



1

What are PISA and PISA for Development?

This Chapter provides an overview of the Programme for International Student Assessment (PISA) and explains how the PISA for Development (PISA-D) project was developed in response to a review of the experience of middle-income countries in PISA. It describes what PISA-D adds to PISA, including enhancements to the cognitive test and contextual questionnaires, an assessment of the out-of-school population, and support for building the capacity of participating countries to implement international large-scale assessments and use assessment results to support evidence-based policy making. The Chapter also discusses how PISA-D contributes to the monitoring and achievement of the Education Sustainable Development Goal (SDG), which emphasises quality and equity of learning outcomes for children, young people and adults.



“What is important for citizens to know and be able to do?” In response to that question and to the need for cross-nationally comparable evidence on student performance, the Organisation for Economic Co-operation and Development (OECD) launched the Programme for International Student Assessment (PISA) in 1997. PISA assesses the extent to which 15-year-old students, near the end of their compulsory education, have acquired key knowledge and skills that are essential for full participation in modern societies.

The triennial assessment focuses on the core school subjects of reading, mathematics and science. Students’ proficiency in an innovative domain is also assessed. The assessment does not just ascertain whether students can reproduce knowledge; it also examines how well students can extrapolate from what they have learnt and can apply that knowledge in unfamiliar settings, both in and outside of school. This approach reflects the fact that modern economies reward individuals not for what they know, but for what they can do with what they know.

Through questionnaires distributed to students, parents, school principals and teachers, PISA also gathers information about students’ home background, their approaches to learning and their learning environments.

In each round of PISA, one of the core domains is tested in detail, so a thorough analysis of achievement in each of the three core areas is presented every nine years and an analysis of trends is offered every three years. Combined with the information gathered through the various questionnaires, the PISA assessment provides three main types of outcomes:

- basic indicators that provide a baseline profile of the knowledge and skills of students
- indicators derived from the questionnaires that show how such skills relate to various demographic, social, economic and educational variables
- indicators on trends that show changes in outcome levels and distributions, and in relationships between student-level, school-level and system-level background variables and outcomes.

PISA is an ongoing programme that, over the longer term, will lead to the development of a body of information for monitoring trends in the knowledge and skills of students in various countries as well as in different demographic subgroups of each country. Policy makers around the world use PISA findings to gauge the knowledge and skills of students in their own country/economy in comparison with those in other participating countries/economies, establish benchmarks for improvements in the education provided and/or in learning outcomes, and understand the relative strengths and weaknesses of their own education systems.

THE EXPERIENCE OF MIDDLE-INCOME COUNTRIES IN PISA

Students representing more than 80 countries and economies that together make up over 80% of the world economy have participated in PISA since its launch, including 44 middle-income countries, 27 of which have been recipients of foreign aid. As more and more participants join it has become apparent that the design and implementation models for PISA need to evolve to successfully cater to a larger and more diverse set of countries, including the growing number of middle- and low-income countries who want to participate in the assessment (Lockheed, Prokic-Breuer and Shadrova, 2015). In particular, PISA needs to take more account of the marked differences between high- and middle-income countries in education quality and equity and their correlates.

The OECD’s analysis of the experience of middle-income countries in PISA has revealed the following three key results that have implications for the further development of the assessment and its framework:

- First, the overall performance of 15-year-old students in all the middle-income countries participating in PISA, except Viet Nam, is lower than that of students in OECD countries, and varies widely. Performance is also concentrated at the lower levels of the PISA proficiency scales.
- Second, some of the educational inputs as currently measured by PISA are unrelated to differences in performance across schools in the majority of the middle-income countries that participate in PISA. In addition, the measure of economic, social and cultural status currently used by PISA does not adequately capture lower levels of parental education, income and risk factors of poverty that are more frequent in low-income countries. Moreover, it has also become clear that the data captured on the context that surrounds students could be made more relevant, particularly in respect of policies, for middle- and low-income countries.
- Third, out-of-school rates for lower secondary school children are high in many middle- and low-income countries and, in addition, many 15-year-olds in these contexts are also enrolled in grades below those that are eligible for PISA (i.e. Grade 6 and below). The combination of these two exclusion mechanisms result in indices as low as 50% coverage



of the 15-year-old population in some PISA-participating countries, and limit the comparability of middle-income countries' results with other countries. It is also the case that PISA runs the risk of reinforcing policies of exclusion in middle-income countries, unless the assessment takes concrete steps to incorporate all the 15-year-olds in a country's population in the survey.

PISA FOR DEVELOPMENT

Building on the experience of middle-income countries in PISA, and in an effort to respond to the three results highlighted above, the OECD launched the PISA for Development (PISA-D) initiative in 2014. This is a one-off pilot project spanning six years that aims to make the assessment more accessible and relevant to a wider range of countries. The project is also a contribution to the monitoring of international educational targets related to the Education Sustainable Development Goal (SDG), adopted by the United Nations General Assembly in 2015 as part of the Agenda for Sustainable Development. The project has also been informed by analysis of the lessons and experiences from other regional and international large-scale assessments in education in middle- and low-income countries (Cresswell, Schwantner and Waters, 2015). To accomplish its aims, the project sets out to:

- increase the resolution of the PISA tests at the lower end of the student performance distribution
- capture a wider range of social and economic contexts
- incorporate an assessment of out-of-school 14-16 year-olds.

