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PISA for Development Reading Framework

This Chapter defines "reading literacy" as assessed in the Programme for International Student Assessment (PISA) and the extensions to the PISA reading framework that have been designed for the PISA for Development (PISA-D) project. It describes the processes involved in reading and the type of texts and response formats used in the PISA-D reading assessment and provides several sample items. The Chapter also discusses how student performance in reading is measured and reported.

WHAT IS NEW IN PISA-D? EXTENSIONS TO THE PISA READING LITERACY FRAMEWORK

The extensions made to the PISA frameworks for PISA-D are an attempt to gain more information about students at the bottom of the performance distribution, particularly for Level 1. The text in this chapter draws primarily on the PISA 2012 reading framework, with additions to facilitate the extensions of the framework and some modifications to address aspects particularly important to assessment for PISA-D. Some specific elements from the 2018 framework have also been included.[1] The extensions occur primarily in four locations: the literature review, descriptions of the reading processes, descriptions of the proficiency levels, and discussion on assessing the proficiencies. The rationale behind these changes is also provided.

Reading literacy was the major domain assessed in 2000 for the first PISA cycle (PISA 2000). For the fourth PISA cycle (PISA 2009), it was the first to be revisited as a major domain, requiring a full review of its framework and new development of the instruments that represent it. For the seventh PISA cycle (2018), the conceptual framework for reading literacy is again being revised. This chapter discusses the conceptual framework underlying the PISA 2012 assessment of students' reading competencies and its extension to PISA-D. The definition of the domain is the same as in PISA 2009 (when it was assessed as the major domain for a second time), apart from the enhanced descriptions of the levels of competencies that fall below the current PISA Level 1.

Starting in 2009, the PISA reading literacy frameworks took digital reading into account, and the assessment of digital reading was implemented only as a computer-based assessment. Much of the content related to paper-based reading remained consistent across the 2009, 2012 and 2015 frameworks. However, the 2015 framework was changed to make formulations for testing on computer. Because of this, the PISA-D framework is based on the 2012 framework. It must be stressed that both 2015 and 2018 offer a paper-based version that maintains its comparability with the computer-based version through the trend items. The use of trend items is the strategy used to ensure comparability between PISA-D and PISA 2015.

The PISA-D framework is designed for assessing the reading literacy of 15-year-old adolescents, who may be in or out of school. The 15-year-olds need to read proficiently in order to participate in school activities (Shanahan and Shanahan, 2008). But most of them also use reading in a wide range of out-of-school contexts; for instance, to communicate with their peers, to acquire information related to their personal interests, or to interact with institutions and businesses (IRA, 2012). Therefore, the framework must represent reading in a broad sense that encompasses basic as well as more advanced forms of reading, relevant for school as well as non-school situations. This includes not only the comprehension of a single given passage of text, but also an ability to find, select, interpret and evaluate information from the full range of texts associated with reading for school and out-of-school purposes.

The original reading literacy framework for PISA was developed through a consensus-building process involving reading experts selected by the participating countries to form the PISA 2000 reading expert group. The definition of reading literacy evolved in part from the International Association for the Evaluation of Educational Achievement's Reading Literacy Study (1992) and the International Adult Literacy Survey (IALS, 1994, 1997 and 1998). In particular, it reflected the IALS emphasis on the importance of reading skills for active participation in society. It was also influenced by contemporary – and still current – theories of reading, which emphasise the multiple cognitive processes involved in reading and their interactive nature (Britt, Goldman and Rouet, 2012; Dechant, 1991; Rayner and Reichle, 2010; Rumelhart, 1985), models of discourse comprehension (Kintsch, 1998; Zwaan and Singer, 2003) and theories of performance in solving information problems (Kirsch, 2001; Kirsch and Mosenthal, 1990; Rouet, 2006).

Changes in our concept of reading since 2000 have already led to an expanded definition of reading literacy, which recognises motivational and behavioural characteristics of reading alongside cognitive characteristics. In light of recent research, reading engagement and metacognition were featured more prominently in the PISA 2009 reading literacy framework as elements that can make an important contribution to policy makers' understanding of factors that can be developed, shaped and fostered as components of reading literacy.

The PISA-D reading literacy framework provides additional emphasis on the basic components of the cognitive processes that underlie reading skills. These components include being able to locate information that is explicitly stated in text, to access and comprehend the meaning of individual words, and to understand the literal meaning of information as it is expressed in sentences as well as across passages. As such, these components can provide information about what these students *can do* with respect to the building blocks of reading literacy proficiency.

This chapter is organised into three major sections. The first section, "Defining reading literacy", explains the theoretical underpinnings of the PISA reading assessment, including the formal definition of the reading literacy construct. The second section, "Organising the domain of reading", describes three elements: 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; and situation, which refers to the range of broad contexts or purposes for which reading takes place. The third section, "Assessing reading literacy", outlines the approach taken to apply the elements of the framework previously described, including factors affecting item difficulty, the response formats, coding and scoring, reporting proficiency, testing reading literacy among the out-of-school population and examples of items for addressing the extended PISA-D Framework.

DEFINING READING LITERACY

Definitions of reading and reading literacy have changed over time in parallel with changes in society, economy and culture. The concept of learning, particularly the concept of lifelong learning, has expanded the perception of reading literacy. Literacy is no longer considered to be an ability acquired only in childhood during the early years of schooling. Instead, it is viewed as an expanding set of knowledge, skills and strategies that individuals build on throughout life in various contexts, through interaction with their peers and the wider community.

Cognitively based theories of reading emphasise the constructive nature of comprehension, the diversity of cognitive processes involved in reading and their interactive nature (Binkley, Rust and Williams, 1997; Kintsch, 1998; McNamara and Magliano, 2009; Oakhill, Cain and Bryant, 2003; Snow, 2002; Zwaan and Singer, 2003). The reader generates meaning in response to text by using previous knowledge and a range of text and situational cues that are often socially and culturally derived. While constructing meaning, competent readers use various processes, skills and strategies to locate information, to monitor and maintain understanding (van den Broek et al., 2002), and to critically assess the relevance and validity of the information (Richter and Rapp, 2014). These processes and strategies are expected to vary with context and purpose as readers interact with multiple continuous and non-continuous texts both in print and when using digital technologies (Britt and Rouet, 2012; Coiro et al., 2008).

The PISA 2012 definition of reading literacy, the same used in PISA 2009 and 2015 and PISA-D, is shown in Box 2.1:

Box 2.1 **The PISA 2012 definition of reading literacy**

Reading literacy is understanding, using, reflecting on and engaging with written texts, in order to achieve one's goals, develop one's knowledge and potential, and participate in society.

While this definition is taken for PISA-D also, the project extends the PISA definition of reading literacy through the incorporation of the concept of reading components. Reading components are the sub-skills, or building blocks, that underlie reading literacy (Oakhill, Cain and Bryant, 2003). As they develop and integrate, they facilitate proficient reading comprehension. Conversely, if the components are under-developed or deployed inefficiently, they may hinder a person's ability to comprehend texts (Perfetti, Landi and Oakhill, 2005). Although components can vary in their importance across languages (based on the structure of the language), there are several components that are generally agreed to be significant regardless of language family: word meaning (print vocabulary); sentence processing; and passage comprehension. An assessment of reading components was administered as part of the Programme for the International Assessment of Adult Competencies (PIAAC) and as an optional component of PISA 2012 (e.g. Sabatini and Bruce, 2009). The assessment of reading components can provide information on the component skills of students and out-of-school youth, particularly of those who fall into the lowest levels of literacy. They can also shed light on the kinds of educational/ instructional programmes that improve their component skills, which will, in turn, improve their literacy. While word meaning is generally considered to be a proficiency that is already attained by 15 years, students in some countries may not have fully achieved this proficiency, most particularly when the established language of instruction is different from the student's home language. Thus, the PISA-D reading literacy framework incorporates the reading components of word comprehension, sentence processing and passage comprehension.

