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ANALYSIS OF CONTEXT QUESTIONNAIRES IN INTERNATIONAL LARGE-SCALE ASSESSMENTS (ILSAs)

Identifying Instruments, Items, and Best Practices for Monitoring Educational Goals

14 January 2025

Global Alliance to Monitor Learning

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1. Objectives[1]

The UNESCO Institute for Statistics (UIS) is central to defining and measuring globally comparable educational indicators. In this effort, UIS launched the Global Alliance to Monitor Learning (GAML), providing a platform to discuss technical approaches to measure learning outcomes. This initiative engages a diverse group of stakeholders including researchers, UN agencies, international organizations, and NGO partners, organizing task forces aimed at assessing specific educational objectives.

As the deadline for the Agenda 2030 approaches, global leaders have launched a 'Decade of Action'. This initiative is designed to accelerate sustainable solutions to the world's most pressing challenges, with a significant focus on improving educational quality globally.

The current project investigates the potential use of International Large-Scale Assessments (ILSAs) to evaluate and monitor SDG 4 targets. It examines which assessments and instruments are currently being used and which ones could potentially be used, focusing on questionnaires directed at students, parents, teachers, and school directors, and pinpointing specific items used to measure different concepts. Ultimately, the study will identify the most effective ILSA tools to measure SDG 4 targets, based on criteria including coverage, frequency, and validity.

The primary objective of this document is to report on an in-depth analysis of the potential use of International Large-Scale Assessments (ILSAs) in measuring educational outcomes related to key educational indicators. Specifically, the project aims to:

1. Identify and analyze the background questionnaires used in ILSAs: Determine which assessments and instruments are currently employed to measure SDG 4 targets and which ones could potentially be used, focusing on specific items within student, parent, teacher, and school director questionnaires.

2. Assess utilization across contexts: Investigate to what extent the use of these instruments (items/scales) across different educational contexts is validated by empirical evidence that ensures the consistency and comparability of the data collected across different settings.

3. Develop Criteria for item/scale Evaluation: Establish criteria for evaluating the effectiveness of these instruments (items/scales), considering additional factors such as coverage, periodicity, and validity, to identify best practices for monitoring target goals.

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[1] This report was commissioned by the UNESCO Institute for Statistics (UIS) and authored by Diego Degetau, Luis Medina Gual and Andrés Sandoval Hernández.

This document will leverage existing data from multiple ILSAs and synthesize findings to offer a comprehensive overview of the current landscape and future possibilities in educational assessment.

In order to achieve these objectives and aims, the authors of this report undertook the following tasks:

1. Debrief of Indicators and ILSAs: The task involved conducting a comprehensive literature review to identify and document various indicators and the corresponding International Large-Scale Assessments (ILSAs) used.

2. Methodology Development: This task focused on developing and validating the methodology for the systematic review of existing instruments.

3. Indicator Analysis: This task consisted of a detailed content analysis and synthesis of information from the International Large-Scale Assessment (ILSAs) used to evaluate each indicator. The result is a separate analytical report for each target identified in the corresponding ILSAs.

4. General Report: The final task was to compile the findings from the individual reports into a comprehensive final report that considered a summary of all the findings, a detailed overview of the analysis by reviewing each of the project's objectives and setting general conclusions and recommendations for UNESCO.

2. Methodology

The methodology was structured into several key stages, ensuring a comprehensive and systematic approach to the analysis.

1. **Identification of Evidence from UNESCO's Database:** The initial step involved identifying and collecting all relevant tests and questionnaires available in UNESCO's database and other sources (e.g., ILSA Gateway). This process was crucial in establishing a strong foundation for the project. It included finding the most updated versions of tests and instruments in PDF format, as well as additional questionnaires aimed at different stakeholders: students, school directors, teachers, families, and applications. We ensured that all materials were up to date and relevant to the study's objectives, thereby maximising the reliability of our data sources.
2. **Understanding and Operationalisation of Indicators:** Each of the indicators was analyzed to understand their conceptualisation and operationalisation. This involved a detailed examination of each indicator's definitions and requirements. We classified the indicators into three dimensions based on the predefined categories:

- National Surveys: Indicators measured through national statistics and survey data. These indicators relied on data collected at the national level, providing insights into broader trends and patterns within the education system.
- Achievement Tests: Indicators assessed by tests that evaluate skills, knowledge, or competencies. These tests were instrumental in understanding the learning outcomes and achievements of students across different educational contexts.
- Searchable Indicators: Indicators that could potentially be measured through International Large-Scale Assessments (ILSAs). These indicators were identified as having the potential to be measured using data from international assessments, which allowed for cross-country comparisons and benchmarking.

3. Analysis of Tests and Questions: We then identified applicable tests and potential questions for measuring each indicator. This analysis involved studying the relevance of the tests and questions to the conceptual and operational definitions of the indicators. We created an initial checklist to assess whether each indicator could feasibly be measured based on its conceptualisation. The checklist served as a critical tool for ensuring consistency and accuracy in our evaluation process. By systematically reviewing each test and question, we were able to determine their suitability for measuring the indicators and make informed decisions about their inclusion.
4. Determining Measurability of Indicators:
    - Measurable Indicators: For indicators deemed measurable, we conducted a detailed content analysis of each question in the tests to generate individual reports for each indicator, test, and question. This included evaluating the pertinence of the questions to both the conceptual and operational definitions of the indicators and assessing whether the questions collectively provided sufficient coverage to operationalise the indicator. The content analysis was meticulous, ensuring that each question was scrutinised for its relevance and effectiveness in capturing the intended data. This allowed us to provide a clear and detailed report on the strengths and weaknesses of each test.
    - Non-Measurable Indicators: For indicators that could not be measured through ILSAs, we added conclusions explaining why measurement was not possible. Common reasons included the lack of valid data sources through ILSAs or the need for specific national statistics that were beyond the scope of ILSAs. In such cases, we provided detailed

explanations to clarify the limitations and proposed potential alternative methods for future assessments.

5. **Analysis of Limitations:** For each test, question, and indicator, we conducted an analysis of the limitations. This included identifying gaps in operationalisation, such as age-related constraints or insufficient response options, which affected the comprehensive coverage of the indicator. The limitations analysis was crucial for understanding the areas where the current methods fell short and for identifying opportunities for improvement. By documenting these limitations, we were able to provide a transparent account of the challenges faced and suggest ways to address them in future iterations of the project.
6. **Recommendations:** Where applicable, recommendations were made to adjust existing ILSAs to enable the measurement of the indicators. This included identifying changes in questions or proposing additional questions to improve coverage and reliability. The recommendations were practical and actionable, designed to enhance the effectiveness of future assessments. By suggesting specific modifications, we aimed to ensure that the indicators could be measured more accurately and comprehensively in subsequent assessments. In specific cases, we also suggested which ILSA best suits the assessment of the reviewed indicator.

3. Indicator Analysis

The current landscape of International Large-Scale Assessments (ILSAs) reveals both strengths and limitations in assessing progress toward SDG 4 indicators. While ILSAs are highly effective in measuring core academic competencies such as literacy, numeracy, and science proficiency, they exhibit significant limitations when assessing broader, non-academic indicators related to inclusivity, life skills, vocational training, school safety, and overall educational equity. This gap is partly due to the original design of ILSAs, which primarily target academic knowledge and skills relevant for comparing educational systems internationally. As a result, ILSAs lack adequate coverage of certain SDG 4 indicators that address social, emotional, and life-skills-based learning, as well as the educational environments and teacher qualifications that support such learning.

Moreover, the heavy reliance on self-reported data in many ILSA questionnaires introduces a degree of bias and subjectivity. For example, student responses on issues related to school safety or bullying (e.g., in PISA) can vary significantly depending on personal perception, cultural context, and social desirability bias. This affects the reliability of these measurements, particularly in sensitive areas that may not be consistently reported. Furthermore, ILSAs often focus on school-aged children and adolescents, leading to gaps in measuring access to education for marginalized populations, out-of-school youth, and adults in non-formal or informal education systems—populations essential for indicators focused on broader educational inclusivity and lifelong learning.

Another significant limitation is the methodological targeting of populations by ILSAs. While most ILSAs have set targets for their delivery, many indicators extend beyond these targets, seeking to cover a broader age range with more sociodemographic variety. This methodological limitation is critical for the use of ILSAs in assessing SDG 4 indicators.

Significant gaps also exist in indicators targeting teacher qualifications (SDG 4.c.1) and school resources (SDG 4.a.1). These indicators rely on administrative or systemic data, which ILSAs were not designed to capture, as they focus mainly on student-level outcomes rather than teacher profiles or school infrastructure. Additionally, indicators related to life skills education, such as SDG 4.7.2 (life skills-based HIV and sexuality education) and safety (e.g., SDG 4.a.2, focused on bullying), are either entirely unmeasured or inadequately covered due to ILSAs' emphasis on cognitive domains over socio-emotional or health-related domains.

Indicators such as SDG 4.3.1 (participation in technical, vocational, and tertiary education) are generally underrepresented due to the academic focus of ILSAs and their lack of adaptability to non-traditional educational contexts. ILSAs are structured within the formal education system, neglecting non-formal, informal, or community-based learning environments that are critical for assessing educational access and inclusivity.

Considering the structure reviewed in the methodology section of this report, the following table presents the general findings of the performed indicator analysis. It shows the

number of items by ILSA that provide information contributing to the assessment of each indicator to a certain extent. For an in-depth analysis of each indicator, please refer to the annex.

Table 1. Number of analyzed items by ILSA and Indicator.

ID	Classification	ERCE	ICILS	PIRLS	PISA	TIMSS	PASEC	SEA-PLM	PILNA	Total	Recommendation
4.1.1	Achievement test										-
4.1.3	National Surveys										-
4.1.4	National Surveys										-
4.1.5	Searchable	3		1	1	1				6	PISA
4.1.6	National Surveys										-
4.1.7	National Surveys										-
4.2.1	Searchable	1		4	1	5				11	None recommended
4.2.2	Searchable	1		1	4	1			1	8	None recommended
4.2.3	Searchable	1		1	1	1		1		5	None recommended
4.2.4	Searchable			1	1	1				3	None recommended
4.2.5	National Surveys										-
4.3.1	National Surveys										-
4.3.2	National Surveys										-
4.3.3	National Surveys										-
4.4.1	Searchable	5	4		4	3				16	ICILS
4.4.2	Searchable		3		2					5	None recommended
4.4.3	Searchable			1	2					3	PISA
4.5.2	Searchable	2		1	1	2			1	7	PILNA
4.5.4	National Surveys										-
4.6.1	Achievement test										-
4.6.2	Achievement test										-
4.7.1	Achievement test										-
4.7.2	National Surveys										-
4.7.4	Achievement test										-
4.7.5	Achievement test										-
4.a.1	Searchable	1			2		1	1		5	ERCE
4.a.2	Searchable				3	2		1	1	7	PISA
4.c.1	Searchable	7			2	7	1	1	1	19	PASEC
4.c.2	Searchable	14			3	4				21	TIMSS
4.c.3	National Surveys										-
4.c.4	Searchable	5								5	TIMSS
4.c.5	National Surveys										-
4.c.6	National Surveys										-
4.c.7	Searchable	2				1	1	1	1	6	SEA-PLM
Total		42	7	10	27	28	3	5	5		

3.1 Limitations of ILSAs in Measuring SDG 4 Targets: Identification and Analysis of the Background Questionnaires Used in ILSAs

The primary aim of this objective was to identify and analyze the questionnaires utilized in International Large-Scale Assessments (ILSAs) to determine which are currently employed or could potentially be used to measure Sustainable Development Goal 4 (SDG 4) targets. The focus was on specific items within questionnaires directed at students, parents, teachers, and school directors.

As previously reviewed, our comprehensive analysis revealed that while ILSAs such as PISA, TIMSS, PIRLS, and ERCE are effective in assessing core academic competencies like literacy, numeracy, and science, they present significant limitations when it comes to measuring broader, non-academic SDG 4 indicators. These limitations include:

a) Insufficient Coverage of Non-Academic Indicators: ILSAs were originally designed to evaluate academic knowledge and skills for international comparison. As a result, they lack adequate items that address social, emotional, and life skills-based learning, as well as educational environments and teacher qualifications that are crucial for holistic education.
b) Bias and Subjectivity in Self-Reported Data: Many ILSA questionnaires rely heavily on self-reported data, introducing bias and subjectivity. For instance, student responses on school safety or bullying can vary widely due to personal perceptions, cultural contexts, and social desirability bias, affecting the reliability of the data.
c) Focus on School-Aged Populations: ILSAs predominantly target children and adolescents within formal schooling systems, leading to significant gaps in measuring access to education for marginalized groups, out-of-school youth, and adults engaged in non-formal or informal education.

d) Methodological Limitations in Target Populations: While ILSAs have specific target populations, many SDG 4 indicators require data from a broader age range and diverse sociodemographic backgrounds. This mismatch limits the applicability of ILSAs for certain indicators.

Examples of analysis of Specific SDG 4 Indicators

Several SDG 4 indicators were analyzed to assess their measurability through existing ILSA questionnaires:

a) Indicator 4.1.1 *(Proportion of children and young people achieving minimum proficiency in reading and mathematics)*: Due to differences in target age groups and grade levels, ILSAs background questionnaires cannot accurately measure this indicator as they do not align with the specific requirements of the SDG framework.

b) Indicator 4.1.5 *(Percentage of children over-age for grade)*: Although questions from TIMSS, PIRLS, PISA, and ERCE provide some data on school entry age and grade repetition, they do not track students' progression over time, making it insufficient to measure this indicator fully.
c) Indicator 4.2.2 *(Participation rate in organized learning before primary school)*: Questions in PISA and other assessments focus on attendance and age of entry but overlook critical aspects such as the quality and duration of early learning programs.

d) Indicator 4.4.1 *(Proportion of youth and adults with ICT skills)*: While assessments like ICILS and PISA include questions on ICT exposure, they tend to measure frequency of use rather than actual proficiency levels, failing to capture true competency in ICT skills.

For a deep dive of each indicator analysis review the Indicator Analysis report.

Recommendations for Enhancing Measurement of SDG 4 Targets

To address these limitations, we propose the following recommendations:

a) Integrate ILSA Data with National and Regional Sources: UNESCO should collaborate with national governments to combine ILSA data with country-specific surveys, administrative records, and statistics from non-formal education sectors. This integration would provide a more comprehensive picture of educational progress.

b) Develop Standardized Frameworks and Guidelines: UNESCO could spearhead the creation of internationally recognized frameworks for non-academic indicators, such as socio-emotional learning, inclusive education practices, teacher qualifications, and school safety, to standardize measurement across countries.

c) Expand and Adapt Assessment Tools: Collaborate with ILSA administrators to develop optional modules or adapt existing questionnaires to include items on currently underrepresented indicators like safety perceptions and inclusive practices, ensuring that assessments are more aligned with SDG 4 targets.

3.2 Assessment of Utilization Across Contexts

The second objective focused on investigating the extent to which the use of ILSA instruments (items/scales) across different educational contexts is validated by empirical evidence that ensures consistency and comparability of the data collected.

Challenges in Validating ILSA Instruments Across Diverse Contexts

Our evaluation highlighted several challenges related to the utilization of ILSA instruments in varied educational settings:

a) **Cultural and Social Biases**: The heavy reliance on self-reported data in ILSAs can lead to inconsistencies due to cultural and social biases. Perceptions of concepts like school safety or bullying can differ significantly across cultures, affecting data reliability and comparability.
b) **Limited Applicability to Non-Formal Education**: ILSAs are primarily designed for formal education systems, which limits their applicability in contexts involving marginalized populations, out-of-school youth, or adults in non-formal education programs. This creates gaps in data for indicators that require broader educational context coverage.

c) **Methodological Constraints**: The standardized nature of ILSAs means they may not account for local educational practices or curricular differences, potentially impacting the validity of the instruments when applied in diverse settings.