The highly collaborative PISA-D project is being carried out by the OECD, nine participating countries, international contractors, development partners and technical partners.

Eight countries are participating in the school-based implementation of PISA-D: Bhutan, Cambodia, Ecuador, Guatemala, Honduras, Paraguay, Senegal and Zambia. One of the main reasons for their participation is policy makers' wish to understand why students in their countries achieve certain levels of performance. Assessment results will provide these policy makers with data and evidence that can be used to determine what they can do to improve their educational systems and, ultimately, ensure that their students obtain the skills needed to succeed in tomorrow's world and as set out in the Education SDG Framework.

In addition to the school-based component of PISA-D, an out-of-school component is being piloted by six countries – Guatemala, Honduras, Senegal, Paraguay, Panama and Zambia – and focuses on the knowledge, skills and contextual factors of 14-16 year-old out-of-school youth. In PISA-D, the definition of out-of-school youth incorporates all those 14-16 year-olds that are not reflected in the school-based survey, including those who are out-of-school and those who are in school but enrolled at Grade 6 or below. This out-of-school component adopts the same framework used for the school-based component of PISA-D, as the description of competencies, particularly at lower levels of performance, will also apply to the out-of-school population. Through the out-of-school assessment, PISA-D will be able to report on what all 15-year-olds in a population know and can do. The analysis of these data should yield valuable insights for governments in middle- and low-income countries, in particular about the effectiveness of their education systems, and about the success of policies that aim to ensure inclusive and equitable quality education and learning opportunities for all. It will also serve to reinforce these policies of inclusion and contribute to the monitoring and achievement of the Education SDG with its emphasis on leaving no one behind.

Box 1.1 The out-of-school component

Across many middle- and low-income countries, relatively large proportions of 15-year-olds are not enrolled in school or are enrolled in school in grades below PISA's target grades (Grade 7 and above) and are therefore excluded from the PISA sample. In the PISA-D participating countries, between 10 and 50% of youth are in this situation. The PISA-D out-of-school component is establishing methods and approaches to include out-of-school youth aged 14 to 16 and also 14-16 year-old students that are in Grade 6 or below in the assessment. The sample range was expanded from 15-year-olds to 14- and 16-year-olds following the recommendations of Carr-Hill (2015), who highlighted the challenge of locating a single year age group in a household survey in middle- and low-income countries. The range of educational experiences in this out-of-school population is expected to vary substantially, from children with no experience in formal education to those who have recently left school or who are still in school but in Grade 6 or below.



The PISA-D instruments, once piloted and finalised, will be available for use in future PISA cycles (from PISA 2021 onwards) and will allow middle- and low-income countries to participate in PISA more meaningfully. The enhanced instruments will also support global measures of reading and mathematical skills as part of the Education SDG agenda, strengthening PISA's potential to provide a global metric for measuring progress towards the Education SDG targets and indicators.

The PISA-D framework maintains the concept of competency that was adopted by the PISA Governing Board as part of the long-term strategy for PISA in 2013, which seeks to go beyond the reproduction of subject-matter knowledge and focuses on the capacity of students to extrapolate from what they know and apply their knowledge. Furthermore, the PISA-D framework maintains the same design parameters that have guided all assessments from PISA 2000.

This publication presents the theory underlying the PISA-D assessment, which has been developed in the context of PISA. It includes frameworks for assessing the three core subjects – reading, mathematics and science (Chapters 2, 3 and 4, respectively), that build on the PISA 2012 and 2015 frameworks (OECD 2013 and 2016). The chapters outline the cognitive processes or competencies involved in the tasks of each testing domain, and the area of knowledge and contexts or situations in which these cognitive processes are applied. They also discuss how each domain is assessed. Chapter 5 explains the theory underlying the context questionnaires distributed to students, school principals and teachers, and the ones answered by the out-of-school youth, their parents (or the person most knowledgeable about the youth) and the interviewer.

WHAT PISA-D ADDS TO PISA

While PISA-D is being implemented within the overall PISA framework and in accordance with PISA's technical standards and usual practices, it includes new features and enhancements to make the assessment more accessible and relevant to middle- and low-income countries. These features and enhancements include:

- An equal treatment of the three major domains tested: reading, mathematics and science – unlike PISA, where one of the domains is given a particular focus in each cycle.
- Targeted test instruments that cover a wider range of performance at the lower levels of proficiency, while still providing scores that cover the whole of the PISA framework and are comparable to the main PISA results – unlike PISA where the tests are not targeted on particular levels of performance.
- Modified test instruments and questionnaires that have a reduced reading burden, in recognition of the lower levels of reading literacy capacity in middle- and low-income countries.
- Contextual questionnaires that have at their core items from PISA to facilitate international comparisons, but also include several distinct PISA-D items that are more relevant to middle- and low-income countries. These new items also respond to the policy priorities of the countries participating in PISA-D.
- An assessment of the out-of-school population: PISA assesses 15-year-olds that are in school in Grade 7 or above. PISA-D assesses this same population, but also has an out-of-school module aimed at 14-16 year-olds who are not in school, or are in school but in Grade 6 or below. The inclusion of out-of-school youth in the survey makes PISA-D unique in the landscape of international large-scale assessments. The project explores methodologies and data-collection tools regarding out-of-school youth, i) in terms of their skills, competencies and non-cognitive attributes; and ii) in terms of obtaining better actionable data on the characteristics of these children, the reasons for their not being in school and on the magnitudes and forms of exclusion and disparities.