It should be noted that there are other critical reading components, including the visual recognition of the printed elements of the alphabet, decoding words into sounds and basic oral comprehension. These are not included as part of the PISA-D framework as they are assumed to be skills attained by 15-year-olds who attend school at their regular grade level as well as out-of-school 15-year-olds who have mastered these basic levels of literacy.

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Box 2.2 **Foundational reading skills required for PISA-D**

Successful performance on higher level reading tasks are dependent and built upon a foundation of component skills (e.g. Abadzi, 2003; Baer, Kutner and Sabatini, 2009; Curtis, 1980; Oakhill, Cain and Bryant, 2003; Perfetti, 2003; Rayner and Reichle, 2010; Sabatini and Bruce, 2009; Stine-Morrow, Miller and Hertzog, 2006). At the simplest view, reading consists of word recognition and linguistic comprehension, each being necessary but not sufficient for reading (e.g. Hoover and Tunmer, 1993). These components can be further elaborated to multiple foundational skills that are required to perform successfully at the lowest level of PISA. Below we outline five of these foundational skills. The first two are pre-conditions of the abilities needed to perform basic reading for PISA-D and are not assessed as part of the instrument. The remaining three are included as part of the assessment and are considered the basic skills that would be necessary to succeed at Level 1c.

1. Ability to relate characters (written symbols) to corresponding phonemes (acoustic sounds)

Reading requires mapping a system of printed visual symbols (individually and in combination) to the spoken form of the language (i.e. the phonetics, phonology) (e.g. Perfetti, 1985). However, there is a significant amount of variability in how the mapping is performed in different languages. For example, alphabetic writing systems map letters to phonemes, while other languages map characters at the syllable level and some at the level of individual words or morphemes (meaning-based units). Thus, the acquisition of this ability may vary by language.

2. Ability to recognise individual or groups of symbols as representing a word referring to objects and/or relationships between words

The printed forms of objects and concepts given the particular orthographic and morphological structure of the language must also be recognised as representing meaningful words (e.g. Anderson and Freebody, 1981; Hirsch, 2003; McCutchen, Green and Abbott; 2008; Nagy and Townsend, 2012; Ouellet, 2006). It should be noted that this ability can differ across languages due to the orthographic differences between languages, the degree of regularity of the relationship between the print and oral language forms; and how morphological and grammatical/ syntactical features of the language are encoded in words. For these reasons, it is difficult to ensure cross-language comparability in assessment, as this requires evaluating how to match the sources of difficulty in acquiring these print skills for each language, and balancing them across stimuli and tasks.

3. Ability to literally understand relationships among groups of words at the sentence level

An individual sentence serves as a complete unit of one or more coherent ideas (e.g. Kintsch, 1998), and a student must be able to comprehend the literal meaning of sentences of varying lengths. Reading a sentence requires both the syntactic processes that interpret the order and function of the words, and the semantic processes of interpreting the meaning of words and propositions (e.g. Kintsch, 1998; Snow, 2002).

4. Ability to literally understand explicit relationships between sentences at the level of short texts

Beyond individual sentences, a reader must be able to understand the literal meaning of passages of text. This requires forming a representation of the information contained across multiple sentences, connecting the idea units and structuring them in memory.

5. Ability to make low-level inferences about relationships across sentences of short texts

Students must be able to represent the information from connected sentences and infer specific relationships. These relationships can include connecting simple referents between one sentence and the next, such as the use of a nominal phrase in one sentence and a pronoun in the next, or creating coherence between two related sentences.

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Reading literacy...

The term "reading literacy" is preferred to "reading" because it is likely to convey to a non-expert audience more precisely what the survey is measuring. "Reading" is often understood as simply decoding, or even reading aloud, whereas the intention of this survey is to measure something broader and deeper. Reading literacy includes a wide range of cognitive competencies, from basic decoding, to knowledge of words, grammar and larger linguistic and textual structures and features, to knowledge about the world.

In this assessment, "reading literacy" is intended to express the active, purposeful and functional application of reading in a range of situations and for various purposes. According to Holloway (1999), reading skills are essential to the academic achievement of middle and high school students. PISA assesses a wide range of students. Some will go on to university; some will pursue further studies in preparation for joining the labour force; some will enter the workforce directly after completing compulsory education. Achievement in reading literacy is not only a foundation for achievement in other subject areas within the education system, but also a pre-requisite for successful participation in most areas of adult life (Cunningham and Stanovich, 1998; Smith et al., 2000). Indeed, regardless of their academic or labour-force aspirations, students' reading literacy is important for their active participation in their community and economic and personal life.

Reading literacy skills matter not just for individuals, but for economies as a whole. Policy makers and others are coming to recognise that in modern societies, human capital – the sum of what the individuals in an economy know and can do – may be the most important form of capital. Economists have for many years developed models showing generally that a country's education levels are a predictor of its economic growth potential (Coulombe, Tremblay and Marchand, 2004).

...is understanding, using, reflecting on...

The word "understanding" is readily connected with the widely accepted concept of "reading comprehension", which emphasises that all reading involves some level of integrating information from the text with the reader's knowledge structures. In order to achieve some degree of understanding, the reader must decode written words, comprehend the literal meaning of sentences and passages, but also elaborate and reason about the information. Even the most basic forms of understanding require readers to draw on symbolic knowledge to identify words and make meaning from them. However, this process of integration can also be much broader, such as developing mental models of how texts relate to the world. The word "using" refers to the notions of application and function – doing something with what we read. "Reflecting on" is added to "understanding" and "using" to emphasise the notion that reading is interactive: readers draw on their own thoughts and experiences when engaging with a text. Of course, every act of reading requires some reflection, drawing on information from outside the text. Even at the earliest stages, readers draw on symbolic knowledge to decode a text and require some vocabulary knowledge to construct meaning. As readers develop their stores of information, experience and beliefs, they constantly, often unconsciously, test what they read against outside knowledge, thereby continually reviewing and revising their sense of the text.

...and engaging with...

A reading literate person not only has the skills and knowledge to read well, but also values and uses reading for a variety of purposes. It is therefore a goal of education to cultivate not only proficiency but also engagement in reading. Engagement in this context implies the motivation to read and comprises a cluster of affective and behavioural characteristics that include an interest in and enjoyment of reading, a sense of control over what one reads, involvement in the social dimension of reading, and diverse and frequent reading practices.

...written texts...

The term "written texts" is meant to include all those coherent texts in which language is used in its graphic form, whether printed and digital. Instead of the word "information", which is used in some other definitions of reading, the term "texts" was chosen because of its association with written language and because it more readily connotes literary as well as information-focused reading. The PISA-D reading literacy framework makes no assumption about the length or elaborateness of a written text. For example, a text could be a single word embedded within a graphic or short passage within a table.

These texts do not include aural language artefacts such as voice recordings; nor do they include film, TV, animated visuals or pictures without words. They do include visual displays such as diagrams, pictures, maps, tables, graphs and comic strips that include some written language (for example, captions). These visual texts can exist either independently or they can be embedded in larger texts. Digital texts are distinguished from printed texts in a number of respects, including physical readability; the amount of text visible to the reader at any one time; the way different parts of a text and different texts are connected with one another through hypertext links; and, given these text characteristics, the way that readers typically engage with digital texts. To a much greater extent than with printed or hand-written texts, readers need to construct their own pathways to complete any reading activity associated with a digital text.

...in order to achieve one's goals, develop one's knowledge and potential, and participate in society.