Recommendations for Enhancing Consistency and Comparability

To improve the validation of ILSA instruments across different contexts, we recommend:

a) **Integrate ILSA Data with Local Sources**: Combining ILSA data with national surveys and administrative records can provide contextual information that enhances understanding and addresses local nuances.
b) **Develop Standardized Measurement Frameworks**: Establish internationally recognized definitions and guidelines for non-academic indicators to ensure that all countries measure concepts consistently, improving data comparability.

c) **Adapt Assessment Instruments**: Modify existing ILSA instruments or develop new modules that are sensitive to cultural and contextual differences, ensuring that items are relevant and understandable in various educational settings.

The analysis indicates a need for more empirical research to validate the use of ILSA instruments across diverse contexts:

a) **Assessing Cultural Impact on Responses**: Studies should examine how cultural factors influence responses to ILSA questionnaires and develop strategies to mitigate potential biases.

b) **Validating Instruments in Non-Formal Settings**: Research is needed to test the applicability and reliability of ILSA instruments in non-formal education contexts.

c) **Evaluating Adaptations and Extensions**: Investigate the effectiveness of adapted or expanded assessment tools in improving data validity and comparability across different settings.

3.3 Development of Criteria for Item/Scale Evaluation

The third objective aimed to establish criteria for evaluating the effectiveness of ILSA instruments (items/scales), considering factors such as coverage, periodicity, and validity, to identify best practices for monitoring target goals.

Based on our analysis, we propose the following criteria for evaluating the effectiveness of ILSA items and scales:

a) Alignment with SDG 4 Targets
   - Relevance: Items should directly measure concepts and skills pertinent to specific SDG 4 indicators.
   - Conceptual Accuracy: The operational definitions and constructs measured should align with official SDG frameworks.
   - Comprehensive Coverage: Items should thoroughly cover all dimensions of the indicator without significant gaps.

b) Validity and Reliability
   - Empirical Validation: Instruments should be supported by empirical evidence demonstrating validity and reliability across diverse contexts.
   - Bias Mitigation: Design items to minimize cultural, social, and self-reporting biases that could affect data accuracy.
   - Internal Consistency: Items within a scale should consistently measure the same construct, showing high inter-item correlations.

c) Coverage and Periodicity
   - Representative Sampling: Assessments should include a representative sample of the target population, including marginalized and diverse groups.
   - Educational Levels: Instruments should span all relevant educational levels pertinent to the SDG 4 indicators, from early childhood to adult education.
   - Regular Administration: Periodic assessments are necessary to monitor progress and identify trends over time.

d) Feasibility and Utility
   - Ease of Administration: Items should be straightforward to administer and comprehend, reducing respondent burden and enhancing data quality.
   - Policy Relevance: Data collected should be actionable, informing policy decisions and educational improvements.
   - International Comparability: Instruments should be designed to allow for meaningful comparisons between countries, adhering to international standards.

4. Recommendations

Building upon the comprehensive analysis of the strengths and limitations of current International Large-Scale Assessments (ILSAs) in measuring Sustainable Development Goal 4 (SDG 4) indicators, this section outlines key recommendations to enhance educational monitoring and evaluation to bridge the identified gaps and enhance the measurement of SDG 4 targets, aiming to integrate broader data sources, develop standardized frameworks, and adapt assessment tools for a more inclusive and accurate evaluation of global educational progress.

It is important to acknowledge that while these recommendations represent the overarching conclusions of the General Report, the specific recommendations detailed for each of the report's objectives and the analyses of individual indicators should also be considered in the overall evaluation.

UNESCO could lead efforts to create internationally recognized frameworks for non-academic indicators, including socio-emotional learning, inclusive education practices, teacher qualifications, and school safety. For instance, SDG indicators 4.a.1 and 4.c.1 address aspects like school infrastructure and teacher qualifications, which currently lack global uniformity in measurement. By establishing and disseminating guidelines on measuring these non-academic indicators, UNESCO can enhance data comparability across countries, ensuring that every aspect of SDG 4 is monitored comprehensively and consistently.

To improve data reliability for SDG indicators not covered by ILSAs, UNESCO could create and disseminate standardized definitions and best practices for collecting non-academic data. Having a standardized framework ensures that each ILSA developer is measuring the same concepts in similar ways, which is essential for creating comparable data. Clear definitions and data collection guidelines will help countries consistently gather relevant, high-quality data across all dimensions of SDG 4.

Annex

The following Indicator Analysis report comprises two types of sub-reports, each meticulously structured to facilitate a comprehensive understanding of the indicators analyzed:

The sub-report #1 comprises indicators classified as *Achievement tests* or *National Surveys* which cannot be accurately assessed using ILSAs due to methodological limitations or insufficient data. Each sub-report includes:

- Title of the Indicator
- Classification (Achievement Test or National Survey)
- Conclusion: An explanation of why the indicator cannot be reported using current ILSAs.
- Recommendations: Suggestions toward achieving the end goal of accurate measurement, which may involve alternative data sources or methodological adjustments.
- *Example*: For Indicator 4.1.3 (Gross intake ratio to the last grade), the report concludes that ILSAs focus on student performance and do not gather the necessary administrative data, recommending the use of national enrollment records instead.

The sub-report #2 focuses on indicators classified as *Searchable*, meaning they have the potential to be measured through ILSAs. Each sub-report includes:

- Title of the Indicator
- Classification (Always Searchable)
- Detailed Table of Item Analysis: For each relevant item, the table provides the test name, analysis, items analyzed, and considerations.
- Conclusions: A synthesis of findings from the item analyses, reviewing the project's objectives.
- Recommendations: Proposals for assessing the indicator using ILSAs, which may involve adapting existing instruments or developing new methodologies.
- *Example*: For Indicator 4.1.5 (Percentage of children over-age for grade), the report analyzes questions from TIMSS, PIRLS, PISA, and ERCE. It concludes that while these assessments provide partial insights, they lack the ability to fully track student progression over time and recommends integrating longitudinal tracking to monitor age and grade progression.

4.1.1. Proportion of children and young people (a) in grades 2/3; (b) at the end of primary; and (c) at the end of lower secondary achieving at least a minimum proficiency level in (i) reading and (ii) mathematics, by sex

Classification: Achievement tests

This indicator cannot be accurately assessed using International Large-Scale Assessments (ILSAs) due to methodological limitations.

Conclusions:

Indicator 4.1.1 measures the proportion of children and young people achieving minimum proficiency levels in reading and mathematics at key stages of their education. The ILSAs (International Large-Scale Assessments) like PISA, TIMSS, and ERCE are often referenced to assess these skills across countries. However, none of these ILSAs can fully and effectively measure this indicator due to several limitations:

Indicator 4.1.1 specifically requires data for students in grades 2/3, at the end of primary education, and at the end of lower secondary education. However, ILSAs tend to focus on specific age groups (e.g., 15-year-olds in PISA) rather than specific grades. This mismatch makes it difficult to align ILSA data directly with the requirements of the indicator, which is grade-specific.

The cross-national nature of ILSAs like PISA and TIMSS often leads to differences in how countries participate, resulting in data that is not always nationally representative for all stages of education. For Indicator 4.1.1, nationally representative data across the required grades are essential to provide accurate measures of proficiency levels at key stages.

While ILSAs focus on core subjects like reading and mathematics, the proficiency levels required by Indicator 4.1.1 are context-dependent and can vary by country. ILSAs use a standardized framework, which may not capture the specific national curricula or the minimum proficiency levels defined by individual countries.

The minimum proficiency levels used in ILSAs are not always aligned with the specific benchmarks set by UNESCO for Indicator 4.1.1. Each assessment sets its own proficiency levels, which might not match the operational definition of the indicator, leading to gaps in comparability.

Recommendation:

The best approach for effectively measuring Indicator 4.1.1 is to implement nationally representative achievement tests tailored to each country's educational context. These tests should assess reading and mathematics proficiency in line with the UNESCO-defined minimum proficiency levels for each grade. By developing or adapting national assessments to align with the indicator's requirements, countries can generate more accurate and relevant data. Additionally, achievement tests can be integrated into national systems to provide regular, consistent data collection at the appropriate educational stages. This would ensure more targeted and actionable insights for improving education outcomes across the board.

4.1.3. Gross intake ratio to the last grade (primary education, lower secondary education)

Classification: Achievement tests

This indicator cannot be accurately assessed using International Large-Scale Assessments (ILSAs) due to methodological limitations.

Conclusion:

ILSA assessments like PISA, TIMSS, and ERCE focus on student performance but do not gather critical data on the number of new entrants into the last grade of primary or lower secondary education, which is necessary for calculating the Gross Intake Ratio. These assessments are typically designed for a specific target population, often excluding over-age students or dropouts, which are key components for this indicator. Additionally, the Gross Intake Ratio relies on administrative data, such as enrollment records and repeaters, rather than performance data, which is the primary focus of ILSAs.

Recommendation:

To accurately measure the Gross Intake Ratio to the Last Grade (Indicator 4.1.3), administrative data from schools is the best approach. Schools should provide enrollment records of new entrants into the last grade of primary or lower secondary education, including data on over-age students and repeaters. This data must be collected at a national level to ensure complete coverage. Furthermore, population estimates by single year of age, often sourced from censuses or demographic surveys, are necessary to finalize the calculation of the Gross Intake Ratio.

4.1.4. Out-of-school rate (1 year before primary, primary education, lower secondary education, upper secondary education)

Classification: Achievement tests

This indicator cannot be accurately assessed using International Large-Scale Assessments (ILSAs) due to methodological limitations.

Conclusion:

ILSA assessments focus exclusively on students who are already enrolled in school, assessing their academic performance rather than enrollment status. Consequently, these assessments do not capture data on children who are not enrolled in school, which is critical for measuring the out-of-school rate (Indicator 4.1.4). Since ILSAs are designed to gather data from within the education system, they lack mechanisms for collecting population-level or non-enrollment data, making them unsuitable for calculating the out-of-school rate. The indicator requires comprehensive data on both the total population of children within a specific age range and the number of those children enrolled in formal education, which ILSAs cannot provide.

Recommendation:

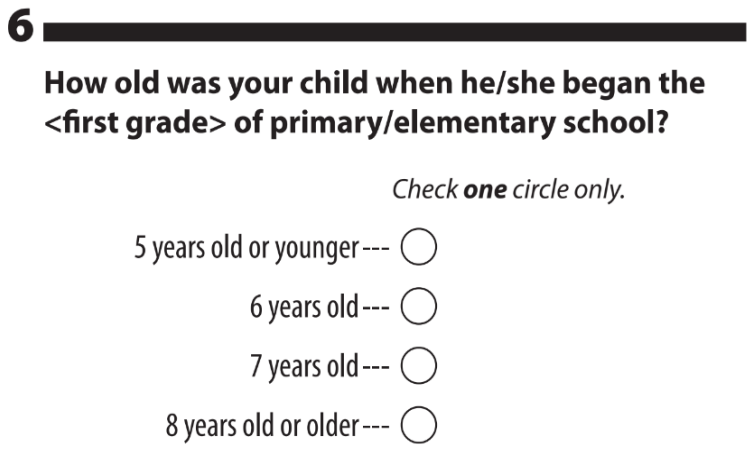
To accurately measure the out-of-school rate (Indicator 4.1.4), administrative data from schools and national household surveys are the best sources of data. Administrative records collected by ministries of education can provide detailed information on student enrollment by grade and age, while household surveys, such as Demographic and Health Surveys (DHS) or Multiple Indicator Cluster Surveys (MICS), can capture data on children who are not enrolled. These sources, combined with population data from censuses, allow for a comprehensive calculation of the out-of-school rate, covering both enrolled and non-enrolled children. This approach ensures full coverage of all children in the target age groups and education levels.

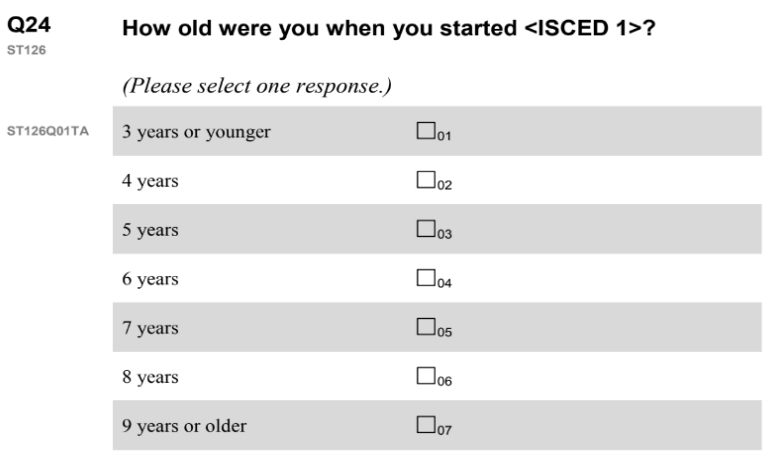
4.1.5 Percentage of children over-age for grade (primary education, lower secondary education)

Classification: Searchable

Test name	T19_HQ_4
Analysis	The TIMSS question is somewhat effective as an early indicator of potential over-age issues, but it is not comprehensive for fully measuring SDG 4.1.5. To effectively assess SDG 4.1.5, additional data on grade progression, repetition, and age tracking across years would be necessary.
Item	**5** [redacted] **How old was your child when he/she began the <first grade> of primary/elementary school?** *Check **one** circle only.* 5 years old or younger--- ◯ 6 years old--- ◯ 7 years old--- ◯ 8 years old or older--- ◯
Considerations	Does not measure progression: While the question helps identify the age of entry, it does not track whether the child continues to be over-age as they progress through the grades. A child who enters late may catch up or may continue to fall behind.

Test name	P21 Home Questionnaire
Analysis	The PIRLS question is somewhat effective as an early indicator of potential over-age issues, but it is not comprehensive for fully measuring SDG 4.1.5. To effectively assess SDG 4.1.5, additional data on grade progression, repetition, and age tracking across years would be necessary.

Item	Question 6  6 **How old was your child when he/she began the <first grade> of primary/elementary school?** *Check **one** circle only.* 5 years old or younger --- 6 years old --- 7 years old --- 8 years old or older ---
Considerations	Does not measure progression: While the question helps identify the age of entry, it does not track whether the child continues to be over-age as they progress through the grades. A child who enters late may catch up or may continue to fall behind.

Test name	**COMPUTER-BASED STUDENT questionnaire PISA 2022.pdf y PAPER-BASED STUDENT questionnaire PISA 2022.pdf**
Analysis	The Computer-based Student Questionnaire and Paper-based Student questionnaire PISA 2022 question is somewhat effective as an early indicator of potential over-age issues.
Item	Question 24  **Q24** ST126 **How old were you when you started <ISCED 1>?** *(Please select one response.)* ST126Q01TA 3 years or younger ☐01 4 years ☐02 5 years ☐03 6 years ☐04 7 years ☐05 8 years ☐06 9 years or older ☐07

Extra Questions after considerations:

Q25 ST127 **Have you ever repeated a <grade>?**

(Please select one response in each row.)

		No, never	*Yes, once*	*Yes, twice or more*
ST127Q01TA	At <ISCED 1>	☐01	☐02	☐03
ST127Q02TA	At <ISCED 2>	☐01	☐02	☐03
ST127Q03TA	At <ISCED 3>	☐01	☐02	☐03

Q26 ST260 **Have you ever missed school for more than three months in a row?**

(Please select one response in each row.)