Another feature unique to PISA-D is the learning and capacity-building opportunities that are built into each phase of project implementation. In preparing to implement the assessment, PISA-D countries undergo a capacity needs analysis based on PISA's technical standards and devise a capacity-building plan that is also relevant for strengthening their national assessment systems. The PISA-D countries are also assisted by the OECD to prepare a project implementation plan that guides their implementation of the survey and ensures that the necessary human and financial resources are in place. While PISA countries have not benefitted from similar support, the PISA-D project serves as the basis for developing a model of support within the core PISA survey which can be offered more widely to all participating countries from the 2021 cycle onwards.

PISA-D results will be published in national reports produced by the countries in collaboration with the OECD. As part of the report production process, the OECD and its contractors will provide inputs to the countries to strengthen their capacities for data analysis, interpretation of PISA results, report writing and the production of tailored communication products to support the dissemination of PISA results and policy messages. These national reports and other communication products will present results in the context of the international PISA scales and include relevant analyses and information



based on the policy priorities of each country. The reports will constitute a summary of key results and analysis designed to stimulate a constructive debate on improvement, building upon and enriching already existing data and evidence from national, regional or international sources. The national reports will be the culmination of an engagement and communication strategy that is being implemented by each country, another new feature introduced by PISA-D. These strategies involve key stakeholders in each country in the survey and the discussion of the results and implications for policy. Stakeholders include pupils, parents, teachers, teacher unions, school principals, academia, civil society, media, and central and local government.

Box 1.2 Key features of PISA-D

The content

The school-based survey assesses reading, mathematics and science, while the out-of-school survey includes reading and mathematics only. PISA-D assesses not only whether students can reproduce knowledge, but also whether they can extrapolate from what they have learnt and apply their knowledge in new situations. It emphasises the mastery of processes, the understanding of concepts, and the ability to function in various types of situations.

The students

Around 37 100 students will complete the school-based assessment, representing about 1 200 000 15-year-old students (in Grade 7 or above) in the schools of the seven participating countries. Furthermore, around 16 200 youth from six countries will participate in the out-of-school assessment, representing about 1 700 000 out-of-school youth between the ages of 14 and 16 and students aged 14 to 16 in Grade 6 or below.

The assessment

The school-based assessment is a paper-based test, lasting a total of two hours for each student. Test items are a mixture of multiple-choice questions and questions requiring students to construct their own responses. The items are organised in groups, each group based on a passage that sets out a real-life situation. The school-based assessment draws on about 195 test items, with different students taking different combinations of test items.

Students also answer a background questionnaire, which takes 35 minutes to complete. The questionnaire seeks information about the students themselves, their well-being, educational attainment and engagement, their homes, their families, and their school and learning experiences. School principals complete a school questionnaire that describes the school, its students and teachers, and the learning environment. Teachers also complete a questionnaire about themselves, the school's resources, their teaching practice and their students.

The out-of-school assessment is conducted on a tablet computer. The test takes 50 minutes and test items are a mixture of multiple-choice questions and questions requiring respondents to construct their own responses. The items are organised in groups, each group based on a passage that sets out a real-life situation. Youth participating in the out-of-school assessment will answer about 38 test items, with different respondents taking different combinations of test items.

The out-of-school respondents also answer a background questionnaire, which takes about 30 minutes to complete. The questionnaire seeks information about the youth themselves, their well-being, educational attainment and attitudes towards learning, their homes, and their school and learning experiences. Parents (or the most knowledgeable person) also answer a questionnaire about the youth's background and childhood experiences. A household observation questionnaire is completed by the interviewer and information about the location of the household is collected by PISA-D National Centres.

THE PISA-D TESTS: SCHOOL-BASED AND OUT-OF-SCHOOL ASSESSMENTS

The PISA-D school-based instrument is a paper-based assessment designed as a two-hour test. This test design includes four clusters from each of the domains of reading, mathematics and science to measure trends. There are 12 different test booklets, each containing PISA 2015 trend items from two of the three core PISA domains. Each booklet allocated to students comprises four 30-minute clusters of test material. In total, students spend 120 minutes on all three subjects, reading, mathematics and science.



Each test booklet is completed by a sufficient number of students to make appropriate estimates of the achievement levels on all items by students in each country and in relevant subgroups within a country (such as boys and girls, and students from different social and economic contexts). Comparability with PISA 2015, a computer-based assessment, is assured through trend items. In addition, each student answers a 35-minute background questionnaire, which gathers contextual information that is analysed with the test results to provide a broader picture of student performance.

