



United Nations  
Educational, Scientific and  
Cultural Organization



UNESCO  
INSTITUTE  
FOR  
STATISTICS



GLOBAL  
ALLIANCE  
TO MONITOR  
LEARNING



# Monitoring adult literacy and numeracy for Indicator 4.6.1

## Progress on indicators 4.6.1 and recommendations

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# SDG Indicator 4.6.1 and Progress

## SDG Indicator 4.6.1 calls upon countries to report on:

*"Percentage of population in a given age group achieving at least a fixed level of proficiency in functional (a) literacy and (b) numeracy skills, by sex"*

## Progress

- **Two expert group meetings:** *7-8 November 2017 and 17-18 May 2018*
- **Setting up of two expert groups on literacy and numeracy**
  - Multiple consultations between June and October 2018;
  - Development of two papers with tentative recommendations for GAML 5



## **Numeracy Core Group (NCG):**

**Iddo Gal**, University of Haifa, Israel (Group Facilitator)

**Diana Coben**, King's College London & U. of East Anglia, UK

**Jean-Pierre Jeantheau**, Agence Nationale de Lutte contre l'Illettrisme (ANLCI), France

**Koji Miyamoto**, World Bank, USA

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## **Literacy Core Group (LCG):**

**Anke Grotlüschen**, University of Hamburg, Germany (Group Facilitator)

**Anil Kanjee**, Tshwane University of Technology, South Africa

**Greg Brooks**, University of Sheffield, UK

**Scott Murray**, DataAngel, Canada



## Key proposals of the experts meetings:

- To adopt the UNESCO working definition of literacy (2005) for indicator 4.6.1
- To use the PIAAC conceptual framework as a basis for developing a global framework for indicator 4.6.1
- To measure literacy and numeracy separately
- To focus on reading as the domain for global comparability for literacy. Writing, which was considered as an integral component of literacy skills, could be assessed at the national level
- To develop global reporting frameworks to cover the lower levels of the literacy and numeracy skills spectrum (below PIAAC level 1 as a reference point)



# Outline

## Tentative recommendations for GAML5 by the Literacy and Numeracy Core Groups

Recommendation on *definitions and domains for assessment*

Proposal/Recommendation on *global reporting schemes that cover the lower levels of the literacy and numeracy skills spectrum (below PIAAC level 1 as a reference point)*

Proposal/Recommendation on *“fixed” minimum proficiency levels for literacy and numeracy*

Proposal/Recommendation on *assessment design options and interim and long term strategies*

Recommendation on *reporting options on literacy and numeracy (UIS)*

## **Recommendation to use the UNESCO (2005) working definition of literacy (inclusive of numeracy):**

*Literacy is the ability to identify, understand, interpret, communicate and compute, using printed and written materials associated with varying contexts. It involves a continuum of learning in enabling individuals to achieve their goals, to develop their knowledge and potential, and to participate fully in their community and wider society.*

## **Proposal to use a distinct definition for numeracy for measurement and reporting purposes with regard to indicator 4.6.1 (PIAAC, OECD, 2012)**

*Numeracy is the ability to access, use, interpret, and communicate (and critically evaluate) mathematical information and ideas, in order to engage in and manage the mathematical demands of a range of situations in adult life.*

*Numerate behavior involves managing a situation or solving a problem in a real context, by responding to mathematical content/information/ideas represented in multiple ways.*



# Reporting scheme for literacy



# LCG Recommendation: Reporting Scheme for Literacy

Level	Description / Difficulty level
<b>E</b>	Skills related to PIAAC/LAMP <i>lower</i> Level 3 (276–325 score range)
<b>D</b>	Skills related to PIAAC/LAMP Level 2 (226–275 score range)
<b>C</b>	Skills related to PIAAC Level 1 (176–225 score range)
<b>B</b>	<b>Sentence Literacy Level</b> (126–175 score range)
<b>A</b>	<b>Pre-Literacy Level</b> (75–125 score range)



# LCG Recommendation : reporting level in literacy

## Description of proposed Level A

Individuals at this level can:

- Match a given word from a question in another text (less than one page) with helpful layout like headlines, bulleted lists, bold print, etc.;
- Recognize their own name and address;
- Recognize familiar brands or signs logographically (stop, pull/push, brands).



