.5.15.
StatLink http://dx.doi.org/10.1787/888933485025

Earning money from work may include formal (part-time) jobs as well as occasional and informal jobs, especially in countries where young people cannot work legally at the age of 15. Figure IV.2.1 also shows that, on average across 10 participating OECD countries and economies, about six in ten students earn money from some type of work activity (64%). More than seven in ten students in the Flemish Community of Belgium, Beijing-Shanghai-Jiangsu-Guangdong (China) (hereafter "B-S-J-G [China]"), Lithuania, the Netherlands, Poland and the Russian Federation (hereafter "Russia") earn money from work (Table IV.5.15).

Furthermore, data from the OECD Survey of Adult Skills (PIAAC) show the extent to which young people and adults engage in basic financial activities (OECD, 2016a). The results reported in this paragraph focus on those countries and economies that participated in both the OECD Survey of Adult Skills in 2008-13 and the 2015 PISA financial literacy assessment. Figure IV.2.2 shows that more than one in three 16-24 year-olds in Australia, the Netherlands and the United States reported that they read bills, invoices, bank statements or other financial statements at least once a week in their everyday life; and more than one in four 16-24 year-olds in Australia, Canada, Poland, Russia and the Slovak Republic indicated that they read such financial statements at least once a week as part of their current or last job. More than 50% of 16-24 year-olds in Australia and the United States reported that they calculate prices, costs or budgets at least once a week in their everyday life; and over 40% of all 16-24 year-olds in Australia, Chile and the United States do/did these kinds of financial calculations at least once a week as part of their current or last job. In many of these countries, adults (16-65 year-olds) reported that they calculate prices, costs or budgets to a similar extent as young adults; and in most countries, more adults than young people reported that they read bills, invoices, bank statements or other financial statements (Table IV.2.1).

Figure IV.2.2 ▪ **Young people engaged in basic financial activities**

Percentage of 16-24 year-olds who reported that they do the following activities at least once a week



1. The sample for Russia does not include the population of the Moscow municipal area.

Countries and economies are ranked in descending order of the percentage of 16-24 year-olds who reported that they calculate prices, costs or budgets at least once a week in their everyday life.

Source: OECD, Survey of Adult Skills (PIAAC) (2012, 2015), Table IV.2.1.

StatLink http://dx.doi.org/10.1787/888933485034

Current trends are likely to make the need for financial literacy skills even more important in the future. First, future generations are likely to face more challenging financial choices if the current trend of growing financial complexity continues. Financial education will therefore have a role, in conjunction with financial consumer protection and regulation policies, in equipping people with the financial literacy needed to understand more complex products and services, choose those most appropriate for them, and protect themselves from financial scams. The spread of digital financial services may open up new opportunities for poor and financially excluded people to access the formal financial system,

but it can also expose consumers to new security threats and risks of fraud that are compounded when low financial literacy is combined with poor digital skills and low cyber security awareness (OECD, 2017). The increasing availability of online credit – especially unlicensed instruments that often target young and/or inexperienced consumers – will pose further challenges for financial consumer protection and education (CCC, 2015; OECD, 2017).

Second, future generations in some countries will probably bear more financial risks during their lives than the current generation. Depending on national circumstances, factors that may contribute to growing financial risks include increased life expectancy, less welfare protection, more "individualised" pensions, and more uncertain economic and job prospects due to digitalisation, technological change, globalisation and changes in work organisation (OECD, 2016c).

Third, growing income and wealth inequality will mean that socio-economically disadvantaged groups will need greater financial literacy to avoid being left behind. Adults' financial literacy has been shown to be strongly correlated with their education, income and wealth (Lusardi and Mitchell, 2014; OECD, 2016d), and wealth inequality is likely to be correlated with inequality in financial knowledge (Lusardi, Michaud and Mitchell, 2012). Providing youth with financial education may help bridge disparities in financial literacy due to differences in students' socio-economic status. Parents with lower levels of education, income or wealth are probably less well-equipped than other parents to transmit financial knowledge to their children (Lusardi, Mitchell and Curto, 2010). Relying on parents alone to provide their children with a financial education may maintain inequalities not just in levels of financial literacy, but also in factors closely correlated with it, especially household wealth.

Taking all of these factors into account, the OECD is developing a conceptual learning framework to identify the knowledge, skills, attitudes and values that young people will need to thrive in society (Box IV.2.2).

Box IV.2.2 **The Future of Education and Skills: OECD Education 2030 Framework**

As societies change, new concepts and bodies of knowledge emerge that are considered to be of key importance for students to learn in school. Today, these include global competence/global citizenship, financial literacy, foresight, innovation and computational thinking.

The OECD is developing a conceptual learning framework, known as *The Future of Education and Skills: Education 2030*, to outline the relevant knowledge, skills, attitudes and values that young people need to acquire in order to understand, participate in and shape a fast-changing world. Together with a working group composed of representatives of interested countries, organisations and experts, the OECD will establish a common grammar and language, first to underpin curricula design and then to build measurement and assessment tools and develop specific interventions. The project will initially focus on secondary school curricula with the expectation that ultimately all stages of learning, from early education to lifelong learning activities, will be involved.

The project currently explores key curriculum issues, including curriculum overload, time lag between today's curriculum and future needs, quality of curriculum content, equality and equity in the curriculum, and implementation challenges. On the issue of curriculum overload, many schools, teachers and students are receiving demands for new topics, such as global competence/global citizenship, financial literacy, foresight, innovation, well-being and computational thinking. Curriculum designers have raised concerns about curriculum overload if these concepts are added as new subjects. To respond to these concerns, the working group conducted an exercise to decompose such complex concepts into aspects of knowledge, skills, attitudes and values to explore whether they are transferable across relevant subjects in existing curricula.

Source: OECD (2016e), Education 2030, OECD Directorate for Education and Skills website, www.oecd.org/edu/school/education-2030.htm.

PROVIDING FINANCIAL EDUCATION FOR YOUNG PEOPLE

Recognising the importance of developing financial literacy skills among young people and adults, a growing number of countries have developed and implemented nationally co-ordinated approaches to financial education, usually referred to as national strategies. Box IV.2.3 describes what is meant by a national strategy for financial education.

Box IV.2.3 **Improving financial literacy within a country through national strategies for financial education**

A growing number of countries is developing and implementing national strategies for financial education. A national strategy for financial education is defined as "a nationally co-ordinated approach to financial education that consists of an adapted framework or programme that:

- recognises the importance of financial education – including possibly through legislation – and defines its meaning and scope at the national level in relation to identified national needs and gaps
- involves the co-operation of different stakeholders as well as the identification of a national leader or co-ordinating body/council
- establishes a roadmap to achieve specific and predetermined objectives within a set period of time, and
- provides guidance to be applied by individual programmes in order to efficiently and appropriately contribute to the national strategy" (OECD/INFE, 2012).

As of 2015, more than 50 countries at different income levels reported developing or implementing a national strategy, with a few more reporting that they are planning to develop such a strategy (OECD/INFE, 2015). National strategies for financial education are usually co-ordinated by one or more public authorities in finance (such as the central bank, ministry of finance or other financial regulator) and education (typically the ministry of education). Most of these strategies target both young people in and out of school, and adults (targeting, for instance, low-income people, people who do not have access to the financial system, rural residents and migrants).

National strategies often include a focus on young people (OECD/INFE, 2015). Below are descriptions of the national strategies for financial education, with a focus on provisions for young people, in countries that participated in the 2015 PISA financial literacy assessment. Chile, China, Peru and Poland are in the process of designing a national strategy for financial education; other countries are already implementing one.

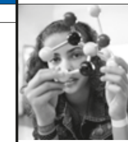
The Australian National Financial Literacy Strategy was first developed in 2011 and then revised in 2014. It is led by the Australian Securities and Investments Commission (ASIC). One of the key strategic priorities for the period 2014-17 is to "Educate the next generation, particularly through the formal education system". This is implemented by promoting a curriculum-based approach to teaching financial literacy in primary and secondary schools, building teachers' capabilities, developing resources for teachers and students linked to the Australian Curriculum, extending opportunities to engage students in the post-compulsory years of education, with a particular emphasis on students in the VET sector, and engaging parents and families to help amplify the core messages students and young people learn through formal education (ASIC, 2014).