		No, never	*Yes, once*	*Yes, twice or more*
ST260Q01JA	At <ISCED 1>	☐01	☐02	☐03
ST260Q02JA	At <ISCED 2>	☐01	☐02	☐03
ST260Q03JA	At <ISCED 3>	☐01	☐02	☐03

Q27 ST261 **Why did you miss school for more than three months in a row?**

(Please select one response in each row.)

		Yes	*No*
ST261Q01JA	I was bored.	☐01	☐02
ST261Q02JA	I was suspended for something (e.g. violence, aggression, use of drugs, drug dealing).	☐01	☐02
ST261Q03JA	I was pregnant.	☐01	☐02
ST261Q04JA	I could not reach school because of transportation problems.	☐01	☐02
ST261Q05JA	I had to take care of a family member.	☐01	☐02
ST261Q06JA	I had to help with work at home, the family business, or on the family land.	☐01	☐02
ST261Q07JA	I had to get work to bring money home.	☐01	☐02
ST261Q08JA	I was sick.	☐01	☐02
ST261Q09JA	I did not feel safe at school.	☐01	☐02
ST261Q10JA	I could not pay <school fees>.	☐01	☐02
ST261Q11JA	School was closed because of a natural disaster (e.g. flood, earthquake).	☐01	☐02

	Q28 ST062 **In the last two full weeks of school, how often did the following things occur?** *(Please select one response in each row.)* ST062Q01TA I <skipped> a whole school day. ☐01 ☐02 ☐03 ☐04 ST062Q02TA I <skipped> some classes. ☐01 ☐02 ☐03 ☐04 ST062Q03TA I arrived late for school. ☐01 ☐02 ☐03 ☐04 *Never* / *One or two times* / *Three or four times* / *Five or more times*
Considerations	Does not measure progression: However, a combination with Questions 25 through 28 of the same test may more effectively capture the reasons behind over ager issues.

Test name	ERCE 2019 QA3 ERCE 2019 QF3 ERCE 2019 QF6
Analysis	Directly identifies students who have repeated a grade, which is a primary reason for being over-age for their grade. By categorizing responses into clear groups (never, once, two times or more), it provides straightforward data to assess grade progression delays.
Item	ERCE 2019 QA3 Question 4 04. **¿Cuántas veces has repetido de curso?** *Marca con una X solo una opción de respuesta.* ◯ Nunca he repetido. ◯ Una vez. ◯ Dos veces o más. ◯ No sé / No me acuerdo. ERCE 2019 QF3 Question 21 ERCE 2019 QF6 Question 21 21. **¿Cuántas veces ha repetido de curso el estudiante?** *Marque con una X solo una opción de respuesta.* ◯ Nunca ha repetido. ◯ Una vez. ◯ Dos veces o más.

Considerations	It lacks information about the students' actual age relative to their grade, which is crucial for fully measuring over-age status. Needs to be combined with Question 2. (Asks student age)

Conclusions:

The questions from TIMSS, PIRLS, PISA, and ERCE provide partial insights into over-age issues, focusing on key factors like age at school entry and grade repetition. However, they lack the ability to fully track student progression over time, which is crucial for assessing whether children remain over-age throughout their schooling. Without combining data on student age and grade progression, the measurement of SDG 4.1.5 is incomplete and may miss identifying ongoing over-age challenges.

UNESCO should encourage the integration of longitudinal tracking in all assessments to monitor student age and grade progression over time. Combining questions about age of entry, grade repetition, and student progression will provide a more comprehensive understanding of over-age issues. Additionally, questions from PISA on grade repetition should be supplemented with follow-up questions on the reasons for educational delays to capture the root causes of over-age status. Standardizing these improvements across assessments like TIMSS, PIRLS, and ERCE will ensure consistent and accurate measurement of SDG 4.1.5.

Recommendation:

While none of the reviewed ILSAs fully meet the requirements for measuring SDG 4.1.5, the PISA questionnaire item ST013Q01TA is recommended as the most suitable option. Although PISA also lacks information about grade repetition, its focus on 15-year-old students provides a snapshot of over-age students at a critical stage in their education. This age group is more likely to reflect the cumulative effects of late enrollment and grade repetition, offering valuable insights into the overall efficiency of the education system.

However, it is crucial to emphasize that PISA data alone cannot comprehensively measure SDG 4.1.5. To obtain a more accurate and complete picture of the over-age student population, it is essential to integrate PISA findings with national-level data on grade repetition and student progression through the education system. This combined approach would provide a more robust and reliable assessment of this important indicator.

4.1.6. Administration of a nationally representative learning assessment (a) in Grade 2 or 3; (b) at the end of primary education; and (c) at the end of lower secondary education

Classification: National Survey

This indicator cannot be accurately assessed using International Large-Scale Assessments (ILSAs) due to methodological limitations.

Conclusion:

While these ILSAs provide valuable data on learning outcomes, they do not comprehensively cover all required education stages (Grade 2 or 3, end of primary, and end of lower secondary) for SDG 4.1.6, nor do they always assess the full range of subjects such as reading, writing, and mathematics at each stage. Additionally, the ILSAs' international focus may not fully represent the national context and specific curriculum requirements of a given country. Therefore, ILSAs are not fully aligned with the specific needs of Indicator 4.1.6, which requires more frequent and comprehensive data collection at key educational stages.

Recommendation:

To accurately measure Indicator 4.1.6, countries should develop and implement nationally representative learning assessments that are aligned with their national curriculum. These assessments should cover all key subjects—reading, writing, language, and mathematics—across Grade 2 or 3, the end of primary, and the end of lower secondary education. National assessments can be conducted at intervals that better align with the country's needs, providing regular and up-to-date data on student achievement. By designing assessments that reflect national priorities and focusing on comprehensive coverage, countries can ensure that learning outcomes are measured effectively and in alignment with SDG 4.1.6 requirements. Additionally, countries can complement national assessments with regional assessments like LLECE or SACMEQ for cross-national comparison while maintaining a focus on national representativity.

4.1.7. Number of years of (a) free and (b) compulsory primary and secondary education guaranteed in legal frameworks

Classification: National Survey

This indicator cannot be accurately assessed using International Large-Scale Assessments (ILSAs) due to methodological limitations.

Conclusion:

International large-scale assessments (ILSAs), such as PISA, TIMSS, and PIRLS, are focused on measuring student learning outcomes in subjects like reading, mathematics, and science, and do not gather data on the legal frameworks related to the number of years of compulsory or free education guaranteed by governments. Since these assessments are not designed to track legal structures around education access, they are not suitable for measuring Indicator 4.1.7, which requires an understanding of national legislation. The most accurate and relevant data for this indicator comes from national legislation and administrative data provided by ministries of education, which detail the entrance age and duration of free or compulsory education.

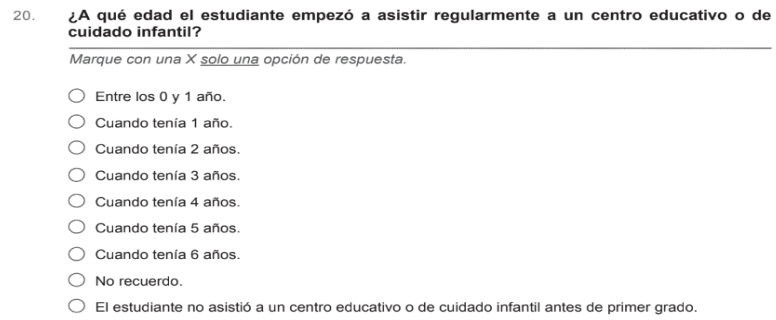
Recommendation:

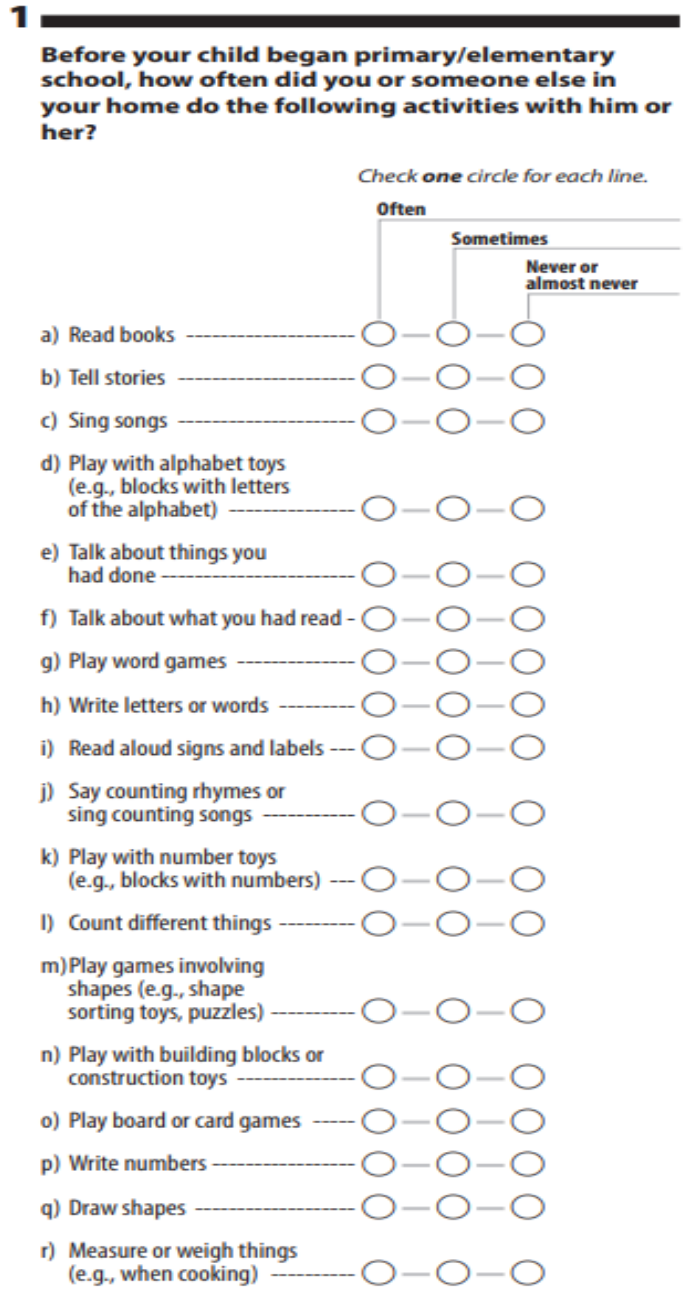
To effectively measure Indicator 4.1.7 (Number of years of free and compulsory primary and secondary education guaranteed in legal frameworks), countries should collect data from national legal frameworks and ministries of education. This data should include formal laws, regulations, and official education system structures that specify the number of years of compulsory or free education. National surveys may also be used to evaluate how well education systems align with their legal obligations. Regular reviews of legislative frameworks by national governments will ensure that the number of years of compulsory and free education meets international standards and development goals.

4.2.1 Proportion of children aged 24-59 months who are developmentally on track in health, learning and psychosocial well-being, by sex

Classification: Searchable

Test name	Parent Questionnaire PISA 2022
Analysis	While it doesn't measure development directly, it provides valuable data on access to environments that support early childhood development.
Item	Question 14 **Q14** PA177 **At what ages did your child attend an <early childhood education and care arrangement> prior to <grade 1 in ISCED 1>?** *(Please select all that apply.)* PA177Q01HA Up to age 1 ☐ PA177Q02HA Age 1 ☐ PA177Q03HA Age 2 ☐ PA177Q04HA Age 3 ☐ PA177Q05HA Age 4 ☐ PA177Q06HA Age 5 ☐ PA177Q07HA Age 6 ☐ PA177Q08HA Age 7 ☐
Considerations	The question only measures attendance and not actual developmental outcomes, which is key for SDG 4.2.1. Full measurement of this indicator requires tools like ECDI2030

Test name	ERCE 2019 QF3 ERCE 2019 QF6
Analysis	While it doesn't measure development directly, it provides valuable data on access to environments that support early childhood development.
Item	Question 20  20. **¿A qué edad el estudiante empezó a asistir regularmente a un centro educativo o de cuidado infantil?** *Marque con una X solo una opción de respuesta.* ○ Entre los 0 y 1 año. ○ Cuando tenía 1 año. ○ Cuando tenía 2 años. ○ Cuando tenía 3 años. ○ Cuando tenía 4 años. ○ Cuando tenía 5 años. ○ Cuando tenía 6 años. ○ No recuerdo. ○ El estudiante no asistió a un centro educativo o de cuidado infantil antes de primer grado.
Considerations	The question only measures attendance and not actual developmental outcomes, which is key for SDG 4.2.1. Full measurement of this indicator requires tools like ECDI2030.

Test name	TIMSS 2019 T19 HQ 4
Analysis	These questions touch on participation in early childhood programs (Q4), readiness for school (Q6, Q7), and early learning experiences at home (Q1). They provide valuable insights into factors that influence whether a child is on track developmentally, especially in areas like literacy and numeracy.
Item	Question 1 

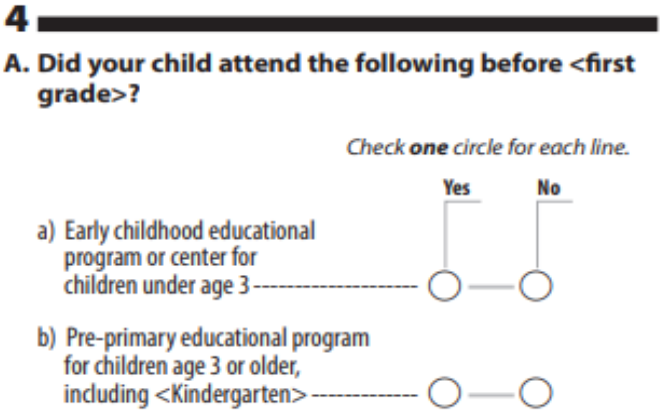
1

Before your child began primary/elementary school, how often did you or someone else in your home do the following activities with him or her?