The PISA-D out-of-school instrument is a tablet-based assessment designed as a 50-minute test. The computer-based household survey Programme for the International Assessment of Adult Competencies (PIACC) was used as a model for selecting the delivery mode, and tablets were chosen over laptops on account of cost, efficiency and user-friendliness. The test will include a ten-minute core module of basic reading and mathematics skills to ensure that respondents have an appropriate level of skills to proceed to the full assessment. An established minimum number of items answered correctly will determine the set of items that will be presented to respondents in the second stage of the cognitive assessment. The second stage was designed to take no longer than 40 minutes to complete. Respondents who pass the core module will be randomly assigned to one of the 30 forms measuring reading and mathematical literacy. Respondents who fail the core module will be directed to a 10-minute assessment of reading components followed by “Form 0”, a 30-minute assessment of basic reading and mathematical literacy tasks. In addition, participants answer a 30-minute questionnaire.

Box 1.3 Paper-based or computer-based – does it make a difference?

There is a great deal of research on paper- and computer-based test performance, but findings are mixed. Some early studies indicated that reading speed was slower in a computer-based environment (Dillon, 1994) and less accurate (Muter et al., 1982), although these studies were conducted on proofreading tasks, not in an assessment situation. Richardson et al. (2002) reported that students found computer-based problem-solving tasks engaging and motivating, often despite the unfamiliarity of the problem types and the challenging nature of the items. They were sometimes distracted by attractive graphics, and sometime used poor heuristics when attempting tasks.

There is a large body of more recent literature on paper- and computer-based tests’ equivalency (e.g. Macedo-Rouet et al., 2009; Paek, 2005); however these still reveal conflicting findings. In one of the largest comparisons of paper- and computer-based testing, Sandene et al. (2005) found that eighth-grade students’ mean score was four points higher on a computer-based mathematics test than on an equivalent paper-based test. Bennett et al. (2008) concluded from their research that computer familiarity affects performance on computer-based mathematics tests, while others have found that the range of functions available through computer-based tests can affect performance. For example, Mason, Patry and Berstein (2001) found that students’ performance was negatively affected in computer-based tests compared to paper-based tests when there was no opportunity on the computer version to review and check responses. Bennett (2003) found that screen size affected scores on verbal reasoning tests, possibly because smaller computer screens require scrolling.

By contrast, a meta-analysis of studies looking at kindergarten through Grade 12 (K-12) students’ mathematics and reading achievement (Wang et al., 2007) indicated that, overall, administration mode has no statistically significant effect on scores. A mode-effects study was conducted as part of the OECD Programme for the International Assessment of Adult Competencies (PIAAC) field trial. In this study, adults were randomly assigned to either a computer- or paper-based assessment of literacy and numeracy skills. The majority of the items used in the paper delivery mode was adapted for computer delivery and used in this study. Analyses of these data reveal that almost all of the item parameters were stable across the two modes, thus showing that responses could be measured along the same literacy and numeracy scales (OECD, 2014). Given this evidence, it was hypothesised that PISA 2009 reading items could be transposed onto a screen for PISA 2015 without affecting trend data. This evidence was also the basis for hypothesising that PISA-D reading and mathematics items could be transposed onto a tablet without affecting trend data.

An overview of what is assessed in each domain

Box 1.4 presents definitions of the three domains assessed in PISA-D, which are the same definitions used for PISA 2015. The definitions all emphasise functional knowledge and skills that allow one to participate fully in society. Such participation requires more than just being able to carry out tasks imposed externally by, for example, an employer; it



also means being able to participate in decision making. The more complex tasks in PISA-D require students to reflect on and evaluate material, not just to answer questions that have one correct answer.

Box 1.4 Definitions of the domains

Reading literacy: An individual's capacity to understand, use, reflect on and engage with written texts, in order to achieve one's goals, to develop one's knowledge and potential, and to participate in society.

Mathematical literacy: An individual's capacity to formulate, employ, and interpret mathematics in a variety of contexts. It includes reasoning mathematically and using mathematical concepts, procedures, facts and tools to describe, explain and predict phenomena. It assists individuals to recognise the role that mathematics plays in the world and to make the well-founded judgments and decisions needed by constructive, engaged and reflective citizens.

Scientific literacy: The ability to engage with science-related issues, and with the ideas of science, as a reflective citizen. A scientifically literate person is willing to engage in reasoned discourse about science and technology which requires the competencies to explain phenomena scientifically, evaluate and design scientific enquiry, and interpret data and evidence scientifically.

Reading literacy (Chapter 2) is defined as an individual's ability to understand, use, reflect on and engage with written texts to achieve their goals, develop their knowledge and potential, and participate in society.

PISA-D assesses students' performance in reading through questions related to three major task characteristics:

- processes, which refers to the cognitive approach that determines how readers engage with a text
- text, which refers to the range of material that is read
- situations, which refers to the range of broad contexts or purposes for which reading takes place.