# LCG Recommendation: reporting level in literacy

## Description of proposed Level B

(Based on below PIAAC-1 Level 1+ Level One Study in Germany + Skills for Life in UK)

Individuals at this level

- can read brief texts on familiar topics
- can locate a single piece of specific information identical in form to information in the question or directive; and
- are not required to understand the structure of sentences or paragraphs and only need to demonstrate basic vocabulary knowledge.

Text at this level consists of 1–2 sentences, of roughly 5–9 words. Sentences follow a simple subject–verb–object (SVO) structure without any subordinate clause.

Familiar topics are presented in the text with frequently used words, excluding any foreign or technical words.

Tasks at this level do not make use of any features specific to digital texts.



# LCG Recommendation: reporting level in literacy

## **Level C: Skills related to PIAAC Level 1 (from PIAAC Level 1 descriptor)**

Most of the tasks at this level require the respondent to read relatively short digital or print continuous, non-continuous, or mixed texts to locate a single piece of information that is identical to or synonymous with the information given in the question or directive.

Some tasks, such as those involving non-continuous texts, may require the respondent to enter personal information into a document. Little, if any, competing information is present. Some tasks may require simple cycling through more than one piece of information.

Knowledge and skills in recognizing basic vocabulary determining the meaning of sentences, and reading paragraphs of text, is expected.



# Reporting scheme for numeracy



# NCG Recommendation: Reporting Scheme for Numeracy

Level	Description / Difficulty level	Comments
<b>E</b>	Skills related to PIAAC lower 'Level 3	
<b>D</b>	Skills related to PIAAC / LAMP Level 2	
<b>C</b>	Skills related to PIAAC Level 1	
<b>B</b>	<i>Very-low-level skill</i> (mostly oral skills) mental calculation, measurement Knows few print-based formal symbols Can do only very simply written problems	Based on: - oral assessment - text-free stimuli - “components”
<b>A</b>	Cannot recognize written digits Rudimentary mental computation skills	



# NCG Recommendation: reporting level in numeracy

## Example items at level B:

### Example 1: "Shirts" items from the IVQ (Oral administration)

- Q1. "Which one is the cheapest shirt of the three?"  
Q2. "How much less does the blue shirt cost than the red one?"  
Q3. "What is the price if you buy three blue T-Shirts?"



### Example 2: Find the total number of bottles in the two full cases from ALL/PIAAC





# Setting a fixed minimum proficiency level for literacy



# LCG Recommendation: Reporting Scheme for Literacy

Level	Description / Difficulty level	Comments
<b>E</b>	Skills related to PIAAC/LAMP <i>lower</i> Level 3 (276–325 score range)	
<b>D</b>	Skills related to PIAAC/LAMP Level 2 (226–275 score range)	
<b>C</b>	Skills related to PIAAC Level 1 (176–225 score range)	"Fixed" minimum level for high- and upper-middle-income countries
<b>B</b>	<b>Sentence Literacy Level</b> (126–175 score range)	"Fixed" minimum level for lower middle income and low-income countries
<b>A</b>	<b>Pre-Literacy Level</b> (75–125 score range)	



# LCG Recommendation: reporting level in literacy

## Setting the fixed minimum proficiency level for literacy:

- Proposed Level B for low-income and lower-middle-income countries (with skill below PIAAC Level 1);
- Proposed Level C for upper-middle income and high-income countries (with skills equivalent to PIAAC Level 1).