This phrase is meant to capture the full scope of situations in which reading literacy plays a role, from private to public, from school to work, from formal education to lifelong learning and active citizenship. "To achieve one's goals and to develop one's knowledge and potential" spells out the idea that reading literacy enables the fulfilment of individual aspirations – both defined ones, such as graduating or getting a job, and those less defined and less immediate that enrich and extend

personal life and lifelong education. The word "participate" is used because it implies that reading literacy allows people to contribute to society as well as to meet their own needs. "Participating" includes social, cultural and political engagement.

ORGANISING THE DOMAIN OF READING

This section describes how the domain is represented, a vital issue because the organisation and representation of the domain determines the test design and, ultimately, the evidence about student proficiencies that can be collected and reported.

Reading is a multidimensional domain. While many elements are part of the construct, not all can be taken into account in building the PISA assessment. Only those considered most important were selected.

The PISA reading literacy assessment is built on three major task characteristics to ensure a broad coverage of the domain:

- *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
- *situation*, which refers to the range of broad contexts or purposes for which reading takes place.

Note that the term "processes" – proposed as the term within PISA 2018 – is used in the PISA-D framework, although in PISA 2000 through PISA 2015, processes were referred to as "aspects". This is because the term "processes" aligns better with the scholarly literature on reading comprehension and assessment. In addition, the task characteristics are introduced in a different order than in the 2012 framework, in order to highlight those characteristics that are directly construct-relevant, as opposed to characteristics such as text types or task contexts, which are included mainly for purposes of coverage.

In PISA assessments, features of the text and processes variables (but not of the situation variable) are manipulated to influence the difficulty of a task. The processes are manipulated through the goals set in tasks.

Reading is a complex activity. The elements of reading do not exist independently of one another in neat compartments. The assignment of texts and tasks to framework categories does not imply that the categories are strictly partitioned or that the materials exist in atomised cells determined by a theoretical structure. The framework scheme is provided to ensure coverage, to guide the development of the assessment and to set parameters for reporting, based on what are considered the marked features of each task.

Processes

Processes are the mental strategies, approaches or purposes that readers use to negotiate their way into, around and between texts. Five processes were defined for PISA 2009-15 to guide the development of the reading literacy assessment tasks:

- retrieving information
- forming a broad understanding
- developing an interpretation
- reflecting on and evaluating the content of a text
- reflecting on and evaluating the form of a text.

For PISA-D, an additional process titled "literal comprehension" has been added. Literal comprehension requires students to comprehend explicitly stated information that may be found in individual words, sentences or passages. In addition, the concept of "retrieving information" is broadened to range from locating explicitly stated individual pieces of information, such as individual words or phrases, up to finding information in large passages.

As it is not possible to include sufficient items in PISA to report on each of the six processes as a separate subscale, for reporting on reading literacy these six processes are organised into three broad categories of processes:

- access and retrieve
- integrate and interpret
- reflect and evaluate.

Generate literal comprehension, forming a broad understanding and *developing an interpretation* tasks focus the reader on relationships within a text. Tasks that focus on the whole text require readers to generate the literal meaning of words,

individual sentences, and short passages. They also require forming a broad understanding; tasks that focus on relationships between parts of the text require developing an interpretation. The three are grouped together under *integrate and interpret*.

Tasks related to the *retrieve information* process form the access and retrieve category.

Tasks addressing the last two processes, *reflecting on and evaluating the content of a text* and *reflecting on and evaluating the form of a text*, are grouped together into a single *reflect and evaluate* process category. Both require the reader to draw primarily on knowledge outside the text and relate it to what is being read. *Reflecting on and evaluating content* tasks are concerned with the notional substance of a text; *reflecting on and evaluating form* tasks are concerned with its structure or formal features.

Figure 2.1 shows the relationship between the five processes targeted in the test development for PISA in general and the additional process that will be assessed for PISA-D (in blue). The three broad categories reported on subscales in general PISA, when reading literacy is the major domain, are marked in bold. Because there is no major domain in PISA-D, reading literacy will be reported on a single overall scale only.

Figure 2.1 ■ **Processes targeted in reading literacy test development for PISA and PISA-D**
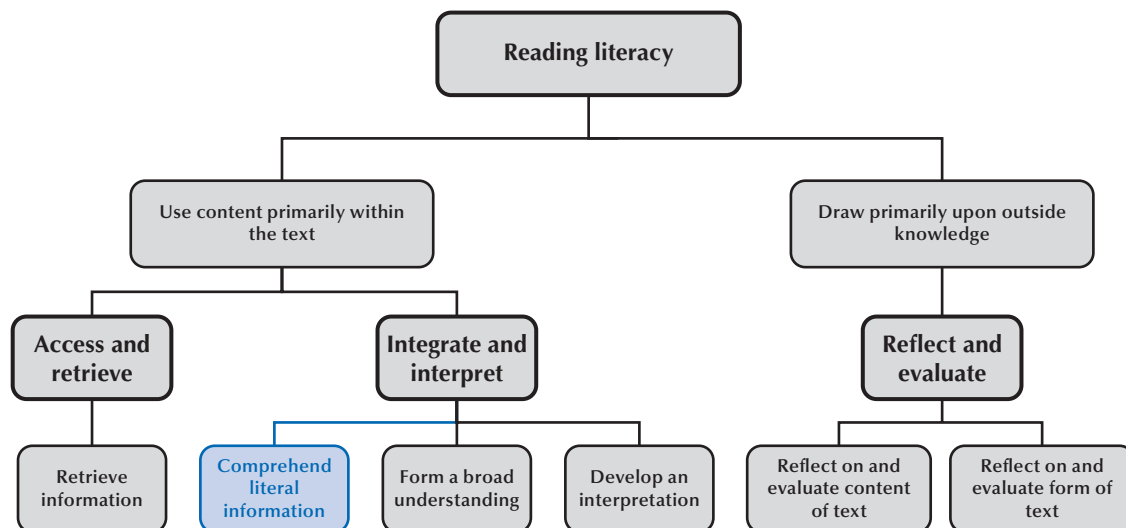
An elaboration of the three broad process categories, encompassing tasks in both print and digital media, is given below.

Access and retrieve

Accessing and retrieving involves going to the information space provided and navigating in that space to locate and retrieve one or more distinct pieces of information. Access and retrieve tasks can range from locating individual pieces of information, such as the details required by an employer from a job advertisement, to finding a telephone number with several prefix codes, to finding a particular fact to support or disprove a claim someone has made.

While *retrieving* describes the process of selecting the required information, *accessing* describes the process of getting to the place, the information space, where the required information is located (e.g. see sample item 4, question 12.1). Both processes are involved in most *access and retrieve* tasks in PISA. However, some items may require retrieving information only, especially in the print medium where the information is immediately visible and where the reader only has to select what is appropriate in a clearly specified information space.

Difficulty will be determined by several factors, including the number of paragraphs or pages that need to be used, the amount of information to be processed on any given place, and the specificity and explicitness of the task directions.

Integrate and interpret

Integrating and interpreting involves processing what is read to construct an internal representation of the meaning of the text.

At the most basic levels of comprehension, readers need to be able to identify in print the meaning of individual words that would occur in the everyday listening lexicon of average adult speakers of the language (e.g. Sabatini and Bruce, 2009). This would include the everyday words of the language that would be used in common social and commerce situations, but not those specialised to technical or academic areas. Beyond the word level, students must be able to combine words in order to parse sentences and to represent their literal meaning. This involves an ability to acknowledge when sentences are ill-structured or simply do not make sense (see the section with sample items at the end of the chapter). Readers also need to combine the meaning of small sets of sentences in order to form internal representations of simple descriptions or narrations. Processing the literal meaning of a text is a foundational competency that then allows additional deeper processes to be performed on the text. In order to better represent this basic comprehension level, in PISA-D the category "integrate and interpret" is extended so as to include the process of "comprehending the literal meaning of text". Tasks that specifically require this process will be included in the assessment.