*Check **one** circle for each line.*

	Often	Sometimes	Never or almost never
a) Read books	○	○	○
b) Tell stories	○	○	○
c) Sing songs	○	○	○
d) Play with alphabet toys (e.g., blocks with letters of the alphabet)	○	○	○
e) Talk about things you had done	○	○	○
f) Talk about what you had read	○	○	○
g) Play word games	○	○	○
h) Write letters or words	○	○	○
i) Read aloud signs and labels	○	○	○
j) Say counting rhymes or sing counting songs	○	○	○
k) Play with number toys (e.g., blocks with numbers)	○	○	○
l) Count different things	○	○	○
m) Play games involving shapes (e.g., shape sorting toys, puzzles)	○	○	○
n) Play with building blocks or construction toys	○	○	○
o) Play board or card games	○	○	○
p) Write numbers	○	○	○
q) Draw shapes	○	○	○
r) Measure or weigh things (e.g., when cooking)	○	○	○

Question 4



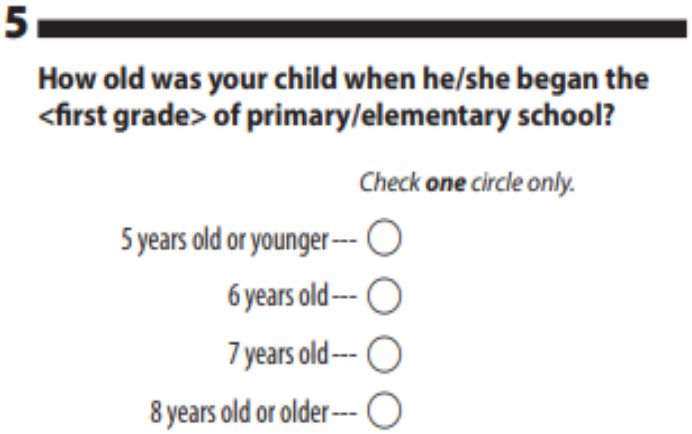
4

A. Did your child attend the following before <first grade>?

*Check **one** circle for each line.*

	Yes	No
a) Early childhood educational program or center for children under age 3	○	○
b) Pre-primary educational program for children age 3 or older, including <Kindergarten>	○	○

Question 5

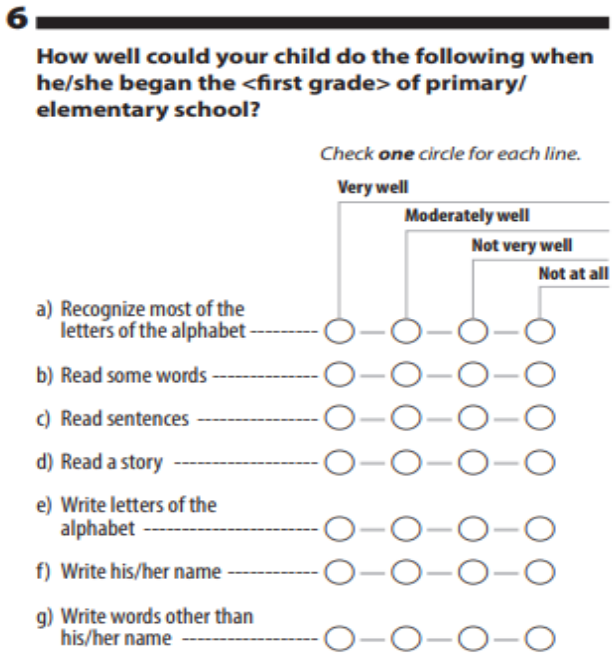
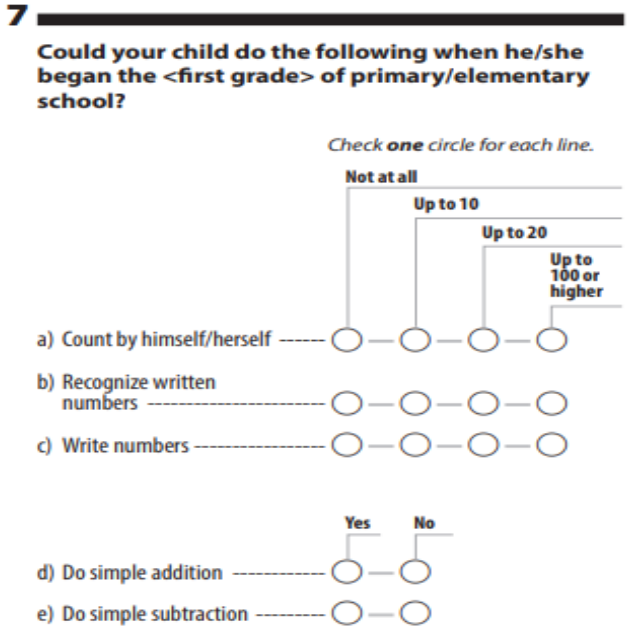


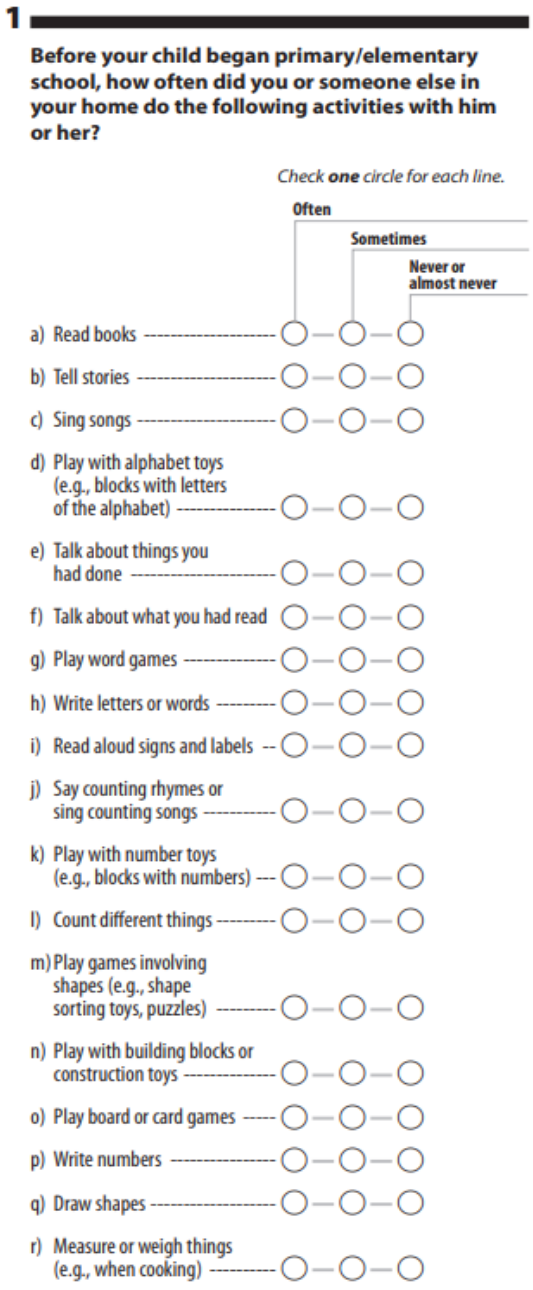
5

How old was your child when he/she began the <first grade> of primary/elementary school?

*Check **one** circle only.*

- 5 years old or younger ○
- 6 years old ○
- 7 years old ○
- 8 years old or older ○

	Question 6  Question 7 
Considerations	They focus on attendance and early learning activities without directly assessing developmental outcomes in health, learning, and psychosocial well-being. The SDG indicator requires a more comprehensive tool like ECDI2030

Test name	PIRLS 2021 P21_HomeQuestionnaire
Analysis	These questions touch on participation in early childhood programs (Q5), readiness for school (Q6, Q7), and early learning experiences at home (Q1). They provide valuable insights into factors that influence whether a child is on track developmentally, especially in areas like literacy and numeracy.
Item	Question 1 

1

Before your child began primary/elementary school, how often did you or someone else in your home do the following activities with him or her?

*Check **one** circle for each line.*

	Often	Sometimes	Never or almost never
a) Read books	○	○	○
b) Tell stories	○	○	○
c) Sing songs	○	○	○
d) Play with alphabet toys (e.g., blocks with letters of the alphabet)	○	○	○
e) Talk about things you had done	○	○	○
f) Talk about what you had read	○	○	○
g) Play word games	○	○	○
h) Write letters or words	○	○	○
i) Read aloud signs and labels	○	○	○
j) Say counting rhymes or sing counting songs	○	○	○
k) Play with number toys (e.g., blocks with numbers)	○	○	○
l) Count different things	○	○	○
m) Play games involving shapes (e.g., shape sorting toys, puzzles)	○	○	○
n) Play with building blocks or construction toys	○	○	○
o) Play board or card games	○	○	○
p) Write numbers	○	○	○
q) Draw shapes	○	○	○
r) Measure or weigh things (e.g., when cooking)	○	○	○

Question 5

5

A. Did your child attend the following before <first grade>?

*Check **one** circle for each line.*

	Yes	No
a) Early childhood educational program or center for children under age 3	○	○
b) Pre-primary educational program for children age 3 or older, including <Kindergarten>	○	○

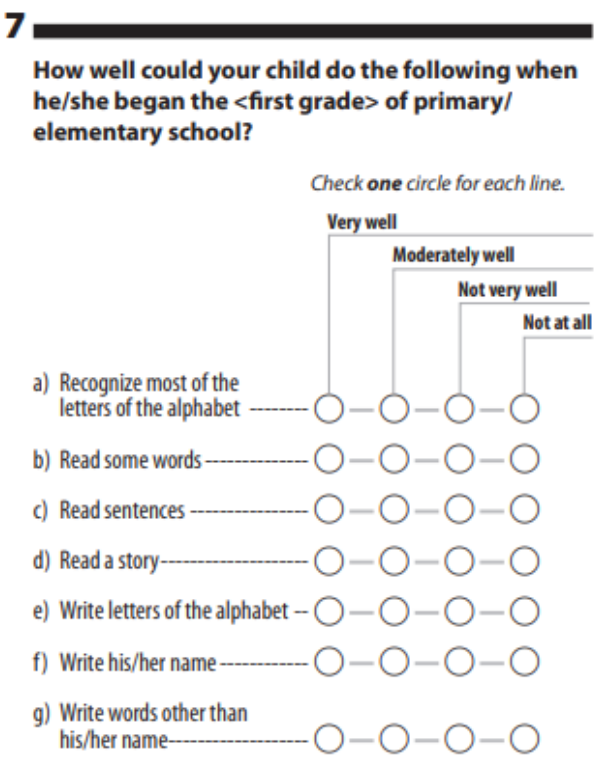
Question 6

6

How old was your child when he/she began the <first grade> of primary/elementary school?

*Check **one** circle only.*

- 5 years old or younger --- ○
- 6 years old --- ○
- 7 years old --- ○
- 8 years old or older --- ○

	Question 7 
Considerations	They focus on attendance and early learning activities without directly assessing developmental outcomes in health, learning, and psychosocial well-being. The SDG indicator requires a more comprehensive tool like ECDI2030.

Conclusions:

The current questions from TIMSS, PIRLS, PISA, and ERCE provide some insights into children's early childhood environments, such as attendance at early childhood programs and readiness for school. However, they fall short of directly measuring developmental outcomes in health, learning, and psychosocial well-being, which are the key components of SDG 4.2.1. These assessments focus more on attendance and early learning activities rather than evaluating whether children are developmentally on track in critical areas like health and psychosocial well-being.

Existing questions in assessments like TIMSS, PIRLS, and ERCE could be expanded to include direct developmental assessments, rather than solely focusing on attendance or early learning environments.

PISA 2022 Parent Questionnaire (Q14) only measures attendance in early learning environments and not developmental outcomes.

ERCE 2019 (Q20 from QF3/QF6) focuses on participation in early childhood programs but lacks any assessment of health, learning, or psychosocial development.

TIMSS 2019 (Q1, Q4, Q5, Q6, and Q7), and PIRLS 2021 (Q1, Q5, Q6, Q7) measure early learning experiences and readiness for school but do not assess whether children are developmentally on track in core areas such as health or psychosocial well-being.

Recommendation:

None of the existing ILSA instruments can be recommended for measuring SDG 4.2.1. They lack the necessary tools and questions to directly assess developmental outcomes across the three key domains (health, learning, and psychosocial well-being) within the required age group (24-59 months).

To effectively measure SDG 4.2.1, the use of specialized instruments like the ECDI2030 is recommended. This tool is specifically designed to assess early childhood development across multiple domains and provides standardized, comparable data that aligns with the indicator's requirements. Integrating the ECDI2030 into national surveys or early childhood assessments would provide valuable data for monitoring progress towards SDG 4.2.1 and inform policies aimed at improving early childhood development outcomes.

4.2.2 Participation rate in organized learning (one year before the official primary entry age), by sex

Classification: Searchable

Test name	ERCE ERCE_2019_QF3 & QF6
Analysis	Effectively measures SDG 4.2.2 by asking when children began attending organized learning programs, which directly aligns with the goal of tracking participation in early childhood education.
Item	Q20 20. **¿A qué edad el estudiante empezó a asistir regularmente a un centro educativo o de cuidado infantil?** *Marque con una X solo una opción de respuesta.* ○ Entre los 0 y 1 año. ○ Cuando tenía 1 año. ○ Cuando tenía 2 años. ○ Cuando tenía 3 años. ○ Cuando tenía 4 años. ○ Cuando tenía 5 años. ○ Cuando tenía 6 años. ○ No recuerdo. ○ El estudiante no asistió a un centro educativo o de cuidado infantil antes de primer grado.
Considerations	The limitation of this question is that it only captures the age when a child started attending but does not necessarily establish a relation with an specific school program.

Test name	PIRLS 2021 P21_HomeQuestionnaire
Analysis	It asks whether a child attended organized learning programs, key for assessing participation one year before the official primary school entry age.
Item	Question 5A **5** **A. Did your child attend the following before <first grade>?** *Check **one** circle for each line.* Yes No a) Early childhood educational program or center for children under age 3 ---------- ○ ○ b) Pre-primary educational program for children age 3 or older, including <Kindergarten> ---------- ○ ○

Considerations	The presence of attending the programme does not necessarily mean that it contributes to assess the indicator.

Test name	TIMSS 2019 T19_HQ_4
Analysis	It asks whether a child attended organized learning programs, key for assessing participation one year before the official primary school entry age.
Item	Question 4A **4** **A. Did your child attend the following before <first grade>?** *Check **one** circle for each line.* Yes No a) Early childhood educational program or center for children under age 3 ---------- ○ ○ b) Pre-primary educational program for children age 3 or older, including <Kindergarten> ---------- ○ ○
Considerations	The presence of attending the programme does not necessarily mean that it contributes to assess the indicator.

Test name	PISA 2022 COMPUTER-BASED STUDENT questionnaire PISA 2022 PAPER-BASED STUDENT questionnaire PISA 2022
Analysis	Effectively measures SDG 4.2.2 by asking when children began attending organized learning programs, which directly aligns with the goal of tracking participation in early childhood education.
Item	ST125 ST126 Q23 Q24

	Q23 ST125 **How old were you when you started <ISCED 0>?** *(Please select one response.)* ST125Q01NA 1 year or younger ☐01 2 years ☐02 3 years ☐03 4 years ☐04 5 years ☐05 6 years or older ☐06 I did not attend <ISCED 0> ☐07 I do not remember ☐08 **Q24** ST126 **How old were you when you started <ISCED 1>?** *(Please select one response.)* ST126Q01TA 3 years or younger ☐01 4 years ☐02 5 years ☐03 6 years ☐04 7 years ☐05 8 years ☐06 9 years or older ☐07
Considerations	While PISA questionnaires ask about participation in early childhood education, they lack questions about the age of entry, which is crucial for calculating the participation rate one year before the official primary entry age. Without information on the age at which students started early childhood education, it's impossible to determine if their participation aligns with the timeframe specified by SDG 4.2.2.

Test name	PILNA 2021 Student Questionnaire Year 4 PILNA 2021 Student Questionnaire Year 6
Analysis	Both questionnaires ask students about their experiences in early childhood education by directly trying to track participation rates in organized learning one year before the official primary entry age.
Item	Q3 – Year 4, Year 6

	3. Did you attend <ISCED Level 0> before attending <ISCED Level 1>? *Tick **one** box only.* Yes, for 1 year ☐ 1 Yes, for 2 years ☐ 2 Yes, for 3 years or more ☐ 3 No ☐ 4
Considerations	While the PILNA student questionnaires ask about participation in early childhood education, they lack questions about the age of entry, which is crucial for calculating the participation rate one year before the official primary entry age. Without information on the age at which students started early childhood education, it's impossible to determine if their participation aligns with the timeframe specified by SDG 4.2.2.

Conclusions:

The questions from PISA, ERCE, TIMSS, PIRLS and PINA are relevant for assessing children's participation in organized learning programs before entering primary school, aligning with the goal of measuring SDG 4.2.2. These questions provide insights into the age of entry into early childhood education programs, which is useful for tracking participation rates. However, the questions primarily focus on attendance and entry age, without addressing critical factors such as the quality or duration of participation in these learning programs, which are important for fully understanding the impact on early childhood development.

