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CHAPTER 2

The reading assessment

HIGHLIGHTS

- The Assessments for Minimum Proficiency Levels (AMPL) for reading assesses the following key aspects of reading comprehension at upper primary level: retrieving information, interpreting information and reflecting on information (Table 2.1).
- The AMPL for reading is strongly aligned to the Global Proficiency Framework enabling reporting against SDG 4.1.1b.
- The assessment material included in the AMPL was selected from the UIS's Global Item Bank using a set of quality assurance guidelines. The 29 selected reading items came from nine different sources, with some originating in French, and others in English.

- The AMPL booklets contained a set of reading material and a set of mathematics material. The booklets were provided to students in their language of instruction (French or English) and students had one hour to complete the booklet.

INTRODUCTION

As outlined in Chapter 1, a main goal of the MILO study was to determine the impact of COVID-19 on learning outcomes for students at the end of primary school. In order to achieve this aim, Assessments for Minimum Proficiency Levels (AMPL) were designed to measure proficiency in reading and mathematics at the end of primary school in 2021. The construct validity of these assessments is addressed in this chapter. The development process led to highly reliable instrumentation (for details see Appendix B).

The performance of the 2021 population was compared to that of an equivalent cohort from a period prior to the COVID-19 outbreak. For a technical description of the analysis methods used to link the MILO data with the past historical assessment results, see Appendix B. The focus of this chapter is on the features of the AMPL for reading.

ASSESSMENT OF READING PERFORMANCE IN MILO

The MPL for upper primary for reading provided the overarching conceptualisation of reading in the AMPL. The parts of reading referred to in the MPL (described in detail later in this chapter) parallel those in the Global Proficiency Framework (GPF) (USAID et al., 2020a). As defined by the GPF, the Reading learning area comprises the following three domains:

- comprehension of spoken or signed language
- decoding
- reading comprehension.

The emphasis of the AMPL was on the third domain, reading comprehension. Comprehension of spoken or signed language was not included because it is discussed in the GPF only in relation to Grades 1–3. Decoding was also not included in the AMPL, partly because it is most relevant in the earliest years of school, and partly because these skills are most easily elicited in one-to-one assessments. In addition, the MPL for reading for upper primary (SDG 4.1.1b) assumes that these decoding skills have been largely mastered (ACER-GEM, 2019). The domain of reading comprehension, the emphasis of AMPL, is further broken down into three constructs: *retrieve information*, *interpret information* and *reflect on information*.

In order to ensure good coverage of the constructs in the AMPL, an assessment blueprint that specified targets for each of the three constructs within the domain of reading comprehension

was developed. The targets were a range rather than a single number. The targets for each of the three constructs within the domain of reading comprehension were as follows:

- retrieve information: 35–45%
- interpret information: 45–55%
- reflect on information: 15–25%

These targets were developed with reference to existing large-scale and regional assessments, and the work of the GPF alignment group.⁴ In relation to the former, this breakdown is analogous to that used in the large-scale international assessment PIRLS (Progress in International Reading Literacy Study) (Mullis & Martin, 2019) in which the equivalent breakdown is 20% retrieve information, 60% interpret information and 20% reflect on information. The slightly greater emphasis on items relating to retrieving information in AMPL was considered appropriate to match with the prior assessment experiences of students in the six MILO countries.

The AMPL assessment is strongly aligned to the GPF. An assessment is considered strongly aligned, and therefore, suitable for reporting against SDG4.1.1b when there are at least five items that assess the construct retrieve information and at least five items that assess the construct *interpret information*. Additionally, as a set, the items should cover at least 50 per cent of the Reading sub-constructs defined in the GPF.⁵ The targets for the AMPL allow this specification to be met. Table 2.1 shows the classification of the items in the assessment against the specified targets, revealing that the final selection was closely aligned to the targets. Appendix C provides further detail about the constructs and sub-constructs in the GPF.