Integrating focuses on demonstrating an understanding of the coherence of the *text* and involves the processes to make internal sense of a text. *Integrating* involves connecting various pieces of information to make meaning, whether it be identifying similarities and differences, making comparisons of degree, or understanding cause and effect relationships.

Interpreting also requires going beyond the literal meaning and refers to the process of making meaning from something that is not stated. When interpreting, a reader is identifying the underlying assumptions or implications of part or all of the text.

Both *integrating* and *interpreting* are required to *form a broad understanding*. A reader must consider the text as a whole or in a broad perspective. Students may demonstrate initial understanding by identifying the main topic or message or by identifying the general purpose or use of the text.

Both *integrating* and *interpreting* are also involved in *developing an interpretation*, which requires readers to extend their initial broad impressions so that they develop a deeper, more specific or more complete understanding of what they have read. *Integrating* tasks include identifying and listing supporting evidence, and comparing and contrasting information in which the requirement is to draw together two or more pieces of information from the text. In order to process either explicit or implicit information from one or more sources in such tasks, the reader must often infer an intended relationship or category. *Interpreting* tasks may involve drawing an inference from a local context: for example, interpreting the meaning of a word or phrase that gives a particular nuance to the text. This process of comprehension is also assessed in tasks that require the student to make inferences about the author's intention, and to identify the evidence used to infer that intention.

The relationship between the processes of integration and interpretation may therefore be seen as intimate and interactive. Integrating involves first inferring a relationship within the text (a kind of interpretation), and then bringing pieces of information together, therefore allowing an interpretation to be made that forms a new integrated whole.

Reflect and evaluate

Reflecting and evaluating involves drawing upon knowledge, ideas or attitudes beyond the text in order to relate the information provided within the text to one's own conceptual and experiential frames of reference.

Reflect items may be thought of as those that require readers to consult their own experience or knowledge to compare, contrast or hypothesise. *Evaluate* items are those that ask readers to make a judgment drawing on standards beyond the text.

Reflecting on and evaluating the content of a text requires the reader to connect information in a text to knowledge from outside sources. Readers must also assess the claims made in the text against their own knowledge of the world. Often readers are asked to articulate and defend their own points of view. To do so, readers must be able to develop an understanding of what is said and intended in a text. They must then test that mental representation against what they know and believe on the basis of either prior information, or information found in other texts. Readers must call on supporting evidence from within the text and contrast it with other sources of information, using both general and specific knowledge as well as the ability to reason abstractly.

Reflecting on and evaluating the form of a text requires readers to stand apart from the text, to consider it objectively, and to evaluate its quality and appropriateness. Implicit knowledge of text structure, the style typical of different kinds of texts, can play an important role in these tasks. Evaluating how successful an author is in portraying some characteristic or persuading a reader depends not only on substantive knowledge but also on the ability to detect subtleties in language.

To some extent every critical judgment requires the reader to consult his or her own experience; some kinds of reflection, on the other hand, do not require evaluation (for example, comparing personal experience with something described in a text). Thus evaluation might be seen as a subset of reflection.

The processes of reading in print and digital media

The three broad processes defined for PISA reading literacy are not conceived of as entirely separate and independent, but rather as inter-related and interdependent. Indeed from a cognitive processing perspective, they can be considered semi-hierarchical: it is not possible to interpret or integrate information without having first retrieved it. And it is not possible to reflect on or evaluate information without having made some sort of interpretation. In PISA, however, the framework description of reading processes distinguishes approaches to reading that are demanded for different contexts and purposes; these are then reflected in assessment tasks that emphasise one or other process.

For PISA-D, the distribution of tasks across the major framework variables of situation and text should closely mirror the distributions used for the print items in PISA 2012, both for the school-based and the out-of-school tests. The distribution of process variables does have some differences.

Table 2.1 shows the approximate distribution of reading score points by the processes for the PISA 2012 assessment and the desired distribution of reading score points by the processes for PISA-D. Note that the distribution puts greater emphasis on *access and retrieve*, most particularly at the lower levels of proficiency, while also putting lower emphasis on *reflect and evaluate*. This enhances the sensitivity to competencies that will tend to fall at the lower levels of the PISA scale.

Table 2.1 Distribution of score points in reading, by processes, for PISA 2012 (approximate distribution) and PISA-D (desired distribution)

Processes (aspects)	Percentage of total score points in PISA 2012	Percentage of total score points in PISA-D
Access and retrieve	22	25-30% with 15% below Level 3
Integrate and interpret	56	45-55%
Reflect and evaluate	22	15-25%
Complex	0	0
Total	**100**	**100**

The desired distribution specifies the blueprint for selecting items according to important aspects of the domain frameworks. Item selection is based on the assessment design, as well as item characteristics related to a number of framework aspects – including coding requirement, process, situation, and text format, and consideration of the items' psychometric properties and appropriateness for this assessment. Following the assessment, the actual distributions of items across the framework aspects will be described in relation to the desired distributions. The extent to which the item pool for the assessment meets the framework specifications will be discussed in the technical report in the context of practical constraints in the item selection process.

Situation

The PISA-D situation variables remain the same as those for PISA 2012. They were adapted from the Common European Framework of Reference (CEFR) developed for the Council of Europe (Council of Europe, 1996). The four situation variables – personal, public, educational and occupational – are described in the following paragraphs.

The *personal* situation relates to texts that are intended to satisfy an individual's personal interests, both practical and intellectual. This category also includes texts that are intended to maintain or develop personal connections with other people. It includes personal letters, fiction, biography and informational texts that are intended to be read to satisfy curiosity, as a part of leisure or recreational activities. In the digital medium it includes personal emails, instant messages and diary-style blogs.

The *public* category describes the reading of texts that relate to activities and concerns of the larger society. The category includes official documents and information about public events. In general, the texts associated with this category assume a more or less anonymous contact with others; they also therefore include forum-style blogs, news websites, and public notices that are encountered both on line and in print.

The content of *educational* texts is usually designed specifically for the purpose of instruction. Printed text books and interactive learning software are typical examples of material generated for this kind of reading. Educational reading normally involves acquiring information as part of a larger learning task. The materials are often not chosen by the reader, but instead assigned by an instructor. The model tasks are those usually identified as "reading to learn" (Sticht, 1975; Stiggins, 1982).

Many 15-year-olds will move from school into the labour force within one to two years, and many out-of-school youth may already be part of the work force. A typical *occupational* reading task is one that involves the accomplishment of some immediate task. It might include searching for a job, either in a print newspaper's classified advertisement section, or on line; or following workplace directions. The model tasks of this type are often referred to as "reading to do" (Sticht, 1975; Stiggins, 1982).

Situation is used in PISA reading literacy to define texts and their associated tasks, and refers to the contexts and uses for which the author constructed the text. The manner in which the situation variable is specified is therefore about supposed audience and purpose, and is not based simply on the place where the reading activity is carried out. Many texts used in classrooms are not specifically designed for classroom use. For example, a piece of literary text may typically be read by a 15-year-old in a mother-tongue language or literature class, yet the text was written (presumably) for readers' personal enjoyment and appreciation. Given its original purpose, such a text is classified as *personal* in PISA. As Hubbard (1989) has shown, some kinds of reading usually associated with out-of-school settings for children, such as rules for clubs and records of games, often take place unofficially at school as well. These texts are classified as *public* in PISA. Conversely, textbooks are read both in schools and in homes, and the process and purpose probably differ little from one setting to another. Such texts are classified as *educational* in PISA.

It should be noted that the four categories overlap. In practice, for example, a text may be intended both to delight and to instruct (personal and educational); or to provide professional advice that is also general information (occupational and public). While content is not a variable that is specifically manipulated in this study, by sampling texts across a variety of situations the intent is to maximise the diversity of content that will be included in the PISA reading literacy survey.