To fully measure SDG 4.2.2, UNESCO should enhance the data collection by integrating questions that not only capture age of entry but also assess the quality and duration of participation in organized learning programs. This would provide a more complete understanding of children's early learning experiences. Additionally, tools like ECDI2030 could be used to assess the developmental outcomes of children in these programs, ensuring a comprehensive evaluation of both participation and the effectiveness of early childhood education.

Recommendation:

The PISA 2022 questionnaire is the most effective tool for measuring SDG 4.2.2, as it includes questions that directly address both participation in organized learning and the age at which children start attending these programs. This combination allows for accurate calculations of the participation rate within the specific timeframe outlined by the indicator.

4.2.3 Percentage of children under 5 years experiencing positive and stimulating home learning environments

Classification: Searchable

Test name	ERCE ERCE_2019_QF3 & QF6
Analysis	Captures how often children engage in learning-related activities at home.
Item	Question 19 **¿Cuántos libros hay en la casa del estudiante? Considere todos los tipos de libro: poesía, novelas, diccionarios, libros de estudio, etc.** *Marque con una X solo una opción de respuesta.* ○ No hay libros. ○ Hay 10 o menos. ○ Hay entre 11 y 20. ○ Hay entre 21 y 30. ○ Hay entre 31 y 50. ○ Hay entre 51 y 100. ○ Hay más de 100.
Considerations	Limited in scope as they focus on school-aged children, whereas SDG 4.2.3 specifically targets children under 5 years old. The data may not fully reflect the early developmental experiences of younger children.

<table>
<tr><th>Test name</th><th>COMPUTER-BASED STUDENT questionnaire PISA 2022
PAPER-BASED STUDENT questionnaire PISA 2022</th></tr>
<tr><td>Analysis</td><td>Captures how often children engage in learning-related activities at home.</td></tr>
<tr><td>Item</td><td>ST353
Q64
ST353
During the time when your school building was closed because of COVID-19, how often did someone in your family do the following things with you?
(Please select one response in each row.)
<table><tr><th></th><th></th><th>Never</th><th>A few times</th><th>About once or twice a week</th><th>Every day or almost every day</th></tr><tr><td>ST353Q01JA</td><td>Help you with your school work</td><td>☐01</td><td>☐02</td><td>☐03</td><td>☐04</td></tr><tr><td>ST353Q02JA</td><td>Ask you what you were learning</td><td>☐01</td><td>☐02</td><td>☐03</td><td>☐04</td></tr><tr><td>ST353Q03JA</td><td>Help you create a learning schedule</td><td>☐01</td><td>☐02</td><td>☐03</td><td>☐04</td></tr><tr><td>ST353Q04JA</td><td>Help you access learning materials online</td><td>☐01</td><td>☐02</td><td>☐03</td><td>☐04</td></tr><tr><td>ST353Q05JA</td><td>Check whether you were completing your school assignments</td><td>☐01</td><td>☐02</td><td>☐03</td><td>☐04</td></tr><tr><td>ST353Q06JA</td><td>Explain new content to you</td><td>☐01</td><td>☐02</td><td>☐03</td><td>☐04</td></tr><tr><td>ST353Q07JA</td><td>Help you find additional learning resources</td><td>☐01</td><td>☐02</td><td>☐03</td><td>☐04</td></tr><tr><td>ST353Q08JA</td><td>Teach you additional topics not part of your school assignments</td><td>☐01</td><td>☐02</td><td>☐03</td><td>☐04</td></tr></table></td></tr>
<tr><td>Considerations</td><td>Limited in scope as they focus on school-aged children, whereas SDG 4.2.3 specifically targets children under 5 years old. The data may not fully reflect the early developmental experiences of younger children.</td></tr>
</table>

Test name	PIRLS Early Learning Survey
Analysis	This question is highly relevant for SDG 4.2.3 as it directly measures the engagement of children aged 36-59 months in key activities like reading, storytelling, singing, and counting, which are essential for stimulating cognitive and social development
Item	Question 1 

1

Before your child began primary/elementary school, how often did you or someone else in your home do the following activities with him or her?

*Check **one** circle for each line.*

	Often	Sometimes	Never or almost never
a) Read books	○	○	○
b) Tell stories	○	○	○
c) Sing songs	○	○	○
d) Play with alphabet toys (e.g., blocks with letters of the alphabet)	○	○	○
e) Talk about things you had done	○	○	○
f) Talk about what you had read	○	○	○
g) Play word games	○	○	○
h) Write letters or words	○	○	○
i) Read aloud signs and labels	○	○	○
j) Say counting rhymes or sing counting songs	○	○	○
k) Play with number toys (e.g., blocks with numbers)	○	○	○
l) Count different things	○	○	○
m) Play games involving shapes (e.g., shape sorting toys, puzzles)	○	○	○
n) Play with building blocks or construction toys	○	○	○
o) Play board or card games	○	○	○
p) Write numbers	○	○	○
q) Draw shapes	○	○	○
r) Measure or weigh things (e.g., when cooking)	○	○	○

Considerations	The limitations of this question are that it is based on self-reported data, which might introduce bias or inaccuracies. It also does not cover the full range of activities mentioned in the SDG definition, such as outdoor activities, and does not assess the quality or duration of engagement in these activities.

Test name	T19 HQ 4 (TIMSS Early Learning Survey)
Analysis	Similar to the PIRLS Early Learning Survey, this question captures key activities that align with SDG 4.2.3. These activities foster early learning and development, making this question relevant for measuring this SDG indicator.
Item	Question 1  1 **Before your child began primary/elementary school, how often did you or someone else in your home do the following activities with him or her?** *Check **one** circle for each line.* Often / Sometimes / Never or almost never a) Read books b) Tell stories c) Sing songs d) Play with alphabet toys (e.g., blocks with letters of the alphabet) e) Talk about things you had done f) Talk about what you had read g) Play word games h) Write letters or words i) Read aloud signs and labels j) Say counting rhymes or sing counting songs k) Play with number toys (e.g., blocks with numbers) l) Count different things m) Play games involving shapes (e.g., shape sorting toys, puzzles) n) Play with building blocks or construction toys o) Play board or card games p) Write numbers q) Draw shapes r) Measure or weigh things (e.g., when cooking)
Considerations	Reliance on self-reported data and lack of comprehensive coverage of all stimulating activities mentioned in the SDG definition (such as outdoor play). Additionally, the frequency of activities is measured but not the quality of interactions or outcomes.

Test name	SEA-PLM 2019 Parent Questionnaire
Analysis	Though not directly focused on children under 5, the parent questionnaire provides insights into home learning environments for Grade 5 students. This information can be extrapolated to infer the learning environment for younger children in the same household.
Item	PA09 - Asks about the availability of a desk, table, or other dedicated space for the child to study at home. **9** Which of the following study materials does **your child** have? Please tick **one** box on **each line**. If an item is broken at present but can be mended, tick 'Yes'. *Yes* *No* a) Pen or pencil ☐01 ☐02 b) Ruler ☐01 ☐02 c) Eraser ☐01 ☐02 d) Calculator ☐01 ☐02 e) School bag ☐01 ☐02 f) Mathematics textbook ☐01 ☐02 g) <Test language> textbook ☐01 ☐02 h) Computer / notebook / tablet ☐01 ☐02 PA10 - Inquires about the number of books in the home, excluding school books, e-books, newspapers, or magazines **10** About how many books are there in **your home**? (Do **not** count school books, e-books, newspapers or magazines.) Please tick **one** box **only**. None or very few (0 – 10) ☐01 Enough to fill one shelf (11 – 25) ☐02 Enough to fill one bookcase (26 – 100) ☐03 Enough to fill two bookcases (101 – 200) ☐04 Enough to fill three or more bookcases (more than 200) ☐05
Considerations	SEA-PLM offers indirect insights into home learning environments by focusing on Grade 5 students. Extrapolating this information to children under 5 might not be entirely accurate, as learning environments can vary significantly within households based on age. Direct data on early childhood learning environments is still required.

Conclusions:

The questions from ERCE, PISA, PIRLS, TIMSS, and SEA-PLM surveys are somewhat relevant for assessing SDG 4.2.3, as they capture how often children engage in learning-related activities at home. However, these questions generally focus on school-aged children, whereas SDG 4.2.3 specifically targets children under 5 years old. Although surveys like PIRLS and TIMSS Early Learning Survey capture important activities (e.g., reading, singing, counting), they are limited by their reliance on self-reported data, and they do not comprehensively cover all stimulating activities, such as outdoor play or the quality and duration of engagement in these activities.

To fully measure SDG 4.2.3, UNESCO should incorporate questions that target children under 5 and cover a broader range of stimulating activities, such as outdoor play, which are crucial for early cognitive and social development. Additionally, questions should not only ask about the frequency of activities but also assess the quality and duration of engagement to ensure a more complete understanding of the home learning environment. Improving the collection of objective data, rather than relying solely on self-reported responses, would also enhance the accuracy of the measurement.

Recommendation:

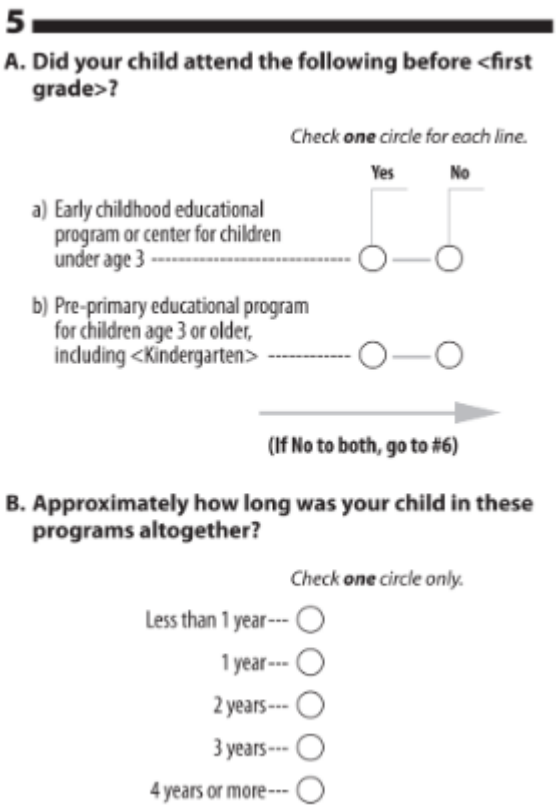
None of the ILSA instruments reviewed fully meet the requirements for measuring SDG 4.2.3. The existing questions are either too limited in scope, focusing on a single activity, or target older children, missing the crucial age group (36-59 months) for early childhood development.

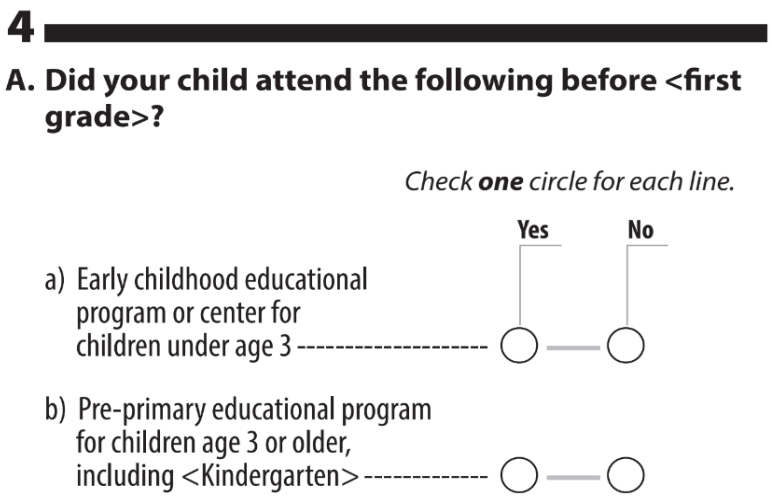
To effectively measure SDG 4.2.3, new instruments or modules specifically designed to assess the quality of home learning environments for children under five need to be developed. These instruments should include questions that cover the full range of activities (reading, storytelling, singing, playing, outdoor exploration, naming/counting/drawing) and emphasize the role of adult engagement.

4.2.4. Net early childhood education enrolment rate in (a) pre-primary education and (b) early childhood educational development

Classification: Searchable

Test name	Parent Questionnaire PISA 2022
Analysis	This question is highly effective for measuring SDG 4.2.4 as it directly captures attendance in pre-primary or early childhood education programs, which is key to calculating the net early childhood education enrolment rate. It also distinguishes between care and educational development, essential for assessing both categories of early childhood education.
Item	Q13 (PA018) **Q13** PA018 **Did your child regularly attend an arrangement with one of the following main purposes prior to <grade 1 in ISCED 1>?** *(Please select one response in each row.)* PA018Q01NA Supervision and care (e.g. <national examples>) ☐ Yes ☐ No PA018Q02NA Early childhood educational development (e.g. <national examples>) ☐ Yes ☐ No PA018Q03NA Pre-primary education (e.g. <national examples>) ☐ Yes ☐ No In case your child did not visit any <early childhood education and care arrangement> prior to <grade 1 in ISCED 1> please proceed to Q17.
Considerations	A limitation of this question is that it does not capture population estimates or the specific age of the children enrolled. Without disaggregated data on the population and the exact age structure of enrollees, it provides only partial data necessary for calculating the net enrolment rate.

Test name	PIRLS 2021 P21 Home Questionnaire
Analysis	This question is relevant for capturing data on participation in pre-primary education, directly supporting the measurement of SDG 4.2.4. It asks about specific age groups, which helps in identifying whether children of the target age group are participating in early childhood education.
Item	Q5  **5** **A. Did your child attend the following before <first grade>?** *Check **one** circle for each line.* Yes No a) Early childhood educational program or center for children under age 3 b) Pre-primary educational program for children age 3 or older, including <Kindergarten> **(If No to both, go to #6)** **B. Approximately how long was your child in these programs altogether?** *Check **one** circle only.* Less than 1 year 1 year 2 years 3 years 4 years or more
Considerations	it does not provide information on the overall population estimates or account for age disaggregation, which is required for the accurate calculation of enrolment as a percentage of the population.

Test name	T19 HQ 4 (TIMSS Early Learning Survey)
Analysis	This question is effective for assessing enrolment in both categories of early childhood education: early childhood educational development and pre-primary education, covering the different phases identified in SDG 4.2.4.
Item	Q4A 
Considerations	It still lacks data on the total population and the exact age of children in these programs, which are necessary for calculating the net enrolment rate as a percentage of the target population. Additionally, it does not differentiate between various types of early childhood programs based on their quality or duration.

Conclusions:

The questions from PISA, PIRLS, and TIMSS provide valuable data on early childhood education participation, which is useful for assessing SDG 4.2.4. These questions, particularly PISA Q13 (PA018), PIRLS Q5, and TIMSS Q4A, capture attendance in pre-primary education or early childhood programs. However, while they effectively identify participation in these programs, they do not provide all the necessary data to calculate the net enrolment rate. Specifically, they lack the disaggregated population data and exact age information required to compute the enrolment rate as a percentage of the relevant age group. Additionally, none of these assessments differentiate between various types of early childhood programs based on quality or duration, which limits the full understanding of participation in early childhood education.

Recommendation:

None of the existing ILSA questions can be directly used to calculate the net enrollment rate for pre-primary and early childhood development programs as defined by SDG 4.2.4.

To accurately measure this indicator, additional data on the age of enrolled children is crucial.