Mathematical literacy (Chapter 3) is defined as an individual's capacity to formulate, employ and interpret mathematics in a variety of contexts. It includes reasoning mathematically and using mathematical concepts, procedures, facts and tools to describe, explain and predict phenomena. It assists individuals to recognise the role that mathematics plays in the world and to make the well-founded judgments and decisions needed by constructive, engaged and reflective citizens.

PISA-D assesses students' performance in mathematics through questions related to three inter-related aspects:

- processes, which describe what individuals do to connect the context of the problem with mathematics and thus solve the problem, and the capabilities that underlie those processes
- content, which is targeted for use in the assessment items
- contexts, in which the assessment items are located.

Scientific literacy (Chapter 4) is included in the school-based assessment only and is defined as the ability to engage with science-related issues, and with the ideas of science, as a reflective citizen. A scientifically literate person is willing to engage in reasoned discourse about science and technology, which requires the competencies to explain phenomena scientifically, evaluate and design scientific enquiry, and interpret data and evidence scientifically.

PISA assesses students' performance in science through questions related to:

- contexts, including personal, local/national and global issues, both current and historical, which demand some understanding of science and technology
- knowledge, which refers to an understanding of the major facts, concepts and explanatory theories that form the basis of scientific knowledge. Such knowledge includes knowledge of both the natural world and technological artefacts (content knowledge), knowledge of how such ideas are produced (procedural knowledge), and an understanding of the underlying rationale for these procedures and the justification for their use (epistemic knowledge).
- competencies, including the ability to explain phenomena scientifically, evaluate and design scientific enquiry, and interpret data and evidence scientifically.



The evolution of reporting student performance in PISA and PISA-D

Results from PISA are reported using scales. Initially, the OECD average score for all three subjects was 500 with a standard deviation of 100, which meant that two-thirds of students across OECD countries scored between 400 and 600 points. These scores represent degrees of proficiency in a particular domain. In subsequent cycles of PISA, the OECD average score has fluctuated slightly around the original. The evolution of reporting student performance in PISA and PISA-D in the three domains is summarised in the sections below.

Reading literacy

Reading literacy was the major domain in 2000, and the reading scales were divided into five levels of knowledge and skills. The main advantage of this approach is that it is useful for describing what substantial numbers of students can do with tasks at different levels of difficulty. Results were also presented through three “aspect” subscales of reading: accessing and retrieving information; integrating and interpreting texts; and reflecting and evaluating texts. A proficiency scale was also available for mathematics and science, though without described levels.

PISA 2003 built upon this approach by specifying six proficiency levels for the mathematics scale. There were four “content” subscales in mathematics: space and shape, change and relationships, quantity and uncertainty. Similarly, the reporting of science in PISA 2006 specified six proficiency levels. The three “competency” subscales in science related to identifying scientific issues, explaining phenomena scientifically and using scientific evidence. Country performance was compared on the bases of knowledge about science and knowledge of science. The three main areas of knowledge of science were physical systems, living systems, and earth and space systems.

PISA 2009 marked the first time that reading literacy was re-assessed as a major domain. Trend results were reported for all three domains. PISA 2009 added a Level 6 to the reading scale to describe very high levels of reading proficiency. The bottom level of proficiency, Level 1, was relabelled as Level 1a. Another level, Level 1b, was introduced to describe the performance of students who would previously have been rated as “below Level 1”, but who show proficiency in relation to new items that are easier than those included in previous PISA assessments. These changes allow countries to know more about what kinds of tasks students with very high and very low reading proficiency are capable of completing. To further extend the framework to the lower end of the scale of reading proficiency, PISA-D adds Level 1c to provide better coverage of basic processes, such as literal sentence and passage comprehension. Levels 1a and 1b have been modified for better alignment with the new descriptor for Level 1c.

Mathematical literacy

Mathematics was re-assessed as a major domain in PISA 2012. In addition to the “content” subscales (with the “uncertainty” scale renamed as “uncertainty and data” for improved clarity), three new subscales were developed to assess the three processes in which students, as active problem solvers, engage. These three “process” subscales are: formulating situations mathematically; employing mathematical concepts, facts, procedures and reasoning; and interpreting, applying and evaluating mathematical outcomes (known as “formulating”, “employing” and “interpreting”). To further extend the framework to the lower end of the scale of mathematical literacy proficiency, PISA-D renames Level 1 as 1a, and creates two new proficiency levels at the lower end of the scale, Levels 1b and 1c, to better measure basic processes; such as performing a simple calculation and selecting an appropriate strategy from a list.

Scientific literacy

Science, which was the main subject of assessment in PISA 2006, was again the main domain in PISA 2015. The assessment measures students’ ability to: explain phenomena scientifically; evaluate and design scientific enquiry; and interpret data and evidence scientifically. The science scale was also extended by the addition of Level 1b to better describe the proficiency of students at the lowest level of ability who demonstrate minimal scientific literacy and who would previously not have been included in the reporting scales. To further extend the framework to the lower end of the scale of scientific literacy proficiency PISA-D adds Level 1c to gather information on basic skills at the lowest performance levels, such as being able to recall appropriate scientific knowledge but not apply such knowledge, or to make a simple prediction but not justify it. Levels 2, 1a and 1b were modified to implement a clear line of progression in knowledge from Level 1c.