Table 2.2 shows the approximate distribution of score points by situation for print reading tasks in PISA 2012 and the desired distribution for PISA-D. The distributions of situations used in PISA 2012 can be maintained at the same approximate values for PISA-D.

Table 2.2 **Distribution of score points in reading, by situation, for PISA 2012 (approximate distribution) and PISA-D (desired distribution)**

Situation	Percentage of total score points in PISA 2012	Percentage of total score points in PISA-D
Personal	36	25-45
Educational	33	25-45
Occupational	20	15-25
Public	11	5-15
Total	**100**	**100**

Text

The text dimensions for PISA-D remain the same as those used in PISA 2012. Reading requires material for the reader to read. In an assessment, that material – a text (or a set of texts) related to a particular task – must be coherent within itself. That is, the text must be able to stand alone without requiring additional material to make sense to the proficient reader. While it is obvious that there are many different kinds of texts and that any assessment should include a broad range, it is not so obvious that there is an ideal categorisation of kinds of texts. The addition of digital reading to the framework has made this issue still more complex. In 2009 and 2012, there have been four main text classifications:[2]

- medium: print and digital
- environment: authored and message-based

- text format: continuous, non-continuous, mixed and multiple
- text type: description, narration, exposition, argumentation, instruction and transaction.

The classification of medium – print and digital – is applied to each text as the broadest distinction. Below that classification, the text format and text type categories are applied to all texts, whether print or digital. The environment classification, on the other hand, is only applicable to digital texts.

Medium

Since PISA 2009, an important major categorisation of texts is the classification by medium: print or digital.

Print text usually appears on paper in forms such as single sheets, brochures, magazines and books. The physical status of the printed text encourages (though it does not compel) the reader to approach the content of the text in a particular sequence. In essence, printed texts have a fixed or static existence. Moreover, in real life and in the assessment context, the extent or amount of the text is immediately visible to the reader.

Digital text may be defined as the display of text through liquid crystal display (LCD), plasma, thin film transistor (TFT), and other electronic devices. For the purposes of PISA, however, digital text is synonymous with *hypertext*: a text or texts with navigation tools and features that make possible and indeed even require non-sequential reading. Each reader constructs a "customised" text from the information encountered at the links he or she follows. In essence, such digital texts have an unfixed, dynamic existence. In the digital medium, typically only a fraction of the available text can be seen at any one time, and often the extent of text available is unknown. The PISA-D instruments do not include hypertext, but digital text is mentioned here for completeness.

Text format

An important classification of texts is the distinction between continuous and non-continuous texts.

Texts in *continuous* and *non-continuous* format appear in both the print and digital media. *Mixed* and *multiple* format texts are also prevalent in both media, particularly so in the digital medium. Each of these four formats is elaborated as follow:

Continuous texts are formed by sentences organised into paragraphs. These may fit into even larger structures, such as sections, chapters, and books (e.g. newspaper reports, essays, novels, short stories, reviews and letters for the print medium, and reviews, blogs and reports in prose for the digital).

Non-continuous texts are organised differently to *continuous* texts, and therefore require a different kind of reading approach. *Non-continuous* texts are most frequently organised in matrix format, composed of a number of lists (Kirsch and Mosenthal, 1990) (e.g. lists, tables, graphs, diagrams, advertisements, schedules, catalogues, indexes and forms).

Many texts in both print and digital media are single, coherent artefacts consisting of a set of elements in both a *continuous* and *non-continuous* format. In well-constructed *mixed* texts, the constituents (e.g. a prose explanation, along with a graph or table) are mutually supportive through coherence and cohesion links at the local and global level. *Mixed* text in the print medium is a common format in magazines, reference books and reports. In the digital medium, authored web pages are typically mixed texts, with combinations of lists, paragraphs of prose, and often graphics. Message-based texts such as online forms, email messages and forums also combine texts that are *continuous* and *non-continuous* in format.

Multiple texts are defined as those that have been generated independently, and make sense independently; they are juxtaposed for a particular occasion or may be loosely linked together for the purposes of the assessment. The relationship between the texts may not be obvious; they may be complementary or may contradict one another. For example, with digital texts, a set of websites from different companies providing travel advice may or may not provide similar directions to tourists. For paper-based texts, multiple texts may include a bus time schedule, a map and a text explaining a set of tours around a town. Multiple texts may have a single "pure" format (for example, continuous), or may include both continuous and non-continuous texts.

Table 2.3 shows the approximate distributions of score points for print reading tasks by text format for PISA 2012, which should be maintained for PISA-D.

Table 2.3 Distribution of score points in reading, by text format, for PISA 2012 (approximate distribution) and PISA-D (desired distribution)

Text format	Percentage of total score points in PISA 2012	Percentage of total score points in PISA-D
Continuous	58	50-60
Non-continuous	31	25-35
Mixed	9	5-15
Multiple	2	0-10
Total	**100**	**100**

Text type

A different categorisation of text is by text type: description, narration, exposition, argumentation, instruction, and transaction. The text types are the same for PISA-D as they have been since PISA 2009.

Texts as they are found in the world typically resist categorisation; they are usually not written with rules in mind, and tend to cut across categories. That notwithstanding, in order to ensure that the reading instrument samples across a range of texts that represent different types of reading, PISA categorises texts based on their predominant characteristics.

The following classification of texts used in PISA is adapted from the work of Werlich (1976).

Description is the type of text where the information refers to properties of objects in space. The typical questions that descriptive texts provide an answer to are *what* questions (e.g. a depiction of a particular place in a travelogue or diary, a catalogue, a geographical map, an online flight schedule, or a description of a feature, function or process in a technical manual).

Narration is the type of text where the information refers to properties of objects in time. Narration typically answers questions relating to *when*, or *in what sequence*. Why characters in stories behave as they do is another important question that narration typically answers (e.g. a novel, a short story, a play, a biography, a comic strip, fictional texts and a newspaper report of an event). The proportion of narrative texts in the print medium in PISA 2012 was a little greater than that in the previous PISA cycles (2000-09), at about 20% (formerly about 15%).

Exposition is the type of text in which the information is presented as composite concepts or mental constructs, or those elements into which concepts or mental constructs can be analysed. The text provides an explanation of how the different elements interrelate in a meaningful whole and often answers questions about *how* (e.g. a scholarly essay, a diagram showing a model of memory, a graph of population trends, a concept map and an entry in an online encyclopaedia).

Argumentation is the type of text that presents the relationship among concepts or propositions. Argument texts often answer *why* questions. An important sub-classification of argument texts is persuasive and opinionative texts, referring to opinions and points of view. Examples of text in the text type category *argumentation* are a letter to the editor, a poster advertisement, the posts in an online forum, and a Web-based review of a book or film.

Instruction is the type of text that provides directions on what to do. The text presents directions for certain behaviours in order to complete a task (e.g. a recipe, a series of diagrams showing a procedure for giving first aid and guidelines for operating digital software).

Transaction represents the kind of text that aims to achieve a specific purpose outlined in the text, such as requesting that something is done, organising a meeting or making a social engagement with a friend. Before the spread of digital communication, this kind of text was a significant component of some kinds of letters and, as an oral exchange, the principal purpose of many phone calls. This text type was not included in Werlich's (1976) categorisation. It was used for the first time in the PISA 2009 framework because of its prevalence in the digital medium (e.g. everyday email and text message exchanges between colleagues or friends that request and confirm arrangements).

Strategy to extend the framework to provide better coverage of basic literacy levels

Two strategies are used in order to extend the framework to lower levels of reading proficiencies. Firstly, additional item types are included to assess word meaning, basic sentence and passage comprehension, and literal meaning (see above for the description of the process "integrate and interpret"). The purpose of the tasks is to measure the extent to which

students understand the literal and inferential meaning of words and connected text. Two tasks were defined: *sentence processing* and *passage comprehension*.