Items were selected from the UIS's Global Item Bank to meet the assessment blueprint after an extensive review process. Two expert reviewers for each of English and French independently reviewed a set of material. The review included only multiple-choice or complex-multiple-choice

TABLE 2.1 Final AMPL reading items and targets by construct

Construct	Items in AMPL (no.)	Items in AMPL (%)	Target percentage (%)
Retrieve information	10	34	35–45
Interpret information	14	48	45–55
Reflect on information	5	17	15–25

Note: Due to rounding, percentages do not add to 100%.

items as it was desirable to exclude any items that could not be scored automatically. The reviewers were provided with item review guidelines and asked to consider issues such as construct validity (whether the item assesses a part of reading comprehension), translatability (whether there are features of the material that might make it difficult to translate), cultural issues and technical criteria (clarity and correctness, centrality, appropriate level of difficulty). Only items that attained a high overall rating and for which no significant concerns were identified were considered for inclusion in the AMPL. From the set of suitable items, a selection was made that:

- met the requirements of the assessment blueprint
- contained items that originated in each of English and French
- represented a range of sources (nine different sources for the 29 items included)
- represented a range of materials (e.g. narrative texts, information texts)
- represented a range of difficulty levels that was considered appropriate for the target population and for measuring the minimum proficiency levels at the end of primary school.

There were two AMPL booklets; each contained a set of reading material and a set of mathematics material. The same set of material was used in each, but the order in which the material appeared was reversed: in Booklet 1 the reading material appeared first, and in Booklet 2 the mathematics material appeared first. This was

to minimise any possible effects of position – for example, if students became fatigued while completing the second half of the booklet, they might underperform. This study design, in which the material could be completed either in the first or second half of the assessment, mitigates the effects of the position of the content. In order to minimise the effects of fatigue, the testing time was limited to one hour (30 minutes each for reading and mathematics).

As described in Chapter 1, a key goal of the MILO project was to evaluate the impact of COVID-19 on learning outcomes by reporting against SDG indicator 4.1.1b ‘...the proportion of children and young learners ... at the end of primary ... achieving at least a minimum proficiency level in (i) reading and (ii) mathematics, by sex.’ (United Nations, 2015).

The MPL for the end of primary for reading is discussed and illustrated in the section that follows. This information is taken from a paper that was presented and endorsed in a 2019 meeting of the Global Alliance to Monitor Learning entitled ‘Minimum Proficiency Levels: Described, unpacked and illustrated.’ (ACER-GEM, 2019).

The MPL is described and elaborated in the following four ways, targeted at different audiences:

1. A nutshell statement: provides brief information for all readers about each learning area, by educational level.
2. An expanded statement: provides information suitable for those working in the field of education.

3. Descriptors by construct: these elaborations use more technical language, and are suitable for educators and researchers.
4. Sample items: a small set of sample items, one below, one at, and one above the MPL.

READING: END OF PRIMARY (SDG 4.1.1B)

1. Nutshell statement

Students independently and fluently read simple, short narrative and expository texts. They retrieve explicitly-stated information. They interpret and give some explanations about the main and secondary ideas in these texts, establish connections between main ideas in a text and their personal experiences.

2. Expanded statement

In a short, simple narrative or expository text, students read aloud at a pace and a level of accuracy that demonstrates understanding. They use previously-taught morphological (word-level) and contextual (sentence or text-level) clues to understand the meaning of familiar and unfamiliar words and to distinguish between the meanings of closely related words. When reading silently or aloud, they locate explicit information in a paragraph. They use that information to make inferences about behaviours, events or feelings. They identify the main and some secondary ideas in a text if they are prominently stated, and recognise common text types when the content and structure are obvious. They make basic connections between the text and their personal experience or knowledge.

3. Constructs and Descriptors

Decoding

In a short, simple narrative or expository text, students read at a pace and with a level of accuracy and prosody that meets minimum standards for fluency in the language of instruction.

Reading comprehension

RETRIEVING INFORMATION

Students use morphological or contextual clues to identify the meaning of most unfamiliar words, familiar words used in unfamiliar ways, different shades of meaning of closely related words, synonyms or basic figurative language.

They locate most pieces of explicit information when the information is prominent and found within a single paragraph containing no competing information.

INTERPRETING INFORMATION

Students establish the main idea of a text most of the time, when it is stated prominently in the text. They make simple inferences by relating two or more prominent pieces of explicitly stated information, when there no competing information, in order to identify behaviours, feelings, events and factual information.

REFLECTING ON INFORMATION

Students establish basic connections between the key ideas in a text and personal knowledge and experience.

They distinguish between text types (narrative and expository) and recognise some other common text types (e.g, poetry, recipe, game instructions.) when the content and structural clues are obvious.