In Brazil, the National Strategy for Financial Education was established in 2010 and is led by a committee composed of eight government agencies (including the central bank, the ministry of finance and the ministry of education) and four financial industry associations. The national strategy includes a financial education programme in school, which was initially developed for high schools in 2010-11 and is now being extended to primary schools.

In 2014, the government of Canada appointed a Financial Literacy Leader (working within the Financial Consumer Agency of Canada) to collaborate and co-ordinate activities with stakeholders from the public, private and non-profit sectors. The national strategy aims to strengthen the financial literacy of all Canadians and to empower them to manage money and debt wisely; plan and save for the future; and prevent and protect against fraud and financial abuse (FCAC, 2014).

The National Strategy for Financial Education in the Netherlands was launched in June 2008 as the Money Wise Action Plan, and then revised to span the period 2014-18. The Steering Group that leads the national strategy is chaired by the ministry of finance and includes other public authorities and not-for-profit organisations. The national strategy focuses on key life events and the related target groups. One target group that is given special attention is children/young people (Money Wise, 2014).

Russia developed a comprehensive nationwide programme on financial literacy and began its implementation in 2011. The process was then formalised into a national strategy, led by the ministry of finance. Students in schools and universities are among the main target groups.



Spain developed its first Financial Education Plan in 2008, which was then revised for the period 2013-17. One of the key components of the plan is the implementation of financial education in schools (CNMV and Banco de España, 2013).

In the United States, the Financial Literacy and Education Commission (chaired by the Secretary of Treasury, and comprising 23 federal government entities) released the National Strategy for Financial Literacy in 2011, with an update in 2016 (FLEC, 2016). The 2016 national strategy update incorporates the Financial Literacy and Education Commission's focus on "Starting Early for Financial Success", an approach to attain the goals of the national strategy based on the understanding that young people who develop the fundamentals of financial literacy are more likely to become financially secure adults. In 2013, the President of the United States created the President's Advisory Council on Financial Capability for Young Americans, with the aim of advising the President and the Secretary of the Treasury on how to promote financial capability among young Americans in schools, families, communities and the workplace, and through the use of technology.

Introducing financial literacy in school

Many of the existing national strategies for financial education specifically identify young people and students among their main target groups and support the introduction of financial education in schools. The 2005 Recommendation of the OECD Council on Principles and Good Practices in Financial Education and Awareness advised that "financial education should start at school. People should be educated about financial matters as early as possible in their lives" (OECD, 2005). The Recommendation recognised the importance of teaching young people key life skills before they start to become active financial consumers, and the relative efficiency of providing financial education in schools rather than attempting remedial actions in adulthood.

A growing number of countries teach financial education in schools, even though provision remains limited. In many cases, this is done by introducing financial topics in the curriculum, mostly following a cross-curricular approach. To minimise curriculum overload, countries typically integrate financial literacy into other subjects and existing courses, rather than introducing an additional subject into already crowded curricula. Some countries have developed financial education pilot programmes in a selected number of schools, before formally introducing financial education elements into the national curriculum. Students may improve their financial skills by acquiring transversal competencies, such as problem solving and critical thinking, in other subjects; at the same time, financial literacy examples can be used as a real-life context for teaching mathematics and other subjects (Koh and Low, 2010).

More countries are teaching financial education in school, either through the curriculum or through pilot programmes, than were doing so when the 2012 PISA financial literacy assessment was conducted. Below are details on the approach followed to introduce financial education in schools by countries and economies participating in the PISA 2015 financial literacy assessment.

Integrating financial education topics into existing subjects

Some countries and economies have integrated financial education topics into existing subjects during recent curricula revisions.[1]

The teaching of financial education in Australian schools was guided by a nationally endorsed education learning framework, the National Consumer and Financial Literacy Framework (MCEECDYA, 2011) which informed the development of the Australian curriculum. States and territories began a phased approach to implementing the Australian curriculum in 2012. Financial literacy has been included in the Australian curriculum in primary and secondary education predominantly in the learning areas of mathematics, humanities and social sciences, and the general capability of numeracy. Financial literacy is also taught through other aspects of the curriculum. Although financial education is part of the national curriculum, Australian states and territories manage schools and determine the curriculum within their jurisdiction based on the national curriculum. In 2012, the Australian Securities and Investments Commission (ASIC) introduced the MoneySmart Teaching programme. The programme contains specific professional development modules in financial literacy for teachers, aligned with the Australian Professional Standards for Teachers, as well as resources to support teachers in the classroom, aligned with the Australian Curriculum. This programme is freely available nationally and delivered either face to face or online through ASIC's MoneySmart website.[2]

In the Flemish Community of Belgium, learning outcomes for secondary schools that came into effect in 2010-11 cover typical financial education topics, such as budgeting and consumer rights, alongside economics topics, such as labour, goods and services, welfare and poverty. They are mandatory in all lower and upper secondary schools, but schools and

teachers can decide how and in which subjects these cross-curricular competencies should be integrated. In addition, vocational upper secondary schools can offer several general subjects following a thematic and project-based approach; these integrated subjects can also include financial education. The Financial Services and Markets Authority (FSMA) develops teaching material and offers teacher training through its wikifin.be portal.

In Lithuania, financial education is part of the curriculum within the "economy and entrepreneurship" subject. Economy and entrepreneurship is taught as a compulsory subject in lower secondary education, and as an optional course in upper secondary education.

In the Netherlands, basic financial education elements are included in primary education (calculations with money) and in secondary education (household economics). After 2000, an increasing number of organisations started providing additional financial education materials to schools. Since 2008, a co-ordinated effort has been made, within the national strategy for financial education, to collect tested teaching material through the MoneyWise website. Teachers and schools use this material on a voluntary basis.

In Peru, economic and financial education topics were incorporated into the national curriculum in 2016. In secondary schools, they are taught as part of history, economics and social science. The minister of education and the Peruvian Superintendence of Banking, Insurance and Private Pension Funds developed pedagogical support for teachers and training programmes.

In the Slovak Republic, financial literacy became part of the national curriculum in 2014/15, as part of different subjects in primary and secondary education. The teaching of financial literacy is guided by the national financial literacy standards, approved by the ministry of education in 2014. The ministry of education also published guidelines for teaching financial literacy, outlining possible methods, forms and activities to integrate financial literacy in the school curriculum. In secondary education, financial education is incorporated in various subjects, including mathematics, civic education and ethics.

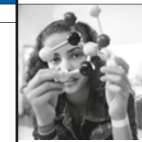
In other countries, there is significant heterogeneity at the state/regional level in the extent to which financial literacy is part of the curriculum.

In Canada, financial literacy components are included in different subjects and to a different extent in the various Canadian provinces. In most of the provinces that participated in the PISA 2015 financial literacy assessment, financial literacy is part of the high school curriculum within mathematics, career exploration/development, business or social studies.

In China, some personal money-management topics have been included in the national curriculum in primary and secondary education in subjects related to ethics, society and history since the 1990s as part of the popularisation of knowledge about the market economy. Since 2001, some flexibility is granted at the school and regional levels to develop curricula tailored to the local context. For instance, the local government of the Pudong New Area in Shanghai has been promoting regular training on finance in primary and lower secondary schools since 2011 (Gao, 2014).

In the United States, decisions about providing financial education in high school vary at the state and district levels. In some states, schools have to offer an optional course in personal finance that is implemented, or not, on a district-by-district basis. In other states, specific personal finance or economics education content is taught within another course (personal finance is typically incorporated in economics, mathematics or social sciences). More substantial mandates require all schools within a state to teach personal finance as a standalone course, and students have to complete a certain number of credits in the subject for high school graduation. Standalone courses in personal finance are mandatory in five states (Council for Economic Education, 2016; Pelletier, 2015; Urban and Schmeiser, 2015).

Even in countries that introduced financial education into the curriculum, the degree to which students are actually exposed to elements of financial literacy may differ from what the curriculum provides. The school curriculum defines the intended objectives of the education system in the content covered and time allocated to each subject. But what matters for students' learning is the implemented curriculum, or the content actually delivered by the teachers. This is especially true for a new topic like financial education. Even when provisions are made in the curriculum, exposure to financial education may be limited, for a variety of reasons. Education authorities at the local level may have autonomy in implementing the national curriculum, and schools may have autonomy in the extent to which, and modalities through which, they have to implement the curriculum. In addition, teachers may not cover all the elements of financial education included in the curriculum if they do not feel sufficiently engaged or prepared to teach the new content, or if little teaching



material and professional development is available. Students might not be much exposed to financial education topics if financial education is integrated into optional courses or if those topics are expected to be taught only for a limited number of hours within the main subject. Even among the countries that offer financial education, almost none of them specifically assesses financial literacy skills.