The sentence processing tasks assess the ability to comprehend written sentences of varying lengths. In the PISA reading components assessment, the construct is instantiated in a sensibility judgment task. Its purpose is to measure the extent to which students can comprehend sentences of increasing lengths. In the task, students see a set of sentences and decide if they make sense ("yes") or do not make sense ("no") with respect to general knowledge about the real world (as in the first item in the section on sample items), or the internal logic of the sentence itself (as in the second item).

The basic passage comprehension tasks assess the ability to understand the literal meaning or "gist" of connected text and to make low-level inferences across sentences in the text. In the PISA and PIAAC reading components assessments, the construct has been instantiated in an embedded cloze task, in which certain words are purposefully deleted from the text and replaced with blanks. The task is for the test-taker to complete the missing words. Its purpose is to measure the extent to which students understand the literal and inferential meaning of connected text. In the task, the participant sees a passage in which the sentences include an embedded cloze item (two word choices are given for a single blank). The participant reads the passage silently and circles the word that correctly completes each sentence. Sample item 2 shows an example of a passage comprehension task with multiple items embedded within it.

The second strategy consists in adapting existing PISA tasks to assess low-level comprehension and access and retrieve processes. Sample items 3, 4 and 5 illustrate this.

ASSESSING READING LITERACY

The previous section outlined the conceptual framework for reading literacy. The concepts in the framework must in turn be represented in tasks and questions in order to collect evidence of students' proficiency in reading literacy.

The distribution of tasks across the major framework variables of process, situation and text was discussed in the previous section. In this section, the framework describes the distribution of tasks across the major framework variables as well as some of the other major issues in constructing and operationalising the assessment: factors affecting item difficulty and how difficulty can be manipulated; the choice of response formats; issues around coding and scoring; strategy to extend the framework to provide better coverage of basic literacy levels; reporting proficiency in reading in PISA-D; testing reading literacy among the out-of-school population; and examples of items for addressing the extended PISA-D framework.

Factors affecting item difficulty

The difficulty of any reading literacy task depends on an interaction among several variables. Drawing on Kirsch and Mosenthal's work (e.g. Kirsch, 2001; Kirsch and Mosenthal, 1990), we can manipulate the difficulty of items by applying knowledge of the following process and text format variables.

In *access and retrieve* tasks, difficulty is conditioned by the number of pieces of information that the reader needs to locate, by the amount of inference required, by the amount and prominence of competing information, and by the length (e.g. number of words, sentences, paragraphs) and complexity of the text.

In *integrate and interpret* tasks, difficulty is affected by the type of interpretation required (for example, making a comparison is easier than finding a contrast, and comprehending a specified causal link is easier than inferring an implicit causal relationship); by the number of pieces of information to be considered; by the degree and prominence of competing information in the text; and by the nature of the text. The less familiar and the more abstract the content and the longer and more complex the text, the more difficult the task is likely to be.

In *reflect and evaluate* tasks, difficulty is affected by the type of reflection or evaluation required (from least to most difficult, the types of reflection are: connecting; explaining and comparing; hypothesising and evaluating); by the nature of the knowledge that the reader needs to bring to the text (a task is more difficult if the reader needs to draw on narrow, specialised knowledge rather than broad and common knowledge); by the relative abstraction and length of the text; and by the depth of understanding of the text required to complete the task.

In tasks relating to *continuous texts*, difficulty is influenced by the length of the text, the explicitness and transparency of its structure, how clearly the parts are related to the general theme, and whether there are text features, such as paragraphs or headings, and discourse markers, such as sequencing words.

In tasks relating to *non-continuous texts*, difficulty is influenced by the amount of information in the text; the list structure (simple lists are easier to negotiate than more complex lists); whether the components are ordered and explicitly organised, for example with labels or special formatting; and whether the information required is in the body of the text or in a separate part, such as a footnote.

Response formats

Coding requirements are shown in Table 2.4 for print score points in relation to the three processes of reading literacy and for digital score points in relation to the four processes. Items that require expert judgment consist of open-constructed and short-constructed responses that require expert coding. Items that do not require coder judgment consist of multiple-choice, complex multiple-choice and closed-constructed response items. The closed-constructed response items are those that require the student to generate a response, but require minimal judgment on the part of a coder.

Distribution of coding requirements for PISA-D should be kept comparable to mainstream PISA assessments. The distribution of item types in print reading does not vary much from one cycle/administration to the next. However, the selection for 2012 has a slightly higher proportion of items that do not require expert coding than in previous cycles: 58% non-expert coded and 42% expert coded in 2012 (compared with 55% and 45% respectively in previous administrations). The same ratio applies to print and to digital reading in PISA 2012.

Table 2.4 shows the approximate distribution of score points by coding requirement for each reading process in PISA 2012 and in the paper-based PISA-D test. Due to the extra testing time it would involve, the tablet-based test does not include items that require expert judgment in coding.

Table 2.4 Distribution of score points in reading, by coding requirement for each reading process, in PISA 2012 (approximate distribution) and PISA-D (desired distribution)

Process (aspect)	Percentage of total score points in PISA 2012: Print reading			Percentage of total score points in PISA-D		
	Expert judgment required	No expert judgment required	Total	Expert judgment required	No expert judgment required	Total
Access and retrieve	4	18	22	0-10	10-20	20-30
Integrate and interpret	20	36	56	15-30	30-40	45-60
Reflect and evaluate	18	4	22	15-25	0-10	20-30
Complex	0	0	0	0	0	0
TOTAL	**42**	**58**	**100**	**35-50**	**45-65**	**100**

Coding and scoring

Codes are applied to test items, either by a more or less automated process of capturing the alternative chosen by the student for a multiple-choice answer, or by a human judge (expert coder) selecting a code that best captures the kind of response given by a student to an item that requires a constructed response. The code is then converted to a score for the item. For multiple-choice or closed-response format items, the student has either chosen the designated correct answer or not, so the item is scored as 1 (full credit) or 0 (no credit) respectively. For more complex scoring of constructed response items, some answers, even though incomplete, indicate a higher level of reading literacy than inaccurate or incorrect answers, and receive partial credit.

Reporting proficiency in reading in PISA-D

PISA reports results in terms of proficiency scales that are interpretable for the purposes of policy. To capture the progression of complexity and difficulty, from 2009 and up to 2018, PISA has used seven levels based on the PISA 2009 combined print reading literacy scale. For PISA-D, an additional level has been added at the lowest level, so the combined print reading literacy scale is divided into eight levels. Figure 2.2 describes these eight levels of print reading proficiency. Level 6 is the highest described level of proficiency (Level 5 was the highest level before PISA 2009 reading assessments). Levels 2, 3, 4 and 5 remain the same as in PISA 2000. In the mainstream PISA, the lowest bottom level of measured proficiency is Level 1b, with Level 1a being the second lowest level. For PISA-D, Level 1c is added as the lowest level of proficiency with a focus on understanding words, short phrases and extracting literal meaning from sentences. These different levels of proficiency allow countries to know more about the kinds of tasks students with very high and very low reading proficiency are capable of performing. Levels 1a and 1b have been modified for better alignment with the new Level 1c.