SAMPLE ITEMS

Three sample items are included, one below, one at, and one above the MPL. Two English items and one French item are included. Two of the sample items are released items from the PASEC (Program for the Analysis of Education Systems) 2014 assessment (CONFEMEN, 2015) and were included in the AMPL.⁶ The other sample item is from ACER-GEM (2019).

EXAMPLE 1: An item below the MPL

Choose the picture that shows a **foot**.



A



B



C



D

Source: PASEC (CONFEMEN, 2015)

Domain	Construct	Descriptor	International percentage correct
Reading comprehension	Retrieve information ⁷	Match an image to a word.	75%

Task solution and commentary

Option C is selected. The matching of images to words is an important early reading skill and scaffolds the development of fluency. However, the MPL for upper primary states that students are able to read short texts 'independently and fluently'. Students at this MPL have therefore mastered such skills that act to support fluent reading. This item therefore falls below the upper primary MPL.

EXAMPLE 2: An item at the MPL

The Dwarf Lantern Shark

Are you afraid of sharks?

Some sharks are harmless. The Dwarf Lantern Shark cannot hurt you. It is so small you can hold it in one hand. It is a special shark because it can glow in the dark.

The Dwarf Lantern shark lives at the bottom of very deep oceans. There is no light where they live. They make their own light.

Why does the Dwarf Lantern Shark need to glow in the dark?

Source: Minimum Proficiency Levels: Described, unpacked and illustrated (ACER-GEM, 2019)

Domain	Construct	Descriptor	International percentage correct
Reading comprehension	Interpreting information	Link information from the end of one paragraph to the beginning of the next paragraph.	N/A Item not included in AMPL

Task solution and commentary

Students can link information across paragraphs when the information follows from the end of one paragraph to the start of the next paragraph. In 'The Dwarf Lantern Shark', students need to link the information about the shark glowing in the dark to the information about living in deep oceans where there is no light in order to understand why they make their own light. This item is an example of an item at the upper primary reading MPL (ACER-GEM, 2019).

EXAMPLE 3: An item above the MPL

Un drôle de rêve

1. Trois voleurs rencontrent un jour un paysan monté sur un âne et
2. tirant une chèvre au bout d'une corde. Le premier fait alors le pari de
3. dérober à l'homme sa chèvre, le deuxième parie qu'il lui prendra l'âne, et
4. le troisième qu'il le dépouillera même de ses habits.
5. Le premier voleur s'approche doucement, attache à la queue de l'âne la
6. clochette qui était suspendue au cou de la chèvre, et fuit avec celle-ci. Le
7. paysan, s'étant aperçu du vol, rencontre le deuxième voleur et lui
8. demande s'il n'a pas vu quelqu'un s'enfuyant avec une chèvre.
9. - Si, dit le voleur. Il est parti par là. Dépêche-toi, tu peux le rejoindre. Si
10. tu veux, je garderai ton âne pendant ce temps-là.
11. Le pauvre paysan court dans la fausse direction et, quand il revient,
12. l'homme et l'âne ont évidemment disparu. Il arrive en gémissant devant
13. un puits au bord duquel un homme gémit aussi. Cet homme est le
14. troisième voleur. Il se plaint au paysan :
15. - J'ai laissé tomber au fond de ce puits une caisse pleine d'argent. Je ne
16. sais comment la rattraper car je ne suis pas très adroit et j'ai peur de
17. l'eau.
18. - Qu'à cela ne tienne ! dit le paysan, qui est très serviable. Moi, je peux te
19. la retrouver.
20. - Si tu le fais, peut-être que je te donnerai une partie de l'argent qu'elle
21. contient, dit le voleur.
22. Le paysan se déshabille donc et descend dans le puits. Il n'y trouve
23. aucune caisse mais, quand il remonte, le voleur a disparu avec ses
24. vêtements.
25. Je me suis réveillé tout en sueur, heureusement que ce n'était qu'un
26. rêve !

L'histoire dit « Il arrive en gémissant devant un puits... » à la ligne 12.
Comment le paysan se sent-t-il à ce moment de l'histoire ?