## **Logic:** statistical arguments + policy considerations

- STEP data show that over 50 per cent of the adult urban population in middle income countries (e.g. Kenya and Jakarta) are at and/or below PIAAC level 1.
- Therefore, a single fixed level for global reporting could lead to a majority of countries having a large percentage of their adult population classified as being below the minimum literacy proficiency level.
- As a result, progress would be difficult to detect, were a single threshold applied globally.



# Developing a fixed minimum proficiency level for numeracy



# NCG Recommendation 3: Reporting Scheme for Numeracy

Level	Description / Difficulty level	Comments
<b>E</b>	Skills related to PIAAC lower 'Level 3	
<b>D</b>	Skills related to PIAAC / LAMP Level 2	
<b>C</b>	<b>Skills related to PIAAC Level 1</b>	
<b>B</b>	<i>Very-low-level skill</i> (mostly oral skills) mental calc, measurement Knows few print-based formal symbols Can do only very simply written problems	<p><b>"Fixed" minimum level for reporting</b></p> <p>Based on:</p> <ul style="list-style-type: none"> <li>- oral assessment</li> <li>- text-free stimuli</li> <li>- "components"</li> </ul>
<b>A</b>	Cannot recognize written digits Rudimentary mental computation skills	"Innumerate"



# NCG Recommendation: reporting level in numeracy

**Set the "fixed" reporting level in numeracy at the *minimum level* of cognitive skills - which is conceptually consistent with the (lower side of the) description of PIAAC Level 1**

**Logic:** Statistical arguments + scholarly & policy considerations

- This level enables individuals to *begin* to successfully engage with and manage basic forms of written representations of mathematical information, beyond having "mental math" skills.

# NCG Recommendation: reporting level in numeracy

## **A tentative description of this minimal proficiency level: (Based on PIAAC-1 Level 1+ LAMP + additions by NCG)**

The respondent can carry out basic mathematical processes in common, concrete contexts where the mathematical content is explicit, with either little **or no** text and minimal distractors.

...Tasks usually require that people can perform simple one-step processes; understand representations of numerical entities (e.g., positions on a number line to 100),

...perform basic arithmetic operations related to written or visual representations of quantities; understanding simple proportions (e.g., fractions or percents such as  $\frac{1}{2}$  or 50%);

...locate, identify, and use elements of simple graphical or spatial representations; and

... understand basic information about everyday measurement systems such as regarding time, length or weight.



# Assessment strategies and design options



# LCG Recommendation: Assessment Strategies

## **Interim strategy: A sentence processing test:**

This option is recommended to Member States to enable them to report on a minimum fixed proficiency level for global comparability.

**Long-term strategy:** Developing a core item pool for a short literacy assessment module that focuses on lower proficiency levels of reading - mainly fluency, accuracy, and comprehension - with the further possibility for countries to add their own contextualized items for policy and programme intervention goals.



# NCG Recommendation: Assessment design options

## Core item pool - Numeracy

(50-60 items covering key content areas and reporting levels  
+ translation and adaptation guidelines)

### Option 1

(like LAMP & PIAAC)

**Computer + Printed**

Adaptive: computer

### Option 2

Proposed for better adoption

**Shorter, Printed only**

Adaptive: Interviewer

### Screeners + full test

Use full item core pool

Needs more assessment time

### Screeners + smaller tests

◆ “base test”: cover levels B+C

◆ “higher test”: cover levels D+E





# Reporting Options

## Self-report and simple assessment tools

Dichotomous (Yes/No response to 'can you read or write' question)

or

actually reading a written sentence

5/10 questions assessing skills use in daily functioning

## National and Cross-National Assessment Survey

Cross-National Skills Survey

– one domain (literacy)

– both domains (literacy and numeracy)

National Skills Survey

– one domain (literacy)

– both domains (literacy and numeracy)

## Estimations and data gap filling

Based on dichotomous response to literacy question in household survey to produce literacy estimates

Based on skills survey and a set of population distribution parameters to produce model-based estimates



# Thank you!