Developing financial education pilot programmes

Some countries, including Brazil, Italy, Russia and Spain, have developed or are developing pilot programmes for financial education in school before formally introducing financial education into the curriculum. In these countries, the number of schools and students that are exposed to financial education elements is limited due to the experimental nature of the programme. However, pilot programmes are useful for evaluating the impact of the programme content and teaching methods on students' financial literacy (Box IV.2.4).

Box IV.2.4 **Evaluating financial education in school**

A growing number of studies assess the impact of programmes offering financial education in schools, as part of the curriculum or as pilot projects. In particular, some experimental studies on secondary school students have assessed the extent to which financial literacy can be improved through formal financial education by focusing on random assignments to financial education in school. A number of recent meta-analyses have shown substantial heterogeneity in the ability of different programmes to improve financial knowledge and skills (Fernandes et al., 2014; Kaiser and Menkhoff, 2016; Miller et al., 2015). Despite the growing number of evaluation studies, however, the evidence base of rigorously evaluated financial education programmes targeting specifically students in school is not large yet, making it difficult to draw general conclusions on which programme features, teaching materials or teaching methods are the most effective, and calling for further evidence to know which approaches work best. Below are examples of evaluation studies in secondary education, including some experimental assessments.

The largest impact assessment of teaching financial education in schools was conducted in **Brazil** in 2010/11 using a randomised control trial. The financial education curriculum was developed by a team of education experts, psychologists and sociologists. The content includes innovative material designed to capture the interest of young adults and to be relevant to their lives. Teacher guidelines explain how to integrate these case studies into the regular curriculum. The results of the evaluation revealed higher average financial literacy, higher saving propensity and a greater likelihood to engage in financial planning among students who participated in the programme than among students who did not participate (Bruhn et al., 2016).

Most other evaluated programmes were conducted on smaller-scale projects. The Bank of **Italy** has been implementing a financial education programme in schools since 2007. A before-and-after evaluation conducted in 2008/09 showed that the programme was successful in increasing the financial knowledge of students who had attended the programme (Romagnoli and Trifilidis, 2013). Another financial education programme offered to high school students in Italy included a randomised evaluation. Results show improved financial knowledge among the students who attended the programme compared with the control group (Becchetti and Pisani, 2011).

Spanish authorities developed a pilot programme, starting in 2010/11, for introducing financial education in compulsory secondary schooling across the country. The pilot was evaluated in 2015 in the Madrid region, and the results showed that the programme increased participating 15-year-old students' financial knowledge by between one-fourth and one-third of a standard deviation (Hospido, Villanueva and Zamarro, 2015).

Lührmann et al. (2015) report the results of a field experiment evaluating the impact of a short financial education session delivered by a non-profit organisation to high schools students in **Germany**. After the training, teenagers showed a significant increase in some dimensions of financial knowledge, e.g. their ability to assess risks correctly, a decrease in the prevalence of impulse purchases, and an increase in intended savings in a hypothetical task. Walstad et al. (2010) use a quasi-experimental design to study the effect of a DVD-based curriculum for high school students in the **United States**. The results showed that exposure to the financial education videos made a positive contribution to students' knowledge of personal finance after controlling for other explanatory factors.

Financial education was initially introduced in Brazilian high schools through a pilot in 2010-11 over 800 schools in six states (Bruhn et al., 2016). The pilot involved preparing a financial education curriculum, developed by a team of education experts, psychologists and sociologists. The content included innovative material designed to capture the interest of young adults and to be relevant to their lives. It consisted of case studies that can be integrated into regular school subjects, such as mathematics, Portuguese, science, geography and history. Teacher guidelines explain how to integrate these case studies into the regular curriculum, and teachers have discretion over the order in which the cases are taught. Teachers were trained through workshops, DVDs and a guidebook. The material developed for the pilot is now available on line to all teachers across the country.[3] Teachers have full autonomy whether to use this material and integrate elements of financial education into their courses. A pilot for primary schools is being developed.

In Italy, financial education is not part of the national school curriculum, but the central bank and the ministry of education have been implementing a financial education programme in interested schools since 2007. Financial education is taught by classroom teachers, trained by Bank of Italy staff. This programme reached over 60 000 high school students in 2015/16.

Some financial literacy topics are taught in Russian schools as part of social science in lower secondary education, and in social studies and/or economics in upper secondary schools. The ministry of finance has been running a pilot programme since 2011 in order to deepen and expand students' exposure to financial literacy. The pilot programme involves defining a learning framework on core financial competencies, developing teaching material, training teachers, and setting up specific initiatives in selected schools. In 2016, textbooks and teaching materials were evaluated in five regions, with a view to scaling up the whole programme nationwide.

In Spain, financial education topics were included in 2014 in the primary education curriculum as part of social sciences, and in the first year of upper secondary education (fourth year of the Educación Secundaria Obligatoria - ESO) as part of economics. Economics is offered only to students choosing a general/academic path and is optional for students within this path. Given the decentralisation of competencies in the Spanish education system, each education administration can configure its own course offering and can develop, expand or qualify the minimum content included in national legislation. In practice, all education administrations have included the subject of economics in their offerings, and almost all have integrated all the content described in the national legislation. Since 2010/11, in parallel with the revision of the curriculum, the Bank of Spain and the Securities and Exchange Commission have been implementing a financial education programme in schools within the scope of the national strategy for financial education. Schools participate on a voluntary basis and teachers can use resources available on the national strategy website. Since 2010, the financial authorities also launched a financial education website (www.finanzasparatodos.es). The website, which has received almost two million visits, is addressed to all members of the education community (students, teachers, families, etc.) and contains teaching and learning resources (available through the portal gepeese.es).

Offering young people financial education through extracurricular and after-school initiatives

Young people can learn about financial matters from a variety of sources, including their parents, friends, schools, extracurricular activities, and through personal experiences, such as making purchases, using a mobile phone, opening a bank account, or taking a student loan. Governments, together with not-for-profit organisations and financial institutions, also try to teach young people basic financial literacy skills outside of normal school hours, whether through extracurricular activities or after-school initiatives. Extracurricular activities may include participation in events dedicated to money or saving, school visits from staff of a financial institution, stock market games, visits to a money museum, or events where students can create their own small business. After-school initiatives include games, comics, videos, websites, mobile apps, and radio programmes. Below are a few (non-exhaustive) examples of different delivery methods and channels in the countries and economies participating in the PISA 2015 financial literacy assessment.

Most countries and economies participating in the PISA 2015 financial literacy assessment organise events to raise awareness about personal finance issues, as part of internationally co-ordinated events (such as the Global Money Week), and/or as independent events (such as the Financial Literacy Month in Canada and the United States). For instance, the ministry of finance in the Netherlands organises an annual National Money Week, in collaboration with other public authorities, non-profit organisations and the financial industry. During the week, stakeholders organise numerous activities to teach school children how to manage money through workshops, guest lessons, school competitions, TV programmes and quizzes. Activities should not have commercial objectives and have to be approved by teachers.

The Catholic University of Leuven in Belgium organises one-day workshops for secondary students on several interdisciplinary topics, including financial education. In Canada, the Ontario Teachers' Federation developed online resources – including video and interactive tools – to teach young people how to spend less than they have, how to

finance post-secondary education, and what to do if they cannot repay a student loan. The museum of the National Bank of Belgium organises both interactive activities for students and classes for teachers on financial and economic topics. Museums that offer exhibitions or programmes about money or savings are present in China and Italy.

The Consumer Financial Protection Bureau in the United States co-ordinates the Youth Employment Success Initiative (YES), which provides technical assistance to over 20 municipalities across the country, helping them integrate financial knowledge and skills-building into existing youth employment and training programmes. The goals of the YES initiative include increasing the number of young people who can open safe accounts, have access to age-appropriate financial education, and can feel empowered to plan for their financial future.

Several public and not-for-profit organisations have developed serious games with financial education content in order to make money-related topics more engaging for young people. The website of the Spanish national strategy for financial education contains a "games bank" for children and young people. The Doorways to Dreams Fund in the United States also designed several free online and mobile games that aim to improve personal financial skills, knowledge and self-confidence.