- A. il est désespéré
- B. il a soif
- C. il est nerveux
- D. il a sommeil

Source: PASEC (CONFEMEN, 2015)

Domain	Construct	Descriptor	Percentage correct in French-speaking countries ⁸
Reading comprehension	Interpreting information	Link information in order to make an inference about a character's feelings	23%

Task solution and commentary

Option A (il est désespéré) is selected. This item requires students to link information across two paragraphs. The description of the 'interpreting' construct above states that students at the MPL can make simple inferences by relating two or more prominent pieces of explicitly stated information, when there is no competing information. To correctly answer this item, students do need to make an inference. However, it is not a simple one, since the information is not prominent, and there is also competing information (a fairly long text with many characters). Therefore, this item is above the upper primary MPL.

Endnotes

- 1 The proportion of children and young learners ... at the end of primary ... achieving at least a minimum proficiency level in (i) reading and (ii) mathematics, by sex (United Nations, 2015).
- 2 In 2016 for Zambia
- 3 Contextual data from the historical population for Zambia was not available in a format suitable for direct comparisons of populations. Some contextual data was not available from the Kenyan historical assessment.
- 4 The GPF advisory group on alignment was a working group comprised of psychometricians and subject matter experts who contributed to the development of the Global Proficiency Framework in 2020. The group was convened to formulate a set of alignment criteria to allow assessments to be compared to the GPF in order to determine their suitability for evaluating and reporting against SDG 4.1.1. The alignment criteria are outlined in detail in: USAID, UIS, UK Aid et al. (2020) *Policy Linking Toolkit for Measuring Global Learning Outcomes – Linking assessments to the Global Proficiency Framework*.
- 5 From SDG 4.1.1 Review Panel: March 2021.
- 6 These items were reproduced with permission from CONFEMEN.
- 7 For the purposes of AMPL, this item was classified as “Retrieve information” rather than “Decoding” as consistent with the GPF for reading (USAID et al, 2020a) which lists matching a given word to an illustration as an example of retrieving information.
- 8 The four French-speaking countries were Burkina Faso, Burundi, Côte D'Ivoire and Senegal.
- 9 These items are used with permission from CONFEMEN.
- 10 Zambia's historical assessment was conducted in 2016. All other countries' historical assessments were conducted in 2019.
- 11 Historical results are not reported for Kenya since the 2019 assessment of English in Kenya did not contain a sufficient number of reading comprehension item to align with the reading constructs within the GPF.
- 12 In the MILO project, students were the primary sampled unit. All results from the School Questionnaire are reported using student weights that are representative of the population. Therefore all results from school principals need to be interpreted in numbers of students.
- 13 There is no consensus among researchers and practitioners on which are the best indicators to operationalise SES. Typical children SES indicators are parents' occupation and education level, household income and home possessions. For a review of SES indicators used in educational research and other disciplines such as health, economics and sociology see Osses et al. (forthcoming).
- 14 Results for Kenya have been excluded based on data validation issues
- 15 The population chosen by countries to report against varied from Grade 5 to Grade 7.
- 16 A wealth index for Kenyan students was computed based on common items from the historical assessment and the AMPL. Comparisons for boys over time revealed higher scores on the wealth index in the 2021 population in comparison to the historical population.
- 17 For further information on different learning approaches and the benefits, considerations and enabling conditions, see for example Dabrowski et al. (2020).
- 18 For further recommendations relating to education in emergencies, see the Policy Monitoring tool developed for building resilient education systems (Tarricone et al., 2021).
- 19 Magnitude of item by gender interaction estimates from a facet model. See PISA 2006 Technical Report (OECD, 2009a).
- 20 'Not reached' items were defined as all consecutive missing values at the end of the test, except the first missing value of the missing series which was coded as 'embedded missing' i.e. coded the same as other items that were presented to the student but which did not receive a response. Omitting the 'not reached' items from the item calibration ensures the item difficulties not to be over-estimated.
- 21 The psychometric properties of the reading items administered in Burundi was unexpectedly inconsistent with those of the other countries. In particular, the response patterns in nearly all of the reading items was consistent with high rates of guessing and resulted in very low discrimination. It was therefore decided to exclude Burundi from the international reading item calibration. Burundi student reading proficiency estimations were subsequently based on the international calibration.
- 22 Expected a-posteriori/plausible value (EAP/PV) reliability (Adams, 2005).
- 23 A two-dimensional model with Quadrature estimation with 40 nodes was used.
- 24 So-called weighted likelihood estimates (WLEs) were used as ability estimates in this case (Warm, 1989).
- 25 Conceptual background and application of macros with examples are described in the PISA Data Analysis Manual SPSS®, 2nd edn (OECD, 2009b).