UNESCO should work with ILSA developers to include age-related questions in future assessments. For example, PISA, PIRLS, and TIMSS could all benefit from adding questions that ask about the child's age when they started attending the program identified in the existing questions.

4.2.5. Number of years of (a) free and (b) compulsory pre-primary education guaranteed in legal frameworks

Classification: Achievement tests

This indicator cannot be accurately assessed using International Large-Scale Assessments (ILSAs) due to methodological limitations.

Conclusion:

ILSAs do not address legal frameworks concerning free or compulsory pre-primary education. ILSAs focus on what happens within schools, and while they provide valuable data on teaching and learning, they do not capture the legal guarantees regarding pre-primary education, such as the number of pre-primary grades guaranteed by national law or whether pre-primary education is free or compulsory.

Recommendation:

To effectively measure Indicator 4.2.5 (Number of years of free and compulsory pre-primary education guaranteed in legal frameworks), countries should rely on national legal frameworks and data from ministries of education. The number of years of free and compulsory pre-primary education should be tracked through official legislation. Regular tracking of this data will also allow UNESCO to monitor progress towards achieving SDG 4.2.5 more effectively.

4.3.1. Participation rate of youth and adults in formal and non-formal education and training in the previous 12 months, by sex

Classification: Achievement tests

This indicator cannot be accurately assessed using International Large-Scale Assessments (ILSAs) due to methodological limitations.

Conclusion:

ILSA assessments like PISA, TIMSS, and PIRLS are focused on student academic performance in formal education systems and do not capture data on participation in non-formal education or lifelong learning activities for youth and adults. They also lack information on ongoing training and learning patterns that occur outside of traditional education systems.

Recommendation:

To accurately measure Indicator 4.3.1 (participation in formal and non-formal education), national household or labour surveys, should be used. These surveys can comprehensively capture participation in both formal and non-formal educational programs across various age groups (15-64 years) and types of training, providing a complete picture of education and training participation. Countries should prioritize integrating detailed data on education and training activities into their national surveys for more accurate tracking.

4.3.2. Gross enrolment ratio for tertiary education by sex

Classification: Searchable

This indicator cannot be accurately assessed using International Large-Scale Assessments (ILSAs) due to methodological limitations.

Conclusion:

Indicator 4.3.2, which measures the gross enrolment ratio for tertiary education, cannot be effectively captured by ILSAs like PISA, TIMSS, and PIRLS, as these assessments focus primarily on primary and secondary education and do not track participation in higher education. Additionally, ILSAs are designed to assess academic performance rather than enrolment data.

Recommendation:

To accurately measure Indicator 4.3.2, national administrative data from tertiary education institutions should be used. This data should track enrolment figures across all age groups and education levels. Ministries of education and higher education institutions should provide comprehensive enrolment data, and this should be supplemented by national population data to calculate the gross enrolment ratio. This approach ensures that the indicator is fully aligned with the SDG 4.3.2 requirements.

4.3.3. Participation rate in technical-vocational programmes (15- to 24-year-olds) by sex

Classification: Searchable

This indicator cannot be accurately assessed using International Large-Scale Assessments (ILSAs) due to methodological limitations.

Conclusion:

Indicator 4.3.3 cannot be effectively measured through ILSAs. These assessments focus on academic subjects and formal schooling, overlooking technical and vocational education and missing non-formal work-based or community-based learning settings. ILSAs are not designed to gather data on vocational training participation or provide a comprehensive view of youth engagement in non-formal education environments.

Recommendation:

To effectively measure Indicator 4.3.3, national administrative data from vocational training centers and formal schools should be combined with household surveys, such as Labour Force Surveys, which capture participation in both formal and non-formal vocational programs. Data collection should be gender-disaggregated to ensure equitable access to vocational education for both men and women. Governments should coordinate data collection efforts across education and labor sectors to comprehensively track all forms of vocational training. The Technical Cooperation Group on SDG Indicators should support the development of standardized survey questions to ensure accurate tracking of youth participation in technical and vocational programs.

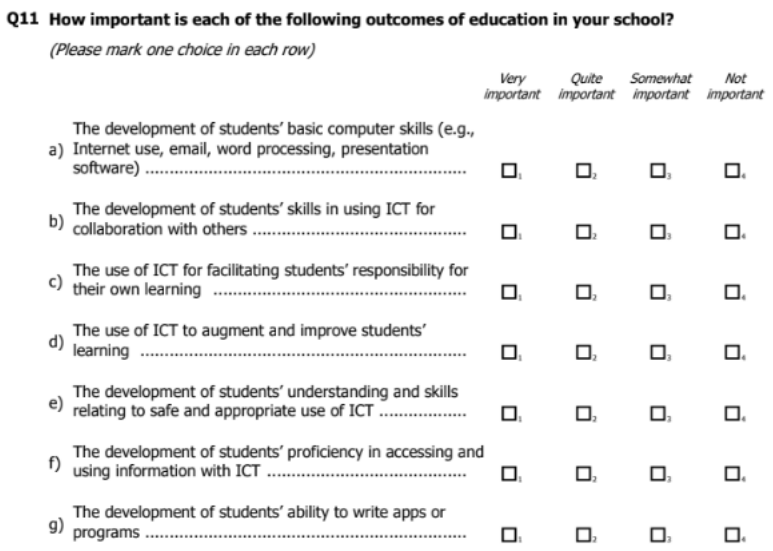
4.4.1 Proportion of youth and adults with information and communications technology (ICT) skills, by type of skill

Classification: Searchable

Test name	ICILS 2018 Student Questionnaire
Analysis	Directly addresses students' use of ICT skills like document creation, spreadsheet use, presentations, and programming. These tasks align with the ICT-related activities required by the indicator.
Item	Question 21 **Q21 How often do you use ICT for each of the following activities?** *(Please mark one choice in each row)* a) Write or edit documents — ☐ Never ☐ Less than once a month ☐ At least once a month but not every week ☐ At least once a week but not every day ☐ Every day b) Use a spreadsheet to do calculations, store data or plot graphs e.g., using Microsoft Excel) — ☐ ☐ ☐ ☐ ☐ c) Create a simple "slideshow" presentation (e.g., using Microsoft PowerPoint) — ☐ ☐ ☐ ☐ ☐ d) Record or edit videos — ☐ ☐ ☐ ☐ ☐ e) Write computer programs, scripts or apps (e.g., using Scratch, Logo, VBA, Java) — ☐ ☐ ☐ ☐ ☐ f) Use drawing, painting or graphics software or apps — ☐ ☐ ☐ ☐ ☐ g) Produce or edit music — ☐ ☐ ☐ ☐ ☐ h) Build or edit a webpage — ☐ ☐ ☐ ☐ ☐
Considerations	This question focuses on the frequency of use but doesn't explicitly confirm whether the students have mastered the skills.

Test name	ICILS 2018 Teacher Questionnaire:
Analysis	This question helps assess how often teachers integrate various ICT tools into their teaching. It reflects how students are exposed to and expected to use ICT tools such as word processors, spreadsheets, and collaborative software, which are core ICT skills.
Item	Question 13 **Q13 How often did <u>you</u> use the following tools in <u>your</u> teaching of the reference class this school year?** *(Please mark one choice in each row)* a) Practice programs or apps where you ask students questions (e.g., Quizlet, Kahoot) ☐1 Never ☐2 In some lessons ☐3 In most lessons ☐4 In every or almost every lesson b) Digital learning games ☐1 ☐2 ☐3 ☐4 c) Word-processor software (e.g., Microsoft Word) ☐1 ☐2 ☐3 ☐4 d) Presentation software (e.g., Microsoft PowerPoint) ☐1 ☐2 ☐3 ☐4 e) Spreadsheets (e.g., Microsoft Excel) ☐1 ☐2 ☐3 ☐4 f) Video and photo software for capture and editing (e.g., Windows Movie Maker, iMovie, Adobe Photoshop) ☐1 ☐2 ☐3 ☐4 g) Concept mapping software (e.g., Inspiration, Webspiration) ☐1 ☐2 ☐3 ☐4 h) Simulations and modelling software (e.g., NetLogo) ☐1 ☐2 ☐3 ☐4 i) A learning management system (e.g., Blackboard, Edmodo, Moodle) ☐1 ☐2 ☐3 ☐4 j) Communication software (e.g., email, direct messaging, Skype) ☐1 ☐2 ☐3 ☐4 k) Collaborative software (e.g., Google Docs, OneNote, Padlet) ☐1 ☐2 ☐3 ☐4 l) Computer-based information resources (e.g., topic-related websites, wikis, encyclopaedia) ☐1 ☐2 ☐3 ☐4 m) Interactive digital learning resources (e.g., learning objects) ☐1 ☐2 ☐3 ☐4 n) Graphing or drawing software ☐1 ☐2 ☐3 ☐4 o) e-portfolios (e.g., VoiceThread) ☐1 ☐2 ☐3 ☐4 p) Digital contents linked with textbooks ☐1 ☐2 ☐3 ☐4 q) Social media (e.g., Facebook, Twitter) ☐1 ☐2 ☐3 ☐4
Considerations	This focuses on teacher-reported use of tools in teaching but does not directly measure whether students themselves have acquired these skills.

Test name	ICILS 2018 ICT Coordinator Questionnaire
Analysis	This question provides data on the availability of various ICT tools used to teach important skills such as document editing, presentations, and media editing, which align with the SDG 4.4.1 indicator of basic and intermediate ICT skills
Item	Q5 **Q5 Please indicate the availability of each of the following software resources at your school.** *(Please mark one choice in each row)* a) Practice programs or apps where teachers decide which questions are asked of students (e.g., Quizlet, Kahoot) ..... b) Single user digital learning games (e.g., Languages Online) ..... c) Multi-user digital learning games with graphics and inquiry tasks (e.g., Quest Atlantis) ..... d) Word-processor software (e.g., Microsoft Word) ..... e) Presentation software (e.g., Microsoft PowerPoint) ..... f) Video and photo software for capture and editing (e.g., Windows Movie Maker, iMovie, Adobe Photoshop) ..... g) Concept mapping software (e.g., Inspiration, Webspiration) ..... h) Data logging and monitoring tools (e.g., Logger Pro) that capture real-world data digitally for analysis (e.g., speed, temperature) ..... i) Simulations and modelling software (e.g., NetLogo) ..... j) A learning management system (e.g., Blackboard, Edmodo, Moodle) ..... k) Graphing or drawing software ..... l) e-portfolios (e.g., VoiceThread) ..... m) Digital contents linked with textbooks ..... n) Social media (e.g., Facebook, Twitter) ..... *Available to teachers and students* / *Available only to teachers* / *Available only to students* / *Not available*
Considerations	It measures the availability of tools but does not capture students' actual ICT skill levels or usage frequency.

Test name	ICILS 2018 Principal Questionnaire
Analysis	This question helps assess the priority given to the development of ICT skills among students, such as basic computer usage, programming, and application creation, which are key components of SDG 4.4.1
Item	Q11  **Q11 How important is each of the following outcomes of education in your school?** *(Please mark one choice in each row)* Very important / Quite important / Somewhat important / Not important a) The development of students' basic computer skills (e.g., Internet use, email, word processing, presentation software) ☐1 ☐2 ☐3 ☐4 b) The development of students' skills in using ICT for collaboration with others ☐1 ☐2 ☐3 ☐4 c) The use of ICT for facilitating students' responsibility for their own learning ☐1 ☐2 ☐3 ☐4 d) The use of ICT to augment and improve students' learning ☐1 ☐2 ☐3 ☐4 e) The development of students' understanding and skills relating to safe and appropriate use of ICT ☐1 ☐2 ☐3 ☐4 f) The development of students' proficiency in accessing and using information with ICT ☐1 ☐2 ☐3 ☐4 g) The development of students' ability to write apps or programs ☐1 ☐2 ☐3 ☐4
Considerations	While it reflects the school's priority, it does not directly measure how many students possess these skills or their proficiency level.

Test name	PISA 2022 ICT Questionnaire
Analysis	Question IC174: This question directly captures the use of important ICT skills such as multimedia creation, text editing, and data management—all relevant to SDG 4.4.1 Question IC183: This question is highly aligned with SDG 4.4.1 as it covers a broad spectrum of ICT-related tasks, from basic information retrieval and data management to more advanced tasks like programming and privacy management
Item	Question IC174

IC174 The following statements are about the use of <digital resources> for school related activities in general (i.e. during lessons or when completing homework).

This school year, how often did you use <digital resources> to conduct the following activities?

(Please select one response in each row.)

		Never or almost never	*About once or twice a year*	*About once or twice a month*	*About once or twice a week*	*Every day or almost every day*
IC174Q01JA	Create a multi-media presentation with pictures, sound or video	☐01	☐02	☐03	☐04	☐05
IC174Q02JA	Write or edit text for a school assignment (e.g. using <Google® Docs™>, <Microsoft® Word>)	☐01	☐02	☐03	☐04	☐05
IC174Q03JA	Find information online about real-world problems or phenomena (e.g. climate change, oil spills, measuring the height of a building)	☐01	☐02	☐03	☐04	☐05
IC174Q04JA	Collect and record data (e.g. using data loggers, <Microsoft® Access™>, <Google® Form>, spreadsheets)	☐01	☐02	☐03	☐04	☐05
IC174Q05JA	Analyse data that you have collected yourself (e.g. using <Microsoft® Excel™>)	☐01	☐02	☐03	☐04	☐05
IC174Q06JA	Report or share your results from your own experiments or investigations	☐01	☐02	☐03	☐04	☐05
IC174Q07JA	Plan and manage work or projects (e.g. dividing tasks, managing deadlines)	☐01	☐02	☐03	☐04	☐05
IC174Q08JA	Track the progress of your own work or projects	☐01	☐02	☐03	☐04	☐05
IC174Q09JA	Collaborate with other students to create digital content (e.g. presentation, etc.)	☐01	☐02	☐03	☐04	☐05
IC174Q10JA	Play digital learning games (e.g. <Atlantis Remixed>, <Duolingo®>)	☐01	☐02	☐03	☐04	☐05

	Question IC183 IC183 **To what extent are you able to do the following tasks when using <digital resources>?** *(Please select one response in each row.)*

		I cannot do this	*I struggle to do this on my own*	*I can do with a bit of effort*	*I can easily do this*	*I don't know what this is*
IC183Q01JA	Search for and find relevant information online	☐01	☐02	☐03	☐04	☐05
IC183Q02JA	Assess the quality of information you found online	☐01	☐02	☐03	☐04	☐05
IC183Q03JA	Share practical information with a group of students	☐01	☐02	☐03	☐04	☐05
IC183Q04JA	Collaborate with other students on a group assignment	☐01	☐02	☐03	☐04	☐05
IC183Q05JA	Explain to other students how to share digital content online or on a school platform	☐01	☐02	☐03	☐04	☐05
IC183Q07JA	Write or edit text for a school assignment	☐01	☐02	☐03	☐04	☐05
IC183Q08JA	Collect and record data (e.g. using data loggers, <Microsoft® Access™>, <Google® Form>, spreadsheets)	☐01	☐02	☐03	☐04	☐05
IC183Q09JA	Create a multi-media presentation (with sound, pictures, or video)	☐01	☐02	☐03	☐04	☐05
IC183Q10JA	Create, update and maintain a webpage or a blog	☐01	☐02	☐03	☐04	☐05
IC183Q12JA	Change the settings of a device or App in order to protect my data and privacy	☐01	☐02	☐03	☐04	☐05
IC183Q13JA	Select the most efficient programme or App that allows me to carry out a specific task	☐01	☐02	☐03	☐04	☐05
IC183Q14JA	Create a computer program (e.g., in <Scratch©>, <Python®>, <Java®>)	☐01	☐02	☐03	☐04	☐05
IC183Q15JA	Identify the source of an error in a software after considering a list of potential causes	☐01	☐02	☐03	☐04	☐05

Considerations	Question IC174: While these activities are relevant to ICT skills, the questionnaire does not provide a full range of tasks needed to cover all skill types, such as programming or more advanced ICT tasks. Question IC183: While the question covers various ICT skills, it does not assess proficiency levels, which could be essential for determining the extent of skill mastery.