The Queensland Government in Australia organises an annual Buy Smart Competition in which students have to research a consumer issue – such as scams, consumer rights and responsibilities, product safety, mobile phones, spending wisely, buying and running a car, or credit – and present it creatively to a target audience of their choice. In Chile, both the central bank and the Superintendency of Banks and Financial Institutions organise competitions for students in schools about economic and financial themes.

THE FINANCIAL LITERACY ASSESSMENT IN PISA 2015

The PISA 2015 assessment of financial literacy among 15-year-old students was the second of its kind. Results of the first assessment, which was conducted in 18 countries and economies, are available in the volume, *PISA 2012 Results: Students and Money (Volume VI)* (OECD, 2014b). The second assessment covers 15 countries and economies, including 10 OECD countries and economies: Australia, the Flemish Community of Belgium, seven provinces in Canada (British Columbia, Manitoba, New Brunswick, Newfoundland and Labrador, Nova Scotia, Ontario and Prince Edward Island – referred to as "the Canadian provinces" in the text), Chile, Italy, the Netherlands, Poland, the Slovak Republic, Spain and the United States. Five partner countries and economies also participated in the second assessment: Brazil, four provinces in China (Beijing, Shanghai, Jiangsu and Guangdong, in the text referred to as a single entity, "B-S-J-G [China]"), Lithuania, Peru and Russia. Eight countries/economies participated in both the 2012 and 2015 assessments: Australia, the Flemish Community of Belgium, Italy, Poland, Russia, the Slovak Republic, Spain and the United States.

PISA assesses the readiness of 15-year-old students for life beyond compulsory education by collecting and analysing test and questionnaire data about 15-year-olds' knowledge, skills and the context in which they live and learn. It thus provides a rich set of cross-country comparative data that policy makers and other stakeholders can use to make evidence-based decisions. International comparative data on financial literacy can answer questions such as "How well-prepared are 15-year-old students to participate in the new financial systems that are becoming more global and more complex?" and "What student characteristics are related to better knowledge and understanding of financial concepts and greater ability to take informed decisions?"

The financial literacy assessment focuses primarily on measuring the proficiency of 15-year-old students in applying the knowledge and skills that they have learned in and outside of school. Like other PISA domains, financial literacy is assessed using an instrument designed to provide data that are valid, reliable and interpretable. The PISA 2015 Assessment and Analytical Framework (OECD, 2016f) presents the comprehensive structure that supports the assessment of 15-year-old students' financial literacy. The framework includes a common language with which to discuss financial literacy and the basis on which a proficiency scale was built to interpret the results of the assessment.

Defining financial literacy

The definition of financial literacy for 15-year-olds that underpins the assessment builds on the OECD definitions of financial education and adult financial literacy. The OECD defines financial education as "the process by which financial consumers/investors improve their understanding of financial products, concepts and risks and, through information, instruction and/or objective advice, develop the skills and confidence to become more aware of financial risks and opportunities, to make informed choices, to know where to go for help, and to take other effective actions to improve their financial well-being" (OECD, 2005).[4] This definition was endorsed by G20 leaders in 2012 (OECD/INFE, 2012) and is used in a majority of countries (OECD/INFE, 2015). "Understanding", "confidence", "skills" and the notion of applying understanding and skills ("effective actions") are key elements of this definition.

For the purpose of measuring financial literacy among adults, the OECD/INFE developed the following working definition: "Financial literacy is a combination of awareness, knowledge, skill, attitude and behaviour necessary to make sound financial decisions and ultimately achieve individual financial well-being" (Atkinson and Messy, 2012; OECD, 2016d). This definition is now globally acknowledged and was also endorsed by G20 leaders in 2012 (G20, 2012).

The definition of financial literacy in the PISA Financial Literacy Assessment Framework refines the definition used for adults to make it relevant for 15-year-old students. The definition also incorporates students' ability to use financial knowledge and skills to meet challenges in the future.

> "Financial literacy is 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."

This definition, like other definitions of PISA domains, has two parts. The first refers to the kinds of thinking and behaviour that characterise the domain. The second part refers to the importance of developing the particular literacy. In PISA, "literacy" refers not only to the capacity of 15-year-old students to apply knowledge and skills in key subject areas, but also to students' ability to analyse, reason and communicate effectively as they pose, solve and interpret problems in a variety of situations.

The framework for assessing financial literacy

The *PISA 2015 Assessment and Analytical Framework* maintains the same definition and operationalisation of financial literacy as the PISA 2012 assessment framework (OECD, 2013, 2016f).

When the 2012 framework was developed, it constituted the first step in constructing a financial literacy assessment of international scope. It provided an articulated plan for developing items, designing the instrument and providing a common language for discussion of financial literacy. In addition to providing a working definition of financial literacy, the framework organises the domain around the content, processes and contexts that are relevant for the assessment of 15-year-old students. This conceptualisation was taken as a reference for further developing an international core-competencies framework on financial literacy for 15-18 year-olds (Box IV.2.5).

Content

The content categories comprise the areas of knowledge and understanding that are essential for financial literacy. The four content areas are: money and transactions; planning and managing finances; risk and reward; and the financial landscape.

The content category "money and transactions" is the first core content category of financial literacy. It includes awareness of the different forms and purposes of money, and handling simple monetary transactions, such as everyday payments, spending, value for money, bank cards, cheques, bank accounts and currencies.

The content category "planning and managing finances" covers skills such as planning and managing income and wealth over both the short term and long term, particularly the knowledge and ability to monitor income and expenses, and to make use of income and other available resources to enhance financial well-being.

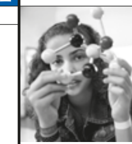
The content category "risk and reward" incorporates the ability to identify ways of managing, balancing and covering risks (including through insurance and saving products) and an understanding of the potential for financial gains or losses across a range of financial contexts and products, such as a credit agreement with a variable interest rate, and investment products.

The content category "financial landscape" relates to the features of the financial world. It covers the rights and responsibilities of consumers in the financial marketplace and within the general financial environment, and the main implications of financial contracts. It also incorporates an understanding of the consequences of change in economic conditions and public policies, such as changes in interest rates, inflation, taxation or welfare benefits.

Processes

The process categories relate to cognitive processes. They describe students' ability to recognise and apply concepts relevant to the domain, and to understand, analyse, reason about, evaluate and suggest solutions. In PISA financial literacy, four process categories have been defined in no particular hierarchical order: identify financial information; analyse information in a financial context; evaluate financial issues; and apply financial knowledge and understanding.

The process category "identify financial information" is applicable when the individual searches and accesses sources of financial information and identifies or recognises their relevance. The process category "analyse information in a financial



context" covers a wide range of cognitive activities undertaken in financial contexts, including interpreting, comparing and contrasting, synthesising, and extrapolating from information that is provided. The process category "evaluate financial issues" focuses on recognising or constructing financial justifications and explanations, drawing on financial knowledge and understanding applied in specified contexts. It also involves cognitive activities, such as explaining, assessing and generalising. The process category "apply financial knowledge and understanding" focuses on taking effective action in a financial setting by using knowledge of financial products and contexts, and by understanding financial concepts.

Context

The context categories refer to the situations in which the financial knowledge, skills and understandings are applied, ranging from the personal to the global. In PISA, assessment tasks are framed in general life situations. The focus may be on the individual, family or peer group, the community, or even on a global scale. The contexts identified for the PISA financial literacy assessment include: education and work; home and family; individual; and societal.

The context category "education and work" highlights that many students will continue in education or training at post-compulsory education, while some of them may soon move into the labour market or may already be engaged in casual employment outside of school hours. The context category "home and family" includes financial issues relating to the costs involved in running a household, including the kind of shared accommodation that young people often use shortly after leaving the family home. The "individual" context category covers most of students' financial decisions, including using products such as mobile phones or laptops, and choosing personal products and services, as well as contractual issues, such as getting a loan. The "societal" context category recognises that individuals' financial decisions and behaviours can influence and be influenced by the rest of society. It includes matters such as being informed, understanding the rights and responsibilities of financial consumers, and understanding the purpose of taxes and local government charges.

Box IV.2.5 **OECD/INFE Core Competencies Framework on Financial Literacy for Youth**

In 2015, the OECD/INFE developed the Core Competencies Framework on Financial Literacy for Youth (OECD, 2015), based on existing financial education learning frameworks (OECD, 2014a) and on the conceptualisation of financial literacy developed in the PISA assessment framework (OECD, 2013, 2016f).