THE PISA-D CONTEXTUAL QUESTIONNAIRES

The focus of the PISA contextual questionnaires is on understanding how measures of student performance at age 15 are related to various aspects of school and classroom practice as well as other related factors, such as economic, social and cultural context. The PISA-D questionnaires include these aspects and also cover a broader set of well-being outcomes and



a wider range of risk and protective factors, taking into account differences in life experiences of children in developing countries, both of those who are in school and of those who are not.

The contextual framework for PISA-D

The PISA-D questionnaire framework uses the Education Prosperity model (Willms, 2015) as an overarching framework, while also taking into account the goals of PISA-D, lessons from past PISA cycles and other international studies, recommendations from research literature and the priorities of the participating countries. Education prosperity, as applied in PISA-D, is a life-course approach that includes a core set of metrics for success at six key stages of development, covering the period from conception to adolescence. It identifies a key set of outcomes called “Prosperity Outcomes” for six stages of development from conception to age 18, and a set of family, institutional and community factors, called “Foundations for Success”, which drive these outcomes. PISA-D focuses on the fifth stage of the Educational Prosperity framework, late primary and lower secondary (ages 10 to 15).

The framework places great emphasis on equality and equity, with equality referring to differences among sub-populations in the distribution of their educational outcomes and equity referring to differences among sub-populations in their access to the resources and schooling processes that affect schooling outcomes. The PISA-D contextual framework also focuses on the measurement of socio-economic status and poverty, with the purpose of exploring an international measure of poverty for youth in middle- and low- income countries; while also extending the measure of the PISA index of economic, social and cultural status (ESCS).

The framework for the PISA-D questionnaires focuses on 15 modules of content. These modules measure the four Prosperity Outcomes, the five Foundations for Success, and the six demographic factors relevant to assessing equality and equity that are listed below. In addition, the questionnaires include several teacher, school and system-level background measures that provide context for the Prosperity Outcomes. Chapter 5 presents the PISA-D questionnaire framework in detail.

Table 1.1 Modules assessed in the PISA-D questionnaires

1. Prosperity Outcomes	1.1 Academic performance (measured through the PISA-D tests)
	1.2 Educational attainment
	1.3 Health and well-being
	1.4 Attitudes towards school and learning
2. Foundations for Success	2.1 Inclusive environments
	2.2 Quality instruction
	2.3 Learning time
	2.4 Material resources
	2.5 Family and community support
3. Demographic factors for assessing equality and equity	3.1 Gender
	3.2 Socio-economic status and poverty
	3.3 Language spoken at home and language of instruction
	3.4 Urban/rural status
	3.5 Immigrant status
	3.6 Disability

PISA-D enhances the contextual questionnaires to better measure factors that are more strongly related to student performance in middle- and low-income countries, while maintaining comparability with PISA on a set of core indicators. For example, the questionnaires collect more detailed data on students’ language of instruction at school, language at home and their socio-economic status, as measured by home possessions and parents’ education, literacy skills and participation in the labour force. The questionnaires also identify additional indicators of educational success beyond performance on the PISA test. These indicators are measured through questions about educational attainment, health and well-being, and attitudes towards school and learning.

It is also important to note that the contextual information collected through the student, school and teacher questionnaires comprises only a part of the information available to PISA-D. System-level data describing the general structure of the education systems will be used in the PISA-D analysis and country reports. This system-level data includes information



on the structure of national programmes, national assessments and examinations, instruction time, teacher training and salaries, educational finance (including enrolment), national accounts and population data. Available data on all of these indicators have been reviewed for PISA-D countries, identifying the current status of system-level data collection and availability in terms of quality and completeness (UIS, 2016).

The school-based questionnaires

The school-based questionnaires for students, teachers and the principals of schools have been developed in accordance with the contextual framework. These questionnaires take about 35 minutes for the students to complete and about 25 minutes for teachers and the principals. The responses to the questionnaires are analysed with the assessment results to provide at once a broader and more nuanced picture of student, school and system performance. These questionnaires seek information about:

- students and their family backgrounds, including their economic, social and cultural capital, and the language they speak at home versus the language of instruction
- aspects of students' lives, such as their level of educational attainment, their health and well-being, and their engagement with school
- aspects of learning, including quality of instruction, inclusive environments, learning time, school material resources and family and community support
- contexts of learning, including teacher, school and system-level information.

The out-of-school questionnaires

The out-of-school component questionnaires for youth, parents and interviewers have been developed in accordance with the contextual framework. These questionnaires take between 15 and 30 minutes each for the youth, the person most knowledgeable about the youth (parent, guardian or other) and the interviewer to complete. These questionnaires seek information about:

- youths and their family backgrounds, including their economic, social and cultural capital, and the language they speak at home versus the language of instruction when they attended school
- aspects of youths' lives, such as their level of educational attainment, their attitudes towards learning, their employment status, their habits and life outside of school, and their health and well-being
- aspects of learning, including inclusive environments, family support, their perception of the inclusiveness of their school environment when they attended school, their reasons for being out of school and barriers preventing them from returning to school, and their family support and environment
- aspects of youths' early years, their educational experience and their parent/care-giver's educational expectations for the youth
- aspects of youths' households, including location and surrounding characteristics.