Test name	PISA 2022 Teacher Questionnaire
Analysis	Question TC220: This question captures the integration of ICT skills in teaching, relevant for ensuring that teachers are proficient in using digital tools in the classroom—an essential part of the ICT skill set Question TC169: This question measures how frequently teachers employ key ICT tools that students may be exposed to, such as word processors, spreadsheets, and coding, aligning with SDG 4.4.1
Item	Question TC220: **This school year, how often did you do the following activities?** TC220 *(If you need further explanation of the term "<digital resources>", please use the help button.)* *(Please select one response in each row.)* Never or almost never / About once or twice a year / About once or twice a month / About once or twice a week / Every day or almost every day TC220Q02JA Use <digital resources> to design tasks ☐01 ☐02 ☐03 ☐04 ☐05 TC220Q04JA Use <digital resources> to explore new teaching methods ☐01 ☐02 ☐03 ☐04 ☐05 TC220Q06JA Use <digital resources> to enable student collaboration ☐01 ☐02 ☐03 ☐04 ☐05 TC220Q07JA Use <digital resources> to provide feedback to students ☐01 ☐02 ☐03 ☐04 ☐05 TC220Q08JA Use <digital resources> to provide access to instructional material for students who cannot physically attend class ☐01 ☐02 ☐03 ☐04 ☐05 TC220Q09JA Use <digital resources> to communicate with parents or guardians ☐01 ☐02 ☐03 ☐04 ☐05 TC220Q10JA Use online tools or computer-based testing to assess students' learning ☐01 ☐02 ☐03 ☐04 ☐05 TC220Q11JA Use <digital resources> to share ideas or resources with colleagues ☐01 ☐02 ☐03 ☐04 ☐05 TC220Q12JA Take part in professional communities of practice online ☐01 ☐02 ☐03 ☐04 ☐05 Help button <Digital resources> refer to digital devices or hardware (e.g. computers, tablets, smartphones, 3D printers), software (e.g. programs, apps, communications tools, educational learning tools), and online resources (e.g. websites, web portals).

Question TC169:

TC169 **How often did you use the following tools in your teaching this school year?**

(Please select one response in each row.)

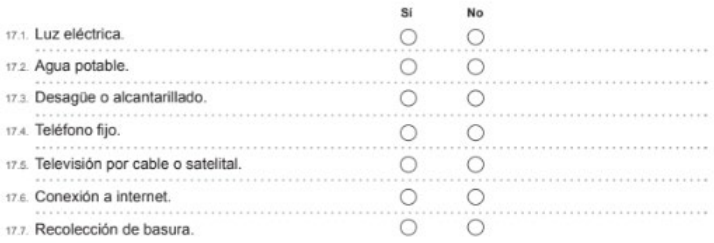
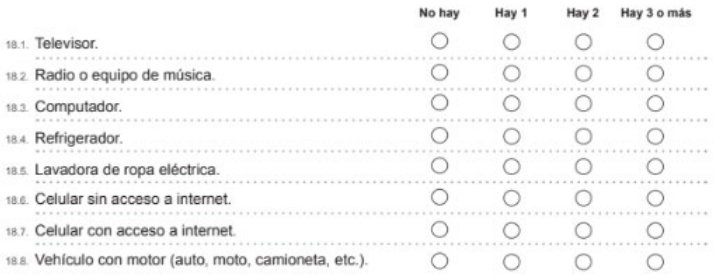
		Never	*In some lessons*	*In most lessons*	*In every or almost every lesson*
TC169Q01HA	Tutorial software or practice programmes	☐01	☐02	☐03	☐04
TC169Q02HA	Digital learning games	☐01	☐02	☐03	☐04
TC169Q03HA	Word-processors or presentation software (e.g. <Microsoft Word®>, <Microsoft PowerPoint®>)	☐01	☐02	☐03	☐04
TC169Q04HA	Spreadsheets (e.g. <Microsoft Excel®>)	☐01	☐02	☐03	☐04
TC169Q05HA	Multimedia production tools (e.g. media capture and editing, web production)	☐01	☐02	☐03	☐04
TC169Q06HA	Concept mapping software (e.g. <Inspiration®>, <Webspiration®>)	☐01	☐02	☐03	☐04
TC169Q07HA	Data logging and monitoring tools	☐01	☐02	☐03	☐04
TC169Q08HA	Simulations and modelling software	☐01	☐02	☐03	☐04
TC169Q09HA	Social media (e.g. <Facebook®>, <Twitter>)	☐01	☐02	☐03	☐04
TC169Q10HA	Communication software (e.g. email, blogs)	☐01	☐02	☐03	☐04
TC169Q11HA	Computer-based information resources (e.g. websites, wikis, encyclopaedia)	☐01	☐02	☐03	☐04
TC169Q15JA	Interactive digital learning resources (e.g. instructional content, quizzes)	☐01	☐02	☐03	☐04
TC169Q13HA	Graphing or drawing software	☐01	☐02	☐03	☐04
TC169Q14HA	E-portfolios	☐01	☐02	☐03	☐04

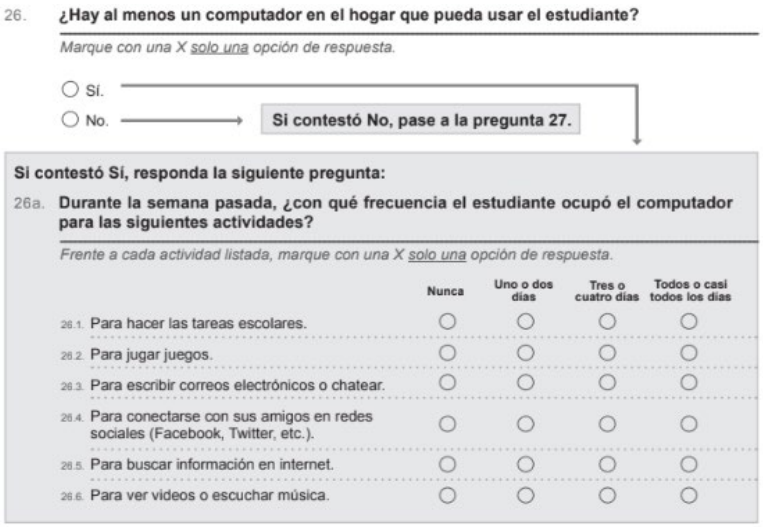
Considerations

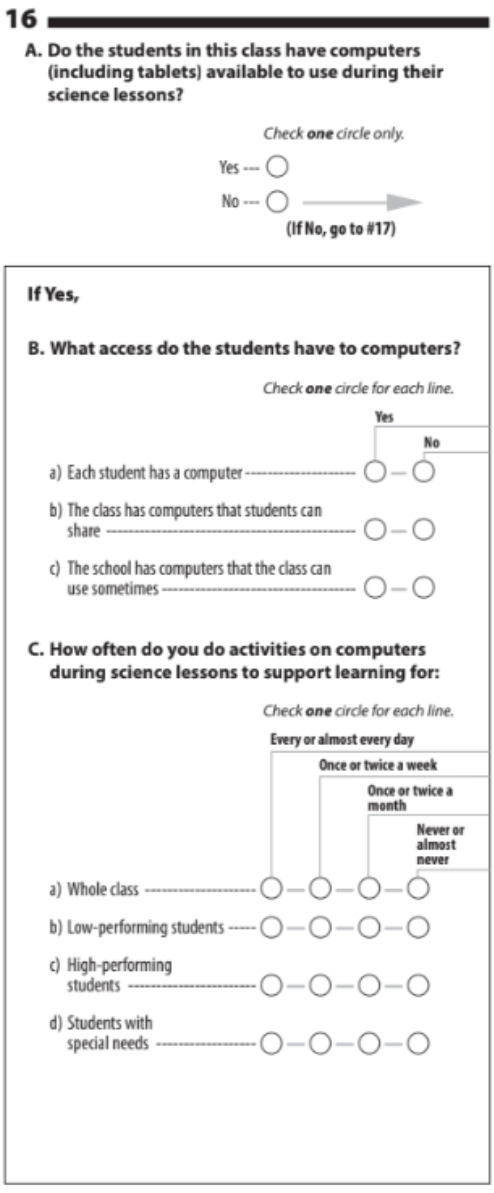
Question TC220: The focus is on teachers' use of ICT, rather than directly measuring students' proficiency in ICT-related activities.

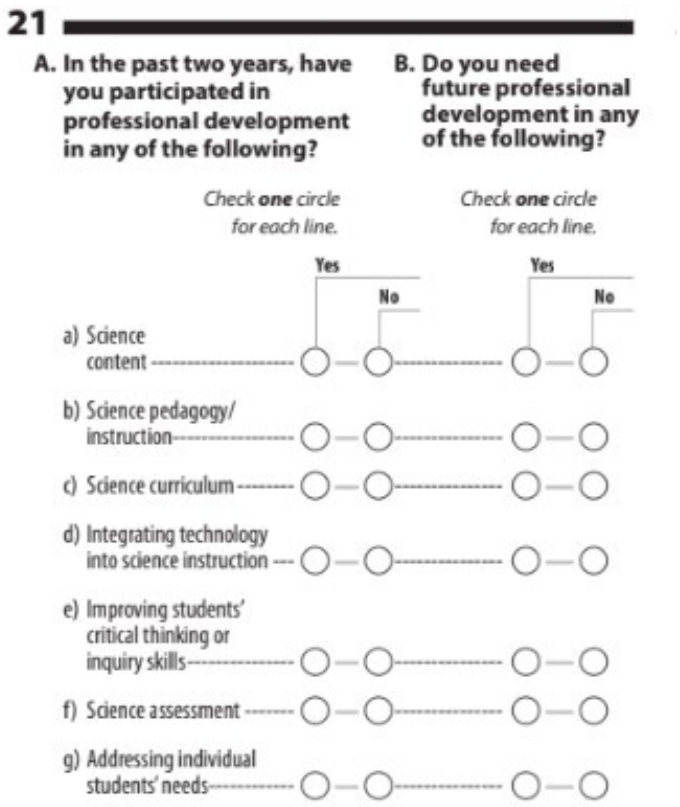
Question TC169: While it captures exposure to ICT tools, it does not provide direct data on whether students can effectively use these tools.

Test name	ERCE 2019 QA3 Questionnaire ERCE 2019 QA6 Questionnaire
Analysis	This question directly assesses access to devices necessary for developing ICT skills.
Item	Question 9 (QA3) Question 12 (QA6) **Sobre los materiales educativos que usas en la escuela.** *Frente a cada una de las siguientes preguntas, marca con una X solo una opción de respuesta (Sí, No).* 12.1. ¿Tienes tu propio libro de texto de lenguaje para usar en clase? Si No 12.2. ¿Tienes tu propio libro de texto de matemática para usar en clase? Si No 12.3. ¿Tienes tu propio libro de ciencias para usar en clase? Si No 12.4. ¿Tienes tus propios cuadernos o libretas para tomar notas en clase? Si No 12.5. ¿Tienes tus propios lápices o lapiceros para usar en clase? Si No 12.6. ¿Tienes tu propio computador o tablet para usar en clase? Si No
Considerations	The questions mainly address access and basic usage rather than specific ICT skills like programming, file management, or using specialized software. The focus on access and basic use does not capture the full scope of skills required by SDG 4.4.1.

Test name	ERCE 2019 QF3 Questionnaire
Analysis	Access to a computer and internet is a basic prerequisite for developing ICT skills. This question helps determine whether children are in environments conducive to learning ICT-related skills.
Item	Question 17-18 17. **¿Cuenta con alguno de los siguientes servicios en su hogar?** *Frente a cada uno de los servicios listados, marque con una X solo una opción de respuesta.*  17.1. Luz eléctrica. Sí ○ No ○ 17.2. Agua potable. Sí ○ No ○ 17.3. Desagüe o alcantarillado. Sí ○ No ○ 17.4. Teléfono fijo. Sí ○ No ○ 17.5. Televisión por cable o satelital. Sí ○ No ○ 17.6. Conexión a internet. Sí ○ No ○ 17.7. Recolección de basura. Sí ○ No ○ 18. **¿Cuántos de los siguientes bienes tiene en su hogar? Considere solo aquellos bienes que funcionan actualmente.** *Frente a cada uno de los bienes listados, marque con una X solo una opción de respuesta.*  18.1. Televisor. No hay ○ Hay 1 ○ Hay 2 ○ Hay 3 o más ○ 18.2. Radio o equipo de música. No hay ○ Hay 1 ○ Hay 2 ○ Hay 3 o más ○ 18.3. Computador. No hay ○ Hay 1 ○ Hay 2 ○ Hay 3 o más ○ 18.4. Refrigerador. No hay ○ Hay 1 ○ Hay 2 ○ Hay 3 o más ○ 18.5. Lavadora de ropa eléctrica. No hay ○ Hay 1 ○ Hay 2 ○ Hay 3 o más ○ 18.6. Celular sin acceso a internet. No hay ○ Hay 1 ○ Hay 2 ○ Hay 3 o más ○ 18.7. Celular con acceso a internet. No hay ○ Hay 1 ○ Hay 2 ○ Hay 3 o más ○ 18.8. Vehículo con motor (auto, moto, camioneta, etc.). No hay ○ Hay 1 ○ Hay 2 ○ Hay 3 o más ○
Considerations	It only assesses access, not skill level. It does not capture how the computer is used, which is crucial for measuring the skills identified in SDG 4.4.1 (such as using spreadsheets or creating presentations).

Test name	ERCE 2019 QF6 Questionnaire
Analysis	This question aligns with SDG 4.4.1 by measuring ICT-related activities, such as document editing and presentation creation. It is particularly relevant because it asks about activities performed in the past three months, which is a requirement for the indicator.
Item	Question 26  26. **¿Hay al menos un computador en el hogar que pueda usar el estudiante?** *Marque con una X solo una opción de respuesta.* ○ Sí. ○ No. → **Si contestó No, pase a la pregunta 27.** **Si contestó Sí, responda la siguiente pregunta:** 26a. **Durante la semana pasada, ¿con qué frecuencia el estudiante ocupó el computador para las siguientes actividades?** *Frente a cada actividad listada, marque con una X solo una opción de respuesta.* 26.1. Para hacer las tareas escolares. ○ Nunca ○ Uno o dos días ○ Tres o cuatro días ○ Todos o casi todos los días 26.2. Para jugar juegos. ○ ○ ○ ○ 26.3. Para escribir correos electrónicos o chatear. ○ ○ ○ ○ 26.4. Para conectarse con sus amigos en redes sociales (Facebook, Twitter, etc.). ○ ○ ○ ○ 26.5. Para buscar información en internet. ○ ○ ○ ○ 26.6. Para ver videos o escuchar música. ○ ○ ○ ○
Considerations	These questions address basic digital engagement rather than the specific skill sets outlined in SDG 4.4.1 (e.g., transferring files, programming, or advanced spreadsheet usage). They primarily reflect general computer use rather than assessing specific ICT skills.