This framework describes the basic level of financial literacy – in terms of knowledge, attitudes and skills – that is likely to be needed by young people between the ages of 15 and 18 to fully and safely participate in economic and financial life. The competencies are outcome-based and can be adapted to national circumstances and used in a flexible manner, taking into account differences in culture and context at the national or local level. Some competencies may be more relevant than others, depending on national social and cultural circumstances.

The 2015 financial literacy assessment in practice

Around 48 000 students were assessed in financial literacy in 2015, representing about 12 million 15-year-olds in the schools of the 15 participating countries and economies.

Among the students that participated in the core PISA 2015 assessment of science, reading and mathematics, a subsample of students was randomly selected to take the financial literacy test. This is different from the sample design adopted in 2012 when, in sampled schools, two separate student samples sat the financial literacy test and the core PISA assessment. In general, about 11 students were chosen at random in each participating school to sit the financial literacy assessment. The financial literacy assessment was conducted in a separate session after the core assessment.

The financial literacy assessment consisted of a one-hour, computer-based test composed of 43 question items. Most test items were the same as in the 2012 assessment. A small number of items was developed to replace those released in the report of the 2012 results (OECD, 2014b). As in other domains, financial literacy items were grouped in units, where one or more items shared a common stimulus. The selection included financially focused stimulus material in diverse formats, including prose, diagrams, tables, charts and illustrations.

Students who sat the assessment of financial literacy also answered the PISA student questionnaire about themselves, their homes, their school and learning experiences, and attitudes. They also answered questions about their experiences with money matters, which were included at the end of the financial literacy test booklets. School principals received a questionnaire that asked questions about school policies and the learning environment, with no particular emphasis on financial education.

As in other domains, the items comprise two types of question: constructed-response items and selected-response items. Constructed-response items require students to generate their own answers. The format of the answer may be a single word or figure, or may be longer: a few sentences or a worked calculation. Selected-response items require students to choose one or more alternatives from a given set of options. The common types in this category are the simple multiple-choice item, which usually requires the selection of one from a set of four options, and complex multiple choice, in which students respond to a series of Yes/No-type questions. All except the most simple of constructed-response items are coded by expert judges who must be trained and monitored. Selected-response and very short "closed" constructed-response items do not require expert coding (see the *PISA 2015 Assessment and Analytical Framework* [OECD, 2016f] for more information).

Examples of financial literacy items representing different framework categories

The PISA 2015 financial literacy assessment includes items in the four content categories, the four processes and the four contexts described above. About 15 out of 43 items cover the content area "planning and managing finances" and the remaining items are equally spread across the other content areas. Some 28 out of 43 items require students to "analyse information in a financial context" or "evaluate financial issues". Some 32 out of 43 items are framed in "home and family" or "individual" contexts. About half of the items are multiple-choice questions and the other half are open-response questions.

Figure IV.2.3 summarises how several sample items are categorised. The following examples provide a description of the sample items. Sample items are presented in the section "Examples of PISA financial literacy assessment questions" at the end of the chapter.

Items in the units AT THE MARKET, BANK ERROR, MOTORBIKE INSURANCE, NEW OFFER and PAY SLIP are drawn from the PISA 2012 field trial and are included to illustrate different framework categories (OECD, 2013). These particular items are similar to those used in the main surveys, but were not used in the assessment instrument in either 2012 or 2015. Items in the unit INVOICE were used in the 2012 assessment and published in the 2012 results report (OECD, 2014b); they were therefore not used in the 2015 assessment. Only secure, unpublished items are used for any assessment, as way to protect the integrity of the data that is collected to measure student proficiency.

Figure IV.2.3 ▪ **Classification of sample items**

By content, process, context categories and response type

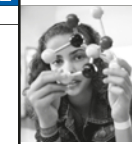
Questions	Content category	Process category	Context category	Response type
AT THE MARKET Question 2	Money and transactions	Analyse information in a financial context	Home and family	Constructed response (expert)
AT THE MARKET Question 3	Money and transactions	Evaluate financial issues	Home and family	Constructed response (expert)
BANK ERROR Question 1	Financial landscape	Evaluate financial issues	Societal	Complex multiple choice
INVOICE Question 1	Money and transactions	Identify financial information	Individual	Simple multiple choice
INVOICE Question 2	Money and transactions	Identify financial information	Individual	Constructed response (manual)
INVOICE Question 3 (Full credit)	Money and transactions	Apply financial knowledge and understanding	Individual	Constructed response (manual)
INVOICE Question 3 (Partial credit)	Money and transactions	Apply financial knowledge and understanding	Individual	Constructed response (manual)
MOTORBIKE INSURANCE Question 1	Risk and reward	Analyse information in a financial context	Individual	Complex multiple choice
NEW OFFER Question 2	Planning and managing finances	Evaluate financial issues	Individual	Constructed response (expert)
PAY SLIP Question 1	Money and transactions	Identify financial information	Education and work	Simple multiple choice

Example 1: AT THE MARKET

The unit AT THE MARKET presents two constructed-response questions about money and transactions in a family context. The stimulus presents a situation where a person can buy tomatoes at different prices by the kilogram or by the box.

Question 2 requires students to apply the concept of value for money in a context familiar to 15-year-old students. Students are asked to make a logical comparison between boxed and loose tomatoes and to explain which option provides the best value for money. In order to support their argument, students can provide their answer in words or explain their idea with quantitative information by using the price ("Zed") and weight (kilogram).

Question 3 asks students to evaluate financial information for decision making in shopping, which is a situation familiar to 15-year-old students. The question examines whether students can recognise that buying things in bulk may be wasteful if a large amount is not needed, and it may be unaffordable to bear the higher absolute cost of buying in bulk in the short term. Students are required to evaluate a financial issue in the situation presented and describe their conclusion in this



constructed-response question. Students can provide their answers either by using words, without quantitative information, or by using numbers, with quantitative information of the price and weight. Full credit will be given if students can explain that buying more tomatoes at a cheaper price may not always be a good decision for some people.

Example 2: BANK ERROR

The question asks students to evaluate a financial issue (potential fraud) in the context of Internet banking, which is part of the broader financial landscape in which students are likely to participate, either now or in the near future. In this environment they may be exposed to financial fraud. BANK ERROR investigates whether they know how to take appropriate precautions. In this question, students are asked to respond appropriately to a financial scam e-mail message. They must evaluate the presented options and recognise which piece of advice can be considered as good advice.

Example 3: INVOICE

The unit INVOICE consists of three questions in the content category “money and transactions” and framed in an individual context. The stimulus presents an invoice received by post.

Question 1 is a multiple-choice question that asks students to interpret a financial document, an invoice, identifying its purpose in the context of the individual. Students are required to identify financial information by demonstrating a basic understanding of what an invoice is. Calculations are not required.

Question 2 is a short, constructed-response question that asks students to identify a delivery cost in an invoice for clothing. It asks a specific question, and the relevant information is explicitly stated. To answer this question correctly, students need to identify the relevant information, understanding that postage refers to the cost of delivery. This is an example of the types of interpretation that they may need to make frequently in adult life.

Question 3 assesses the process of applying financial knowledge and understanding. It asks students to find the correct total amount on an invoice that has been incorrectly prepared, taking into account the sales tax as a percentage of purchase and the delivery charge. In this task, full credit is given for the responses that take into account the tax change and postage, and partial credit is given to responses that only consider one of those factors. To get full credit, students need to interpret and use financial and numeric information in an unfamiliar context and solve a financial problem by using multiple numerical operations (i.e. addition, subtraction and calculation of percentages). To get partial credit, students need to interpret and use financial and numeric information and apply basic numerical operations (i.e. subtraction).

Example 4: MOTORBIKE INSURANCE

The question relies on students understanding that the higher their exposure to risk, based on measurable criteria, the more it will cost them to buy appropriate insurance. This question falls under the content area “risk and reward” because insurance is a product designed specifically to protect individuals against risks and financial losses that they would not otherwise be able to bear. Students need to be able to identify factors likely to affect the cost of motorbike insurance under given circumstances.

Example 5: NEW OFFER

NEW OFFER illustrates a challenging item with an individual context. This question asks students to evaluate two complex financial products (two different personal loans) with competing information to explain a negative financial consequence of changing to a larger loan. Personal loans fall into the individual context since there are benefits, disadvantages and legal consequences for the person taking out the loan. Students need to interpret financial and numeric information, and reason about the effect that different financial actions and variables have on financial well-being. In order to get full credit, students are required to describe a negative consequence of changing loans, such as the time taken to repay the money or the additional interest paid. The item also tests students’ understanding of the relevant financial concepts, such as repayment and penalty fees in relation to a loan and their implications. No numerical operations are required.