Figure 2.2 ▪ **Summary description of the eight levels of reading proficiency in PISA-D**

Level	Lower score limit	Percentage of students across OECD countries at each level, PISA 2012	Percentage of students across 18 middle- and low-income countries at each level, PISA 2012	Characteristics of tasks
6	698	1.1%	0.1%	Tasks at this level typically require the reader to make multiple inferences, comparisons and contrasts that are both detailed and precise. They require demonstration of a full and detailed understanding of one or more texts and may involve integrating information from more than one text. Tasks may require the reader to deal with unfamiliar ideas, in the presence of prominent competing information, and to generate abstract categories for interpretations. *Reflect and evaluate* tasks may require the reader to hypothesise about or critically evaluate a complex text on an unfamiliar topic, taking into account multiple criteria or perspectives, and applying sophisticated understandings from beyond the text. A salient condition for *access and retrieve* tasks at this level is precision of analysis and fine attention to detail that is inconspicuous in the texts.
5	626	7.3%	1.1%	Tasks at this level that involve retrieving information require the reader to locate and organise several pieces of deeply embedded information, inferring which information in the text is relevant. Reflective tasks require critical evaluation or hypothesis, drawing on specialised knowledge. Both interpretative and reflective tasks require a full and detailed understanding of a text whose content or form is unfamiliar. For all processes of reading, tasks at this level typically involve dealing with concepts that are contrary to expectations.
4	553	21.0%	6.7%	Tasks at this level that involve retrieving information require the reader to locate and organise several pieces of embedded information. Some tasks at this level require interpreting the meaning of nuances of language in a section of text by taking into account the text as a whole. Other interpretative tasks require understanding and applying categories in an unfamiliar context. Reflective tasks at this level require readers to use formal or public knowledge to hypothesise about or critically evaluate a text. Readers must demonstrate an accurate understanding of long or complex texts whose content or form may be unfamiliar.
3	480	29.1%	19.1%	Tasks at this level require the reader to locate, and in some cases recognise the relationship between, several pieces of information that must meet multiple conditions. Interpretative tasks at this level require the reader to integrate several parts of a text in order to identify a main idea, understand a relationship or construe the meaning of a word or phrase. They need to take into account many features in comparing, contrasting or categorising. Often the required information is not prominent or there is much competing information; or there are other text obstacles, such as ideas that are contrary to expectation or negatively worded. Reflective tasks at this level may require connections, comparisons, and explanations, or they may require the reader to evaluate a feature of the text. Some reflective tasks require readers to demonstrate a fine understanding of the text in relation to familiar, everyday knowledge. Other tasks do not require detailed text comprehension but require the reader to draw on less common knowledge.

Figure 2.2 [continued] ■ **Summary description of the eight levels of reading proficiency in PISA-D**

Level	Lower score limit	Percentage of students across OECD countries at each level, PISA 2012	Percentage of students across 18 middle- and low-income countries at each level, PISA 2012	Characteristics of tasks
2	407	23.5%	30.3%	Some tasks at this level require the reader to locate one or more pieces of information, which may need to be inferred and may need to meet several conditions. Others require recognising the main idea in a text, understanding relationships, or construing meaning within a limited part of the text when the information is not prominent and the reader must make low level inferences. Tasks at this level may involve comparisons or contrasts based on a single feature in the text. Typical reflective tasks at this level require readers to make a comparison or several connections between the text and outside knowledge, by drawing on personal experience and attitudes.
1a	335	12.3%	25.9%	Tasks at this level require the reader to understand the literal meaning of sentences or short passages. Most tasks require the reader to locate one or more independent pieces of information; to recognise the main theme or author's purpose in a text about a familiar topic, or to make a simple connection between information in the text and common, everyday knowledge. The reader is directed to consider relevant factors in the task and in the text. In tasks requiring interpretation, the reader may need to make simple connections between adjacent pieces of information.
1b	262	4.4%	12.6%	Tasks at this level require the reader to understand the literal meaning of sentences within single short passages. Some tasks require students to locate a piece of explicitly stated information in a single given text. The reader is explicitly directed to consider relevant factors in the task and in the text. Most texts at level 1b are short and they typically contain limited competing information.
1c	189	1.3% (percentage of students scoring below Level 1b, PISA 2012)	4.3% (percentage of students scoring below Level 1b, PISA 2012)	Tasks at this level require the reader to understand the literal meaning of individual written words and phrases within sentences or very short, syntactically simple passages with familiar contexts. Some tasks require students to locate a single word or phrase in a short list or text based on literal matching cues. Texts at level 1c are short and they include little if any competing information. Texts support students with a familiar structure, explicit pointers to the information, repetition and illustration.

Note: Descriptors 2 through 6 are the same as those used in PISA 2012 and 2015. Descriptors 1a and 1b have been revised for better alignment with the new descriptor for Level 1c.

Testing reading literacy among the out-of-school population

The extended PISA-D reading framework is appropriate for 15-year-old students whether in or out of school. The units and items are not directly based in the school context, and thus there is no particular requirement or change needed in the units that are categorised as relevant for educational activities, since educational activities also occur out of school. Therefore, the distribution and selection of units and items can be the same for PISA-D in-school and out-of-school populations.

The out-of-school component is assessed on a tablet computer, but only fixed-text items are used, so it is appropriate to use the same framework as for the paper-based test.

<div style="border:1px solid">

<p style="text-align:center">Box 2.3 Delivery mode</p>

The PISA-D school-based assessment is paper-based, while the out-of-school assessment is conducted on a tablet computer. To ensure comparability between the tests, the tablet-based instruments for PISA-D are formed by a subgroup of the items used for the paper-based assessment. All these items were originally designed for a paper-based assessment, so when moving to a tablet-based delivery, care was taken to maintain comparability between the assessments. The PISA 2015 framework describes some factors that must be considered when transposing items from paper to computer mode. These elements were also taken into account when designing the out-of-school instrument for PISA-D.

Item types: The computer provides a range of opportunities for designers of test items, including new item formats (e.g. drag-and-drop, hotspots). Since the PISA-D tablet-based tests use a subgroup of items from the paper-based test, there is less opportunity to exploit innovative item types and the majority of response formats remains unchanged.

Stimulus presentation: A feature of fixed texts defined in the construct is that "the extent or amount of the text is immediately visible to the reader". Clearly, it is impossible, both on paper and on a screen, to have long texts displayed on a single page or screen. To allow for this and still satisfy the construct of fixed texts, pagination is used for texts rather than scrolling. Texts that cover more than one page are presented in their entirety before the student sees the first question.

IT skills: Just as paper-based assessments rely on a set of fundamental skills for working with printed materials, so computer-based assessments rely on a set of fundamental information and communications technology skills for using computers. These include knowledge of basic hardware (e.g. keyboard and mouse) and basic conventions (e.g. arrows to move forward and specific buttons to press to execute commands). The intention is to keep such skills to a minimal core level in the tablet-based assessment.

</div>

Examples of items for addressing the extended PISA-D reading framework

The following six items illustrate the types of question that can be asked of students at Level 1a and below. The items either come from or are adapted from the PISA or PIAAC assessments.

Sample item 1

Directions: Circle **YES** if the sentence makes sense. Circle **NO** if the sentence does not make sense.

The red car had a flat tyre.	**YES**	**NO**
Airplanes are made of dogs.	**YES**	**NO**
The happy student read the book last night.	**YES**	**NO**
If the cat had stayed out all night, it would not have been in the house at 2 a.m.	**YES**	**NO**
The man who is taller than the woman and the boy is shorter than both of them.	**YES**	**NO**

Sample item 1 assesses sentence processing tasks and likely corresponds to proficiency Level 1c. In PISA-D, sentence processing tasks also included some short sentences with three options, with instructions to choose the word that makes the sentence make sense.

Sample item 2

PASSAGE COMPREHENSION

In items assessing passage comprehension, respondents are asked to read a passage in which they are required at certain points to select the word that makes sense from the two alternatives provided.

To the editor: Yesterday, it was announced that the cost of riding the bus will increase. The price will go up by twenty percent starting next <u>wife / month</u>. As someone who rides the bus every day, I am upset by this <u>foot / increase</u>. I understand that the cost of <u>gasoline / student</u> has risen. I also understand that riders have to pay a fair <u>price / snake</u> for bus service. I am willing to pay a little more because I rely on the bus to get to <u>object / work</u>. But an <u>increase / uncle</u> of twenty percent is too much.