A COLLABORATIVE PROJECT

PISA-D is a highly collaborative effort carried by the OECD Secretariat, contractors and nine participating countries with the support of several development partners and institutional partners.

The OECD's Directorate for Education and Skills and the Development Co-operation Directorate share responsibility for the overall management of PISA-D, monitoring its implementation on a day-to-day basis and building consensus among countries. The OECD serves as the Secretariat and interlocutor between the PISA-D International Advisory Group (IAG), the PISA Governing Board (PGB), the Technical Advisory Group (TAG) and the PISA-D contractors. The OECD is also responsible for the capacity building of the participating countries, the production of the indicators, the analysis of results, and the preparation of the national reports and project publications in co-operation with the contractors and in close collaboration with the participating countries both at the policy level with the PGB and IAG, at the technical level with the TAG and at the implementation level with the National Project Managers (NPMs).

The IAG, which is specifically for PISA-D, meets annually and comprises government officials from participating countries, representatives of development partners supporting the initiative, representatives of institutional partners, such as UNESCO and UNICEF, invited experts and representatives of the OECD.



The PGB, representing all countries/economies with full PISA membership at senior policy levels, determines the policy priorities for PISA in the context of OECD objectives and oversees adherence to these priorities during the implementation of the programme. The PGB sets priorities for developing indicators, for establishing assessment instruments and for reporting results. Experts from participating countries/economies also serve on working groups to ensure that the instruments are internationally valid and take into account differences in the cultures and education systems.

The PISA-D TAG, managed by the OECD, explores technical issues that have policy or project implications and advises the OECD and its international contractors on these issues.

The PISA-D international contractors are responsible for survey operations and management and take the lead on supporting the countries to implement the programme. The contractors also take the lead on developing the enhanced assessment instruments, drawing on the technical expertise of the Subject Matter Expert Groups and Questionnaire Expert Groups that support PISA. The development of the PISA-D frameworks for reading, mathematics and science and the development of the PISA-D cognitive instruments are the responsibility of the contractor Educational Testing Service (ETS), while the design and development of the PISA-D questionnaires are the responsibility of the contractor The Learning Bar. Management and oversight of this survey, the development of the instruments, scaling and analysis are the responsibility of ETS, as is the development of the electronic platform. Other partners or subcontractors involved with ETS include Pearson for the development of the cognitive frameworks, cApStAn for linguistic quality assurance and control and Westat for survey operations and sampling.

Participating countries implement the survey at the national level through National Centres (NCs). Within the NCs, PISA is managed at the country level by NPMs, subject to the agreed administration procedures and in accordance with the PISA-D Technical Standards put in place by the OECD and its contractors. The NPMs play a vital role in ensuring that implementation is of high quality and help to shape and guide the project in accordance with the PISA-D Technical Standards. They also verify and evaluate the survey results, analyses, reports and publications. The co-operation of students, teachers and principals in participating schools is crucial to the success of PISA-D during all stages of development and implementation. National experts from the participating countries contribute to the preparation of the frameworks and instruments, and they also provide input for the design of analytical outputs. NCs collaborate with OECD on the analysis of PISA-D data for their countries and the production of national reports and other communication products.

From the outset of the project, the OECD has engaged the participation of the key international agencies and programmes concerned with student assessment and improving the quality of education in developing countries. These technical partners include UNESCO, UNESCO Institute of Statistics (UIS), the Global Education Monitoring Report team, UNICEF, the Global Partnership for Education and the following assessment programmes: ASER, EGRA, EGMA, SACMEQ, PASEC, Pre-PIRLS and PIRLS, TIMSS, LLECE, STEP, LAMP, Uwezo, and WEI-SPS.¹ Representatives of these agencies and programmes have been consulted on all aspects of project design and development.

The international and national costs of the project are funded through a combination of development partner support and financing from the PISA-D countries. The development partners that have provided financing or aid-in-kind are France (*Agence française de développement* / French Development Agency); Germany (*Bundesministerium für wirtschaftliche Zusammenarbeit und Entwicklung* / Federal Ministry for Cooperation and Development and *Deutsche Gesellschaft für Internationale Zusammenarbeit* / German Corporation for International Cooperation); Global Partnership for Education; Inter-American Development Bank; Ireland (Irish Aid); Japan (*独立行政法人国際協力機構* / Japan International Cooperation Agency); Korea; Microsoft Corporation; Positivo; Norway (*Norad er direktoratet for utviklingssamarbeid* / Norwegian Agency for Development Cooperation); Sunny Varkey Foundation; United Kingdom (Department for International Development); and the World Bank.

IMPLEMENTATION OF PISA-D

PISA-D is being implemented in five phases over the course of 2014 to 2019.