Example 6: PAY SLIP

PAY SLIP is an example of an item in the content category “money and transactions”. This multiple-choice question asks students to identify financial information on a pay slip. While a pay slip is a common financial document, it may be unfamiliar to 15-year-old students. Students need to understand the difference between gross and net pay, that is, the difference between pay before and after any deductions have been made (such as deductions for health care or tax). Numeracy skills are not required to perform this task.

EXAMPLES OF PISA FINANCIAL LITERACY ASSESSMENT QUESTIONS

This section presents examples of the questions used in the PISA assessment of financial literacy. Assessment items used in the 2015 assessment are similar to the ones represented here, in terms of content, but were presented to students on a computer-based platform and a slightly different layout than these paper-based examples.

Items in the units AT THE MARKET, BANK ERROR, MOTORBIKE INSURANCE, NEW OFFER and PAY SLIP are drawn from the PISA 2012 field trial and were not used in the assessment instrument in either 2012 or 2015. Items in the unit INVOICE were used in the 2012 assessment and published in the 2012 results report (OECD, 2014b); they were therefore not used in the 2015 assessment.

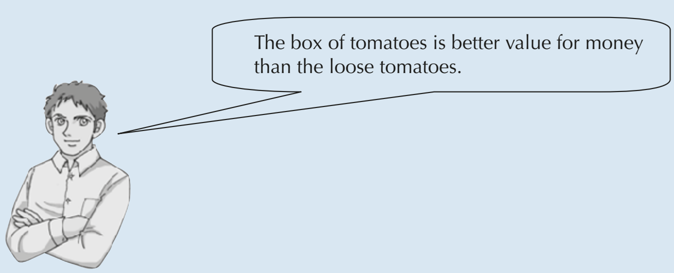
AT THE MARKET

You can buy tomatoes by the kilogram or by the box.

2.75 zeds per kg

22 zeds for a 10 kg box

AT THE MARKET – *QUESTION 2*



Give a reason to support this statement.

....

....

Question type: *Constructed response*

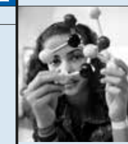
Description: *Recognise value by comparing prices per unit*

Content: *Money and transactions*

Process: *Analyse information in a financial context*

Context: *Home and family*

Difficulty: *459 (Level 2)*



Scoring

Full Credit

Explicitly or implicitly recognises that the price per kilogram of boxed tomatoes is less than the price per kilogram for loose tomatoes.

- It is 2.75 zeds per kg for the loose tomatoes but only 2.20 zeds per kg for the boxed tomatoes.
- It is only 2.20 per kg for the box.
- Because 10kg of loose tomatoes would cost 27.50 zeds.
- There are more kilograms for every 1 zed you pay.
- Loose tomatoes cost 2.75 per kg but tomatoes in the box cost 2.2 per kg.
- It is cheaper per kilogram. *[Accept generalisation.]*
- It is cheaper per tomato. *[Accept assumption that tomatoes are the same size.]*
- You get more tomato per zed. *[Accept generalisation.]*

No Credit

Other responses.

- The box is always better value. *[No explanation.]*
- You get more for less. *[Vague.]*
- Bulk buying is better.
- The price per kilogram is different. *[Does not indicate that the box price is lower.*

Missing.

Comment

This question requires students to apply the concept of value for money in a context familiar to 15-year-old students. Students are asked to make a logical comparison between boxed and loose tomatoes and to explain which option provides the best value for money. In order to support their argument, students can provide their answer in words or explain their idea with quantitative information by using the price ("Zed") and weight (kilogram).

In this question, the unit of currency is the imaginary Zed. PISA questions often refer to situations that take place in the fictional country of Zedland, where the Zed is the unit of currency. This artificial currency has been introduced to enhance comparability across countries and is explained to the students before the test begins.

Using the context of shopping for groceries, which is a familiar, everyday context to 15-year-old students, this item assesses whether students can interpret and use financial and numeric information and explain their judgment based on proportional reasoning and single basic numerical operations (multiplication and division). Questions about the buying of goods are generally categorised as being in the content area of money and transactions. To gain credit for this item, students have to demonstrate that they have compared the two ways of buying tomatoes using a common point of comparison. The question is located at Level 2.

AT THE MARKET – *QUESTION 3*

Buying a box of tomatoes may be a bad financial decision for some people.

Explain why.

....

Question type: *Open-constructed response*
Description: *Recognise value by comparing prices per unit*
Content: *Money and transactions*
Process: *Evaluate financial issues*
Context: *Home and family*
Difficulty: *398 (Level 1)*

Scoring

Full credit

Refers to wastage if a larger amount of tomatoes is not needed.

- The tomatoes might rot before you use them all.
- Because you may not need 10 kg of tomatoes.
- The ones at the bottom of the box might be bad so you are wasting money.

OR

Refers to the idea that some people cannot afford the higher absolute cost of buying in bulk.

- You may not be able to afford a whole box.
- You have to spend 22 zeds (rather than 2.75 or 5.50 for 1 or 2 kg) and you might not have that amount to spend.
- You might have to go without something else that you need to pay for the box of tomatoes.

No credit

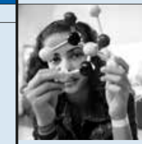
Other responses.

- It is a bad idea.
- Some people don't like tomatoes *[La réponse n'est pas pertinente.]*

Missing.

Comment

This question asks students to evaluate financial information for decision making in shopping, which is a situation familiar to 15-year-old students. The question examines whether students can recognise that buying things in bulk may be wasteful if a large amount is not needed, and it may be unaffordable to bear the higher absolute cost of buying in bulk in the short term. Students are required to evaluate a financial issue in the situation presented and describe their quantitative information, or by using numbers, with quantitative information of the price and weight. Full credit will be given if students can explain that buying more tomatoes at a cheaper price may not always be a good decision for some people. The question is located at Level 1.



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/

ZedBank

BANK ERROR – *QUESTION 1*

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

Question type: *Complex multiple choice*
Description: *Respond appropriately to a financial scam e-mail message*
Content: *Financial landscape*
Process: *Evaluate financial issues*
Context: *Societal*
Difficulty: *797 (Level 5)*

Scoring

Full credit

Three correct responses: No, Yes, No in that order.

No credit

Fewer than three correct responses.

Missing.

Comment

This question asks students to evaluate a potential financial fraud in the context of Internet banking, which is part of the broader financial landscape in which students are likely to participate, either now or in the near future. The question investigates whether they know how to take appropriate precautions. Students are asked to respond appropriately to a financial scam e-mail message. They must evaluate the presented options and recognise which piece of advice can be considered as good advice. No numerical operations are required. The question is located at Level 5.

INVOICE

Sarah receives this invoice in the mail.

Breezy Clothing

Invoice
Invoice Number: 2034
Date issued: 28 February

Sarah Johanson
29 Worthhill Rd
Kensington
Zedland 3122

Breezy Clothing
498 Marple Land
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 Taxes:	153 zeds
Already Paid:	0 zeds
Total due:	153 zeds
Date due:	31 March

INVOICE – *QUESTION 1*

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.

Question type: *Multiple choice*
Description: *Recognise the purpose of an invoice*
Content: *Money and transactions*
Process: *Identify financial information*
Context: *Individual*
Difficulty: *360 (Level 1)*

Scoring

Full credit

A. Because Sarah needs to pay the money to Breezy Clothing.

No credit

Other responses.

Missing.

Comment

This multiple-choice question asks students to interpret a financial document, an invoice, identifying its purpose in the context of the individual. Questions about interpreting financial documents are generally categorised as being in the content area of money and transactions. Students are required to identify financial information by demonstrating a basic understanding of what an invoice is. Calculations are not required. The question is located at Level 1.

INVOICE – *QUESTION 2*

How much has Breezy Clothing charged for delivering the clothes?

Delivery charge in zeds: ………………..…………………..………………..

Question type: *Constructed response*
Description: *Identify the cost of postage on an invoice*
Content: *Money and transactions*
Process: *Identify financial information*
Context: *Individual*
Difficulty: *461 (Level 2)*

Scoring

Full credit

10

Ten

Tene [Unambiguous mis-spelling of correct numerical value.]

No credit

Other responses.

Missing.