This increase is especially difficult to accept when you see the city's plans to build a new sports stadium. The government will spend millions on this project even though we already have a <u>science / stadium</u>. If we delay the stadium, some of that money can be used to offset the increase in bus <u>fares / views</u>. Then, in a few years, we can decide if we really do need a new sports <u>cloth / arena</u>. Please let the city council know you care about this issue by attending the next public <u>meeting / frames</u>.

Sample item 2 assesses passage comprehension and likely corresponds to proficiency Level 1c. In PISA-D, the passage comprehension paragraphs (part of Reading Components) have been modified to have three options instead of two.

Sample item 3

FEEL GOOD IN YOUR RUNNERS

For 14 years the Sports Medicine Centre of Lyon (France) has been studying the injuries of young sports players and sports professionals. The study has established that the best course is prevention … and good shoes.
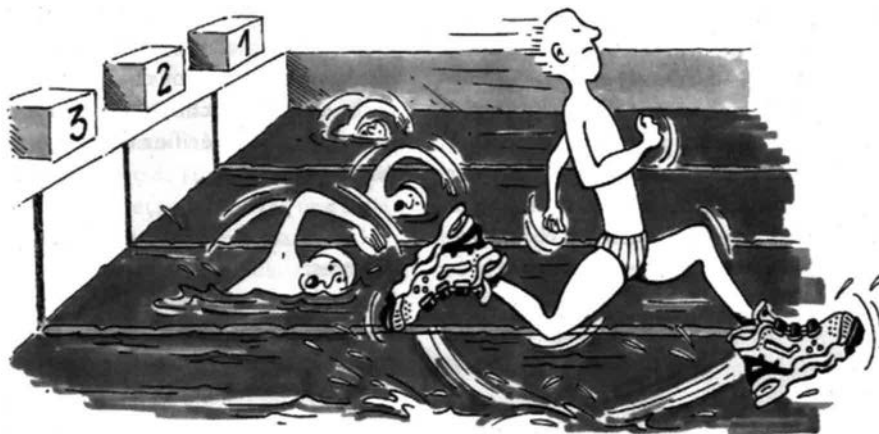
Knocks, falls, wear and tear...

Eighteen per cent of sports players aged 8 to 12 already have heel injuries. The cartilage of a footballer's ankle does not respond well to shocks, and 25% of professionals have discovered for themselves that it is an especially weak point. The cartilage of the delicate knee joint can also be irreparably damaged and if care is not taken right from childhood (10–12 years of age), this can cause premature osteoarthritis. The hip does not escape damage either and, particularly when tired, players run the risk of fractures as a result of falls or collisions.

According to the study, footballers who have been playing for more than ten years have bony outgrowths either on the tibia or on the heel. This is what is known as "footballer's foot", a deformity caused by shoes with soles and ankle parts that are too flexible.

Protect, support, stabilise, absorb

If a shoe is too rigid, it restricts movement. If it is too flexible, it increases the risk of injuries and sprains. A good sports shoe should meet four criteria:

Firstly, it must *provide exterior protection*: resisting knocks from the ball or another player, coping with unevenness in the ground, and keeping the foot warm and dry even when it is freezing cold and raining.

It must *support the foot*, and in particular the ankle joint, to avoid sprains, swelling and other problems, which may even affect the knee.

It must also provide players with good *stability* so that they do not slip on a wet ground or skid on a surface that is too dry.

Finally, it must *absorb shocks*, especially those suffered by volleyball and basketball players who are constantly jumping.

Dry feet

To avoid minor but painful conditions such as blisters or even splits or athlete's foot (fungal infections), the shoe must allow evaporation of perspiration and must prevent outside dampness from getting in. The ideal material for this is leather, which can be water-proofed to prevent the shoe from getting soaked the first time it rains.

QUESTION 7.2

According to the article, why should sports shoes not be too rigid?

………

QUESTION 7.4

Look at this sentence from near the end of the article. It is presented here in two parts:

"To avoid minor but painful conditions such as blisters or even splits or athlete's foot (fungal infections),…"   *(first part)*

"…the shoe must allow evaporation of perspiration and must prevent outside dampness from getting in."   *(second part)*

What is the relationship between the first and second parts of the sentence?

The second part:

A. contradicts the first part.

B. repeats the first part.

C. illustrates the problem described in the first part.

D. gives the solution to the problem described in the first part.

Sample item 3 is a released PISA item that shows a basic informational text. Question 7.2 assesses a student's literal comprehension from the text. Because of the amount of text students must read, it likely corresponds to Level 1a. Question 7.4, on the other hand, assesses integration and interpretation of information and thus is at a higher level of proficiency.

Sample item 4

The Moreland Library System gives new library members a bookmark showing its Hours of Opening. Refer to the bookmark to answer the questions which follow.

Moreland Library System

HOURS OF OPENING *Effective from February 1 1998*

	Brunswick Library	Campbell Turnbull Library	Coburg Library	Fawkner Library	Glenroy Library
Sunday	1pm-5pm	Closed	2pm-5pm	Closed	2pm-5pm
Monday	11am-8pm	11am-5.30pm	1pm-8pm	11am-5.30pm	10am-5.30pm
Tuesday	11am-8pm	11am-8pm	11am-8pm	11am-8pm	10am-8pm
Wednesday	11am-8pm	11am-5pm	10am-8pm	11am-5pm	10am-8pm
Thursday	11am-8pm	11am-5.30pm	10am-8pm	11am-5.30pm	10am-8pm
Friday	11am-5pm	11am-5pm	10am-8pm	11am-5pm	10am-5.30pm
Saturday	10am-1pm	10am-1pm	9am-1pm	10am-1pm	9am-1pm

QUESTION 12.1

What time does the Fawkner Library close on Wednesday?

……...……………………………

QUESTION 12.2

Which library is still open at 6 p.m. on Friday evening?

A. Brunswick Library

B. Campbell Turnbull Library

C. Coburg Library

D. Fawkner Library

E. Glenroy Library

Sample item 4 is a released PISA item that assesses basic access and retrieve tasks in a simple non-continuous text. Question 12.1 requires accessing the information directly from a row in the table which is likely to be Levels 1a or 1b, while Question 12.2 requires combining multiple criteria in order to access the correct information which is more likely Level 2.

Sample item 5

SUPERMARKET NOTICE

Peanut Allergy Alert
Lemon Cream Biscuits

Date of alert: 04 February

Manufacturer's Name: Fine Foods Ltd

Product Information: 125 g Lemon Cream Biscuits (Best before 18 June and Best before 01 July)

Details: Some biscuits in these batches may contain pieces of peanut, which are not included in the ingredient list. People with an allergy to peanuts should not eat these biscuits.

Consumer action: If you have bought these biscuits you may return the product to the place of purchase for a full refund. Or call 1800 034 241 for further information.

QUESTION 3

What is the name of the company that made the biscuits?

....

Sample item 5 is a released PISA item that assesses basic access and retrieve processes. Question 3, "What is the name of the company that makes the biscuits?" requires a small inference since the text says "manufacturer" rather than "company". Thus, as it stands, the item would likely be at Level 1b of proficiency. However, if it were modified to: "What is the name of the manufacturer that makes the biscuits?", then the item would require a literal match and would be considered as Level 1c.

Notes

1. The term "processes" from the 2018 framework is used instead of the term "aspects" used in previous versions.

2. In 2015 PISA was moved to computer-based delivery with additional consequences for the classification of text types. For more details the reader is referred to the PISA 2015 reading framework.

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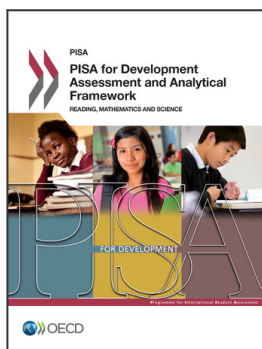
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