1. *Design, planning and co-ordination (2014-15)*: Producing expert papers to inform the work of enhancing the assessment instruments, selecting international contractors to conduct the work, and preparing participating countries, including Capacity Needs Analysis and developing a Capacity Building Plan and a Project Implementation Plan for each country. This phase also included the first and second annual meetings of the PISA-D IAG and the first and second annual meetings of the PISA-D TAG which were crucial for reaching agreements on the design of the initiative.



2. *Technical development (2015-16)*: Reviewing assessment frameworks and items, selecting items, designing enhancements, preparing materials, and planning for field trials, as well as the development of the project's Analysis and Reporting Plan.
3. *Field trials and in-country data collection (2016-18)*: Field trials in each country to test the enhanced instruments, reviewing and analysing the results of the field trial, preparing materials for the main study data collection, and conducting the main study data collection.
4. *Analysis and report writing (2018-19)*: Data cleaning and analysis, interpreting results, eight countries writing their national reports supported by the OECD and its contractors.
5. *Report production, dissemination and post-pilot governance (2018-19)*: Instruments finalised, an independent review of the project completed, national reports published, a project results report and a technical report published, a PISA-D international seminar, and PISA-D instruments incorporated in PISA from the 2021 cycle onwards.

STRENGTHENING CAPACITIES

Nine countries (Bhutan, Cambodia, Ecuador, Guatemala, Honduras, Panama, Paraguay, Senegal and Zambia) have partnered with the OECD to develop and test the enhanced PISA instruments. With the exception of Panama, these countries have never before participated in PISA, but they have experience with regional or international assessments and conduct national student assessments.

In addition to delivering the enhancements to PISA discussed above, PISA-D also builds capacity for managing large-scale student learning assessment and using the results to support policy dialogue and decision making in the participating countries. The OECD offers participating countries training on a variety of topics, including framework and item development, sampling, translation/adaptation of survey instruments, data management, coding of students' responses, data analysis and reporting.

Participating countries have each established an NC and nominated an NPM to ensure appropriate infrastructure and resources are in place to implement the assessment in accordance with the PISA Technical Standards. A three-stage process has been developed and implemented to prepare countries for PISA-D participation:

1. *Capacity Needs Analysis*: ensures there is a solid foundational capacity for implementing the project and identifies areas of potential growth for the country
2. *Capacity Building Plan*: addresses identified capacity needs and enhances the enabling environment for PISA, particularly the use of assessment results for national policy dialogue and evidence-based decision making
3. *Project Implementation Plan*: describes the actions to be carried out by the specific entities and agents that are named and commissioned for implementation by the authorities of the participating country, together with the necessary resources.

The project also promotes peer-to-peer learning by bringing together the countries already participating in PISA with PISA-D countries through individual country visits, staff exchanges, international meetings, technical training and workshops, and developing country case studies. These country partnerships allow for sharing information about the implementation of the study and also about working with education stakeholders, using PISA to inform a broader national discussion about the value and standards of assessment, and preparing national reports and disseminating the assessment results.

PISA-D AND THE SUSTAINABLE DEVELOPMENT GOALS (SDGS)

The SDG Education 2030 agenda (UNESCO, 2015) that is set within the framework of the Sustainable Development Goals (UN, 2015) emphasises the quality, equity and measurement of learning outcomes for young children through to working adults. The challenge now is to define global learning indicators that can be measured and tracked on a global scale over time. Through its enhancement of PISA, the PISA-D initiative is designed to inform and support the monitoring, reporting and achievement of the Education SDG and its related targets and indicators, particularly those related to learning outcomes.

The OECD has been a key partner of UNESCO and the other co-convening agencies in developing the Education SDG framework, and works closely with UIS in the development of indicators that will be used to measure progress towards SDG achievement. In turn, UNESCO, UIS and the World Bank have partnered with the OECD in support of the PISA-D initiative.



The OECD, UIS and the World Bank are working together and with other key practitioners, policy makers, researchers, representatives of governments, civil society organisations, funders, UN agencies, and other stakeholders committed to improving learning outcomes in all countries – particularly low- and middle-income countries. PISA-D and the OECD's plans for mainstreaming the outputs of the project in future cycles of PISA is a key contribution to these efforts, and an embodiment of international collaboration in support of the measurement and monitoring of learning outcomes in the context of the Education SDG.

Note

1. See the abbreviation and acronym section for the full names of these programmes.

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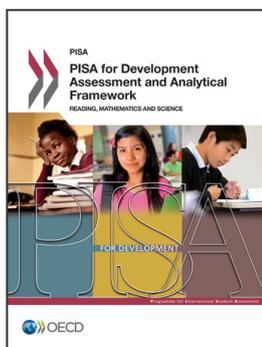


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From:
PISA for Development Assessment and Analytical Framework
Reading, Mathematics and Science

Access the complete publication at:
<https://doi.org/10.1787/9789264305274-en>

Please cite this chapter as:

OECD (2018), "What are PISA and PISA for Development?", in *PISA for Development Assessment and Analytical Framework: Reading, Mathematics and Science*, OECD Publishing, Paris.

DOI: <https://doi.org/10.1787/9789264305274-3-en>

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