Comment

This short, constructed response question asks students to identify a delivery cost in an invoice for clothing. It asks a specific question, and the relevant information is explicitly stated. To answer this question correctly, students need to identify the relevant information, understanding that postage refers to the delivery charge. This is an example of the types of interpretation that they may need to make frequently in adult life. This item is situated at Level 2.

INVOICE – *QUESTION 3*

Sarah notices that Breezy Clothing made a mistake on the invoice.

Sarah ordered and received two T-shirts, not three.

The postage fee is a fixed charge.

What will be the total on the new invoice?

Total in zeds: ………………..…………………..………………..

Question type: *Constructed response*
Description: *Find a new total on an invoice, taking into account several factors (or demonstrate process required)*
Content: *Money and transactions*
Process: *Apply financial knowledge and understanding*
Context: *Individual*
Difficulty: *Full credit : 660 (Level 5);); Partial credit: 547 (Level 3)*

Scoring

Full credit

131

One hundred and thirty-one

One hudred and thirty-one [Unambiguous mis-spelling of 131]

Partial credit

133 [Leaves tax at 13 zeds] OR 121 [Omits postage]

One hundred and thirty-three

One hudred and therty-thre [unambiguous mis-spelling of 133]

One hundred and twenty-one

No credit

Other responses.

123 [Leaves tax at 13 zeds and omits postage.]

Missing.

Comment

This question asks students to interpret a financial document in a complicated situation that is likely to take place in real life. Students are required to calculate the correct amount due, given that the quantity described on the invoice is incorrect. In this task, full credit is given for the responses taking into account the tax change and postage, and partial credit is given to responses that only consider one of those factors. The partial-credit score is located at Level 3 while the full-credit score is located at Level 5. To get full credit, students need to interpret and use financial and numeric information in an unfamiliar context and solve a financial problem by using multiple numerical operations (i.e. addition, subtraction and calculation of percentages). To get partial credit, students need to interpret and use financial and numeric information and apply basic numerical operations (i.e. subtraction).

MOTORBIKE INSURANCE

Last year, Steve's motorbike was insured with the PINSURA insurance company.

The insurance policy covered damage to the motorbike from accidents and theft of the motorbike.

MOTORBIKE INSURANCE – *QUESTION 1*

Steve plans to renew his insurance with PINSURA this year, but a number of factors in Steve's life have changed since last year.

How is each of the factors in the table likely to affect the cost of Steve's motorbike insurance this year?

Circle "Increases cost", "Reduces cost" or "Has no effect on cost" for each factor.

Factor	How is the factor likely to affect the cost of Steve's insurance?
Steve replaced his old motorbike with a much more powerful motorbike.	Increases cost / Reduces cost / Has no effect on cost
Steve has painted his motorbike a different colour.	Increases cost / Reduces cost / Has no effect on cost
Steve was responsible for two road accidents last year.	Increases cost / Reduces cost / Has no effect on cost

Question type: *Complex multiple choice*
Description: *Recognise factors affecting motorbike insurance premiums*
Content: *Risk and reward*
Process: *Analyse information in a financial context*
Context: *Individual*
Difficulty: *574 (Level 4); third part of the question: 494 (Level 3)*

Scoring

Full credit

Three correct responses: Increases cost, Has no effect on cost, Increases cost, in that order.

No credit

Fewer than three correct responses.

Missing.

Comment

The question relies on students understanding that the higher their exposure to risk, based on measurable criteria, the more it will cost them to buy appropriate insurance. This question falls under the content area "risk and reward" because insurance is a product designed specifically to protect individuals against risks and financial losses that they would not otherwise be able to bear. To gain full credit on this question (situated at Level 4), students need to be able to identify which factors are likely to affect the cost of motorbike insurance under given circumstances. To answer correctly the third part of the question (situated at Level 3), students need to understand that being responsible for road accidents in the past will increase the cost of insurance in the future.

NEW OFFER

Mrs Jones has a loan of 8 000 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 7 400 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.

NEW OFFER – *QUESTION 2*

What is one possible negative financial consequence for Mrs Jones if she agrees to the Zedbest loan?

....

Question type: *Constructed response*

Description: *Recognise a negative consequence of having a large loan*

Content: *Planning and managing finances*

Process: *Evaluate financial issues*

Context: *Individual*

Difficulty: *582 (Level 4)*

Scoring

Full credit

Refers to Mrs Jones having more debt.

- She will owe more money.
- She will be unable to control her spending.
- She is going deeper into debt.

Refers to paying more interest in total.

- 13% of 10 000 is greater than 15% of 8 000.

Refers to taking longer to pay the loan off.

- It might take longer to repay because the loan is bigger and the payments are the same.

Refers to the possibility of paying a cancellation fee with FirstZed.

- She may have a penalty fee for paying the FirstZed loan early.

No credit

Other responses.

Missing.

Commentaire

This question asks students to evaluate two complex financial products (two different personal loans) with competing information to explain a negative financial consequence of changing to a larger loan. Students need to interpret financial and numeric information, and reason about the effect that different financial actions and variables have on financial well-being. In order to get full credit, students are required to describe a negative consequence of changing loans, such as the time taken to repay the money or the additional interest paid. No numerical operations are required. The question is located at Level 4

PAY SLIP

Each month, Jane's employer pays money into Jane's bank account.

This is Jane's pay slip for July.

EMPLOYEE PAY SLIP: Jane Citizen	
Position: Manager	1 July to 31 July
Gross salary	2 800 zeds
Deductions	300 zeds
Net salary	2 500 zeds
Gross salary to date this year	19 600 zeds

PAY SLIP – *QUESTION 1*

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

A. 300 zeds

B. 2 500 zeds

C. 2 800 zeds

D. 19 600 zeds

Question type: *Multiple choice*
Description: *Identify the net salary on a pay slip*
Content: *Money and transactions*
Process: *Identify financial information*
Context: *Education and work*
Difficulty: *551 (Level 4)*

Scoring

Full credit

B. 2 500 zeds

No credit

Other responses.

Missing.

Commentaire

This multiple-choice question asks students to identify financial information on a pay slip. While a pay slip is a common financial document, it may provide an unfamiliar financial context to 15-year-old students. Students need to understand the difference between gross and net pay, that is, the difference between pay before and after any deductions have been made (such as deductions for health care or tax). Numeric operations are not required. The question is located at Level 4.

Notes

1. Information on the introduction of financial education in the school curriculum was collected from national authorities of the participating countries and economies in October-December 2016.

2. www.moneysmart.gov.au/teaching.

3. www.edufinanceiranaescola.gov.br.

4. The OECD International Network on Financial Education (OECD/INFE) is investigating the concept of financial well-being and its relationship with financial literacy, building on existing work done by public authorities and academia. For instance, the US Consumer Financial Protection Bureau (CFPB) defines financial well-being as "a state of being wherein a person can fully meet current and ongoing financial obligations, can feel secure in their financial future, and is able to make choices that allow enjoyment of life" (CFPB, 2015).

References

ASIC (Australian Securities and Investments Commission) (2014), *National Financial Literacy Strategy 2014-17*, Australian Government, Canberra, www.financialliteracy.gov.au/media/546585/report-403_national-financial-literacy-strategy-2014-17.pdf.

Atkinson, A. and **F. Messy** (2012), "Measuring financial literacy: Results of the OECD/International Network on Financial Education (INFE) pilot study", *OECD Working Papers on Finance, Insurance and Private Pensions*, No. 15, OECD Publishing, Paris, http://dx.doi.org/10.1787/5k9csfs90fr4-en.

Becchetti, L. and **F. Pisani** (2011), "Financial education on secondary school students: The randomized experiment revisited", University of Rome Tor Vergata, Working paper, No. 34, Rome.

Bruhn, M. et al. (2016), "The impact of high school financial education: Evidence from a large-scale evaluation in Brazil", *American Economic Journal: Applied Economics*, Vol. 8/4, pp. 256-295.

CCC (Consumers Council of Canada) (2015), *Consumer Experiences in Online Payday Loans*, Consumers Council of Canada, Toronto, www.consumerscouncil.com/online-payday-loan-research.

CFPB (Consumer Financial Protection Bureau) (2015), *Financial Well-being: The Goal of Financial Education*, Consumer Financial Protection Bureau, Washington, DC, http://files.consumerfinance.gov/f/201501_cfpb_report_financial-well-being.pdf.