Test name	T19_TQS_8.pdf (TIMSS Grade 8 Science Teacher Questionnaire) T19_TQ_4.pdf (TIMSS Grade 8 Science Teacher Questionnaire)
Analysis	These questions capture important aspects of ICT integration in classrooms, focusing on the availability of computers and how often they are used to support learning. They also assess teachers' professional development in using ICT for instruction, which is key for ensuring that students have exposure to ICT in learning environments.
Item	Question 16; Question 16C  **16** **A. Do the students in this class have computers (including tablets) available to use during their science lessons?** *Check **one** circle only.* Yes --- No --- **(If No, go to #17)** **If Yes,** **B. What access do the students have to computers?** *Check **one** circle for each line.* Yes / No a) Each student has a computer b) The class has computers that students can share c) The school has computers that the class can use sometimes **C. How often do you do activities on computers during science lessons to support learning for:** *Check **one** circle for each line.* Every or almost every day / Once or twice a week / Once or twice a month / Never or almost never a) Whole class b) Low-performing students c) High-performing students d) Students with special needs

	Question 21 
Considerations	These questions focus on ICT tool availability and frequency of use but do not directly measure specific ICT skills or students' proficiency in tasks such as programming, data analysis, or digital literacy. More detailed data on student skills would be needed for a complete picture of ICT competence.

Conclusions:

The analysis of tests from ICILS, PISA, ERCE, and TIMSS shows that while many of the questions capture students' exposure to ICT tools, such as document editing, spreadsheets, and multimedia creation, they often fall short of fully measuring ICT proficiency as defined in SDG 4.4.1. The focus is generally on the frequency of use of these tools rather than on the proficiency levels or mastery of skills, especially for more advanced tasks such as programming or configuring software. This limits the ability of the questions to fully assess whether youth and adults have acquired the ICT skills necessary for today's digital landscape

To better measure SDG 4.4.1, UNESCO should ensure that future assessments not only capture the frequency of ICT tool usage but also assess the proficiency levels of youth and

adults across a broader range of ICT skills, including more advanced tasks like programming and digital security. This can be achieved by incorporating more direct measures of skill mastery, as well as expanding the scope of the questions to include more complex tasks. Additionally, existing questionnaires should include questions on how often and how proficiently students use these skills within the last three months, as specified by the operationalization of the indicator.

Recommendation:

Of the ILSAs discussed, ICILS would be the most suitable choice for measuring SDG indicator 4.4.1 However, even ICILS has limitations that need to be addressed for a comprehensive measurement of SDG 4.4.1. These include:

- Lack of Proficiency Measurement: ICILS currently focuses on the frequency of ICT use rather than directly assessing proficiency levels. To improve the measurement, ICILS would need to incorporate more objective ways to evaluate skill mastery. This could involve:
    - Performance-based tasks where students demonstrate their ability to complete specific ICT-related activities
    - Standardized assessments that measure proficiency levels according to a defined scale
- Limited Scope of Skills: While ICILS covers some essential ICT skills, it could be expanded to include a wider range of activities, especially those related to more advanced skills. This would ensure a more comprehensive assessment of digital literacy. Examples of skills that could be added include:
    - Coding and programming
    - Configuring software
    - Ensuring digital security (e.g., understanding privacy settings, recognizing phishing attempts)

4.4.2 Percentage of youth/adults who have achieved at least a minimum level of proficiency in digital literacy skills

Classification: Searchable

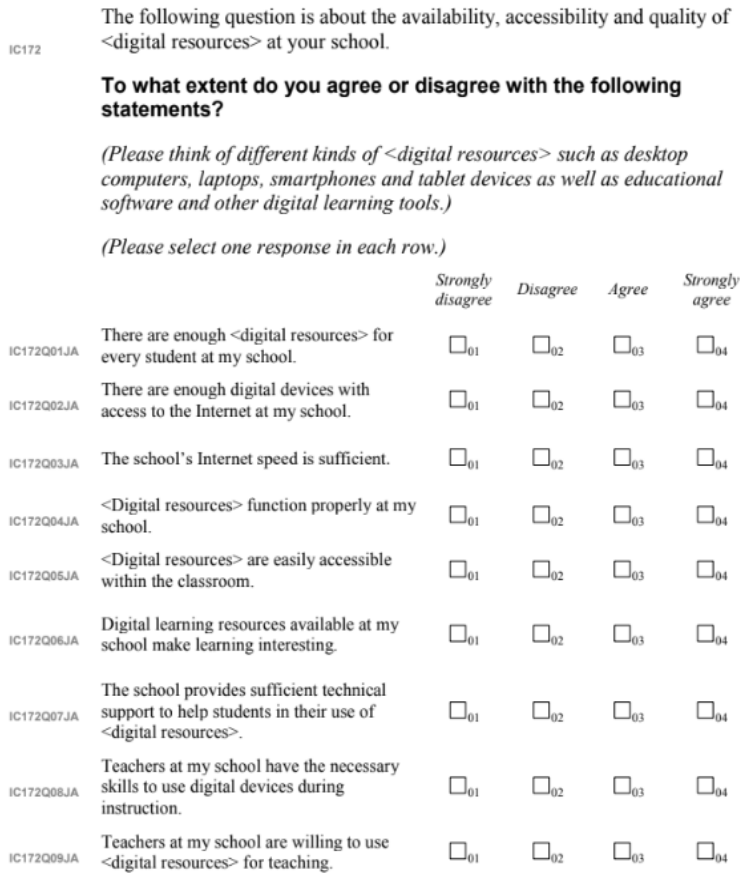
Test name	ICT Questionnaire PISA 2022
Analysis	This questionnaire captures a broad range of digital skills, from basic to advanced tasks like programming. It effectively gauges students' familiarity with essential digital tools and operations, which align well with the digital literacy skills required by SDG 4.4.2.
Item	Question IC183

IC183 **To what extent are you able to do the following tasks when using <digital resources>?**

(Please select one response in each row.)

		I cannot do this	*I struggle to do this on my own*	*I can do with a bit of effort*	*I can easily do this*	*I don't know what this is*
IC183Q01JA	Search for and find relevant information online	☐01	☐02	☐03	☐04	☐05
IC183Q02JA	Assess the quality of information you found online	☐01	☐02	☐03	☐04	☐05
IC183Q03JA	Share practical information with a group of students	☐01	☐02	☐03	☐04	☐05
IC183Q04JA	Collaborate with other students on a group assignment	☐01	☐02	☐03	☐04	☐05
IC183Q05JA	Explain to other students how to share digital content online or on a school platform	☐01	☐02	☐03	☐04	☐05
IC183Q07JA	Write or edit text for a school assignment	☐01	☐02	☐03	☐04	☐05
IC183Q08JA	Collect and record data (e.g. using data loggers, <Microsoft® Access™>, <Google® Form>, spreadsheets)	☐01	☐02	☐03	☐04	☐05
IC183Q09JA	Create a multi-media presentation (with sound, pictures, or video)	☐01	☐02	☐03	☐04	☐05
IC183Q10JA	Create, update and maintain a webpage or a blog	☐01	☐02	☐03	☐04	☐05
IC183Q12JA	Change the settings of a device or App in order to protect my data and privacy	☐01	☐02	☐03	☐04	☐05
IC183Q13JA	Select the most efficient programme or App that allows me to carry out a specific task	☐01	☐02	☐03	☐04	☐05
IC183Q14JA	Create a computer program (e.g., in <Scratch©>, <Python®>, <Java®>)	☐01	☐02	☐03	☐04	☐05
IC183Q15JA	Identify the source of an error in a software after considering a list of potential causes	☐01	☐02	☐03	☐04	☐05

Considerations	The main limitation is that it relies on self-reported data, which may not accurately reflect actual skill levels. It also does not assess students' problem-solving in technology-rich environments, which is a core focus of SDG 4.4.2 proficiency measurements.

Test name	ICT Questionnaire PISA 2022
Analysis	This questionnaire is effective in evaluating how teachers integrate ICT in their teaching, indirectly helping students develop digital literacy skills. It captures the use of ICT for instructional purposes, which is essential for exposing students to ICT tools and fostering digital literacy.
Item	IC172  IC172 The following question is about the availability, accessibility and quality of <digital resources> at your school. **To what extent do you agree or disagree with the following statements?** *(Please think of different kinds of <digital resources> such as desktop computers, laptops, smartphones and tablet devices as well as educational software and other digital learning tools.)* *(Please select one response in each row.)* Strongly disagree / Disagree / Agree / Strongly agree IC172Q01JA There are enough <digital resources> for every student at my school. ☐01 ☐02 ☐03 ☐04 IC172Q02JA There are enough digital devices with access to the Internet at my school. ☐01 ☐02 ☐03 ☐04 IC172Q03JA The school's Internet speed is sufficient. ☐01 ☐02 ☐03 ☐04 IC172Q04JA <Digital resources> function properly at my school. ☐01 ☐02 ☐03 ☐04 IC172Q05JA <Digital resources> are easily accessible within the classroom. ☐01 ☐02 ☐03 ☐04 IC172Q06JA Digital learning resources available at my school make learning interesting. ☐01 ☐02 ☐03 ☐04 IC172Q07JA The school provides sufficient technical support to help students in their use of <digital resources>. ☐01 ☐02 ☐03 ☐04 IC172Q08JA Teachers at my school have the necessary skills to use digital devices during instruction. ☐01 ☐02 ☐03 ☐04 IC172Q09JA Teachers at my school are willing to use <digital resources> for teaching. ☐01 ☐02 ☐03 ☐04
Considerations	It focuses on teachers' usage of ICT rather than directly measuring students' ICT proficiency. It assumes that ICT integration in teaching leads to skill development, but it does not provide a direct assessment of students' competence in performing specific ICT tasks.

Test name	ICILS 2018 Student Questionnaire
Analysis	This questionnaire effectively captures a range of digital literacy skills, including content creation and database management, which are aligned with the key competencies outlined for SDG 4.4.2. It provides insights into students' self-assessed ICT capabilities across various areas of digital literacy.
Item	Question 26-29

Q26 When studying throughout this school year, how often did you use the following tools during class?

(*Please mark one choice in each row*)

	Never	*In some lessons*	*In most lessons*	*In every or almost every lesson*
a) Tutorial software or practice programs	☐	☐	☐	☐
b) Word-processing software (e.g., Microsoft Word)	☐	☐	☐	☐
c) Presentation software (e.g., Microsoft PowerPoint)	☐	☐	☐	☐
d) Spreadsheets (e.g., Microsoft Excel)	☐	☐	☐	☐
e) Multimedia production tools (e.g., media capture and editing, web production)	☐	☐	☐	☐
f) Concept mapping software (e.g., Inspiration, Webspiration)	☐	☐	☐	☐
g) Tools that capture real-world data (e.g., speed, temperature) digitally for analysis	☐	☐	☐	☐
h) Simulations and modelling software	☐	☐	☐	☐
i) Computer-based information resources (e.g., websites, wikis, encyclopedia)	☐	☐	☐	☐
j) Interactive digital learning resources (e.g., learning games or applications)	☐	☐	☐	☐
k) Graphing or drawing software	☐	☐	☐	☐

Q27 At school, to what extent have you learned how to do the following tasks?

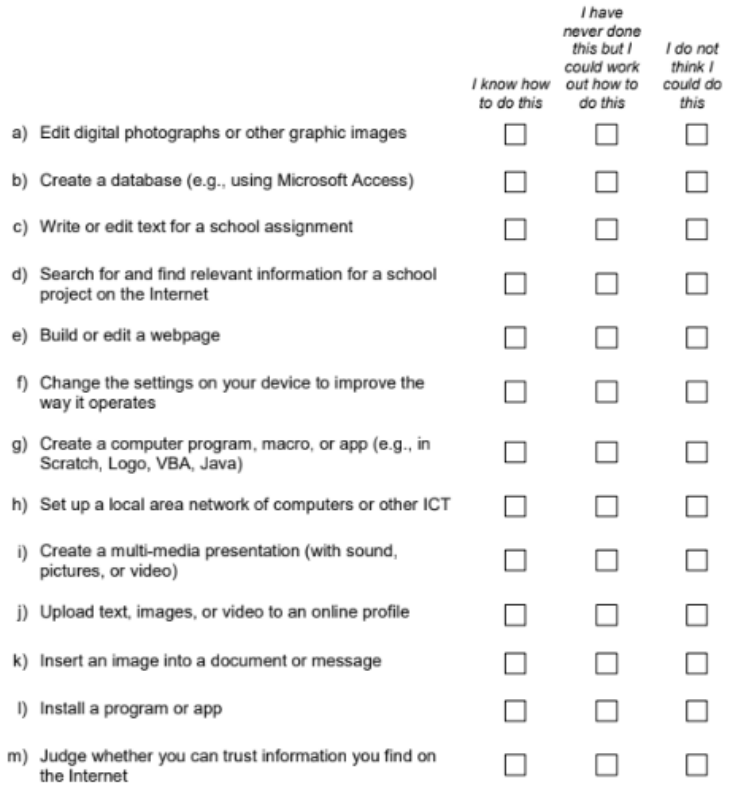
(Please mark one choice in each row)

	To a large extent	*To a moderate extent*	*To a small extent*	*Not at all*
a) Provide references to Internet sources	☐	☐	☐	☐
b) Search for information using ICT	☐	☐	☐	☐
c) Present information for a given audience or purpose using ICT	☐	☐	☐	☐
d) Work out whether to trust information from the Internet	☐	☐	☐	☐
e) Decide what information obtained from the Internet is relevant to include in school work	☐	☐	☐	☐
f) Organize information obtained from Internet sources	☐	☐	☐	☐
g) Decide where to look for information on the Internet about an unfamiliar topic	☐	☐	☐	☐
h) Use ICT to collaborate with others	☐	☐	☐	☐

Q28 At school, have you learned about the importance of the following topics?

(Please mark one choice in each row)

	Yes	*No*
a) To change passwords regularly (e.g., network account, email, social media)	☐	☐
b) To check the origin of emails before opening attachments	☐	☐
c) To log out of a shared computer at the end of a session	☐	☐
d) To share information on social media responsibly	☐	☐

	Q29 **How well can you do each of these tasks when using ICT?** *(Please mark one choice in each row)*  a) Edit digital photographs or other graphic images b) Create a database (e.g., using Microsoft Access) c) Write or edit text for a school assignment d) Search for and find relevant information for a school project on the Internet e) Build or edit a webpage f) Change the settings on your device to improve the way it operates g) Create a computer program, macro, or app (e.g., in Scratch, Logo, VBA, Java) h) Set up a local area network of computers or other ICT i) Create a multi-media presentation (with sound, pictures, or video) j) Upload text, images, or video to an online profile k) Insert an image into a document or message l) Install a program or app m) Judge whether you can trust information you find on the Internet *I know how to do this* *I have never done this but I could work out how to do this* *I do not think I could do this*
Considerations	It is self-reported and lacks a formalized proficiency scale to measure the actual skill level of students. It does not assess problem-solving in technology-rich environments, which is crucial for fully meeting SDG 4.4.2 proficiency standards.

Test name	PIAAC
Analysis	h
Item	h
Considerations	

Conclusions:

The PISA 2022, ICILS 2018, and PIAAC questionnaires provide valuable insights into students' digital literacy skills by covering a range of basic to advanced tasks, such as programming, content creation, and database management. However, both rely on self-reported data, which may not accurately reflect actual proficiency levels. While the questionnaires capture the frequency of ICT use and exposure, they lack direct assessments of problem-solving in technology-rich environments, which is a critical component of SDG 4.4.2. The absence of a formalized proficiency scale further limits their effectiveness in measuring minimum levels of digital literacy skills.