CNMV (Comisión Nacional del Mercado de Valores) and Banco de España (2013), *Financial Education Plan 2013-2017*, CNMV and Banco de España, Madrid, www.cnmv.es/DocPortal/Publicaciones/PlanEducacion/Planeducacion_een2en.pdf.

Council for Economic Education (2016), *Survey of the States: Economic and Personal Finance Education in Our Nation's Schools 2016*, Council for Economic Education, http://councilforeconed.org/policy-and-advocacy/survey-of-the-states/.

FCAC (Financial Consumer Agency of Canada) (2014), *National Strategy for Financial Literacy – Count Me in, Canada*, Government of Canada, Ottawa, www.fcac-acfc.gc.ca/Eng/financialLiteracy/financialLiteracyCanada/strategy/Documents/NationalStrategyForFinancialLiteracyCountMeInCanada.pdf.

Fernandes, D., J.G. Lynch and **R.G. Netemeyer** (2014), "Financial literacy, financial education, and downstream financial behaviors", *Management Science*, Vol. 60/8, pp. 1861-1883.

FLEC (Financial Literacy and Education Commission) (2016), *Promoting Financial Success in the United States: National Strategy for Financial Literacy, 2016 Update*, Washington, DC, www.treasury.gov/resource-center/financial-education/Documents/National%20Strategy%20for%20Financial%20Literacy%202016%20Update.pdf.

G20 (2012), *G20 Leaders Declaration*, Los Cabos, www.g20.utoronto.ca/2012/2012-0619-loscabos.pdf.

Gao, Z. (2014), "China: Best practices of financial and economic education – journey so far and way forward", in *APEC Guidebook on Financial and Economic Literacy in Basic Education*. Asia-Pacific Economic Cooperation, Human Resources Development Working Group,http://publications.apec.org/publication-detail.php?pub_id=1592.

Hospido, L., E. Villanueva and **G. Zamarro** (2015), "Finance for all: The Impact of financial literacy training in compulsory secondary education in Spain", *Banco de España Documentos de Trabajo*, No. 1502, 2015, www.bde.es/f/webbde/SES/Secciones/Publicaciones/PublicacionesSeriadas/DocumentosTrabajo/15/Fich/dt1502e.pdf.

Kaiser, T. and **L. Menkhoff** (2016), "Does financial education impact financial behavior, and if so, when?", *DIW Discussion Papers*, No. 1562, Deutsches Institut für Wirtschaftsforschung, Berlin.

Koh, N.K and **H.K. Low** (2010), "Learning mathematical concepts through authentic learning", in Sparrow, L., B. Kissane and C. Hurst (eds.), *Shaping the Future of Mathematics Education: Proceedings of the Annual Conference of the Mathematics Education Research Group of Australasia*, Freemantle, Australia, July 3-7, 2010, Vol. 1, pp. 305-311.

Lührmann, M., M. Serra-Garcia and **J. Winter** (2015), "Teaching teenagers in finance: Does it work?" *Journal of Banking and Finance*, No. 54, pp. 160-174.

Lusardi, A. and **O.S. Mitchell** (2014), “The economic importance of financial literacy: Theory and evidence”, *Journal of Economic Literature*, Vol. 52/1, pp. 5-44.

Lusardi, A., O.S. Mitchell and **V. Curto** (2010), “Financial literacy among the young”, *Journal of Consumer Affairs*, Vol. 44/2, pp. 358-380, http://dx.doi.org/10.1111/j.1745-6606.2010.01173.x.

Lusardi, A., P.C. Michaud and **O.S. Mitchell** (2012), “Optimal financial knowledge and wealth inequality”, *NBER Working Paper No. 18669*, National Bureau of Economic Research, Cambridge, MA.

MCEECDYA (Ministerial Council for Education, Early Childhood Development and Youth Affairs) (2011), *National Consumer and Financial Literacy Framework*, www.curriculum.edu.au/verve/_resources/National_Consumer_Financial_Literacy_Framework_FINAL.pdf.

Miller, M. et al. (2015), “Can you help someone become financially capable? A meta-analysis of the literature”, *World Bank Research Observer*, Vol. 30/2, pp. 220-246.

Money Wise (2014), *National Strategy for Financial Education in the Netherlands 2014-2018*, Money Wise, the Hague, www.wijzeringeldzaken.nl/bibliotheek/media/pdf/7158-wig-strategic-programme-web-eng.pdf.

OECD (2017), *G20/OECD INFE Report on Ensuring Financial Education and Consumer Protection for All in the Digital Age*, OECD Publishing, Paris, www.oecd.org/daf/fin/financial-education/G20-OECD-INFE-Report-Financial-Education-Consumer-Protection-Digital-Age.pdf.

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), *Education at a Glance 2016: OECD Indicators*, OECD Publishing, Paris, http://dx.doi.org/10.187/eag-2016-en.

OECD (2016c), “Skills for a digital world”, *Policy Brief on The Future of Work*, OECD Publishing, Paris.

OECD (2016d), *OECD/INFE International Survey of Adult Financial Literacy Competencies,* OECD Publishing, Paris, www.oecd.org/daf/fin/financial-education/OECD-INFE-International-Survey-of-Adult-FInancial-Literacy-Competencies.pdf.

OECD (2016e), Education 2030, Directorate for Education and Skills website, www.oecd.org/edu/school/education-2030.htm (accessed 28 April 2017).

OECD (2016f), “PISA 2015 financial literacy framework”, in *PISA 2015 Assessment and Analytical Framework: Science, Reading, Mathematic and Financial Literacy*, OECD Publishing, Paris, http://dx.doi.org/10.1787/9789264255425-6-en.

OECD (2015), *OECD/INFE Core Competencies Framework on Financial Literacy for Youth*, OECD Publishing, Paris, www.oecd.org/daf/fin/financial-education/Core-Competencies-Framework-Youth.pdf.

OECD (2014a), *Financial Education for Youth: The Role of Schools*, OECD Publishing, Paris, http://dx.doi.org/10.1787/9789264174825-en.

OECD (2014b), *PISA 2012 Results: Students and Money: Financial Literacy Skills for the 21st Century (Volume VI)*, PISA, OECD Publishing, http://dx.doi.org/10.1787/9789264208094-en.

OECD (2013), “Financial literacy framework”, in *PISA 2012 Assessment and Analytical Framework: Mathematics, Reading, Science, Problem Solving and Financial Literacy*, OECD Publishing, Paris, http://dx.doi.org/10.1787/9789264190511-7-en.

OECD (2005), *Recommendation on Principles and Good Practices for Financial Education and Awareness*, www.oecd.org/finance/financial-education/35108560.pdf.

OECD/INFE (2015), *National Strategies for Financial Education: OECD/INFE Policy Handbook* OECD, Paris, www.oecd.org/daf/fin/financial-education/National-Strategies-Financial-Education-Policy-Handbook.pdf.

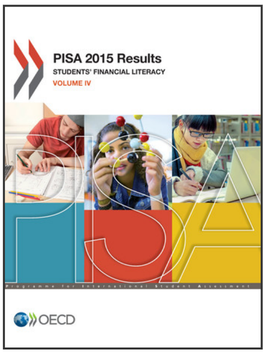
OECD/INFE (2012), *High-Level Principles on National Strategies for Financial Education*, OECD, Paris, www.oecd.org/daf/fin/financial-education/OECD-INFE-Principles-National-Strategies-Financial-Education.pdf.

Pelletier, J. (2015), *2015 National Report Card on State Efforts to Improve Financial Literacy in High Schools*, Center for Financial Literacy at Champlain College, Burlington, VT, www.champlain.edu/centers-of-excellence/center-for-financial-literacy/report-making-the-grade.

Romagnoli, A. and **Trifilidis M.** (2013), “Does financial education at school work? Evidence from Italy”, Occasional Papers (Questioni di Economia e Finanza), No. 155, Bank of Italy Publishing, Rome.

Urban, C. and M. Schmeiser, (2015), *State-Mandated Financial Education: A National Database of Graduation Requirements, 1970-2014*, FINRA Investor Education Foundation, Washington, DC, www.finrafoundation.org/web/groups/foundation/@foundation/documents/foundation/state-mandated-financial-education-and-the-credit-behavior-of-young-adults.pdf.

Walstad, W., K. Rebeck and **R. MacDonald** (2010), “The effects of financial education on the financial knowledge of high school students”, *Journal of Consumer Affairs*, Vol. 44/2, pp. 336-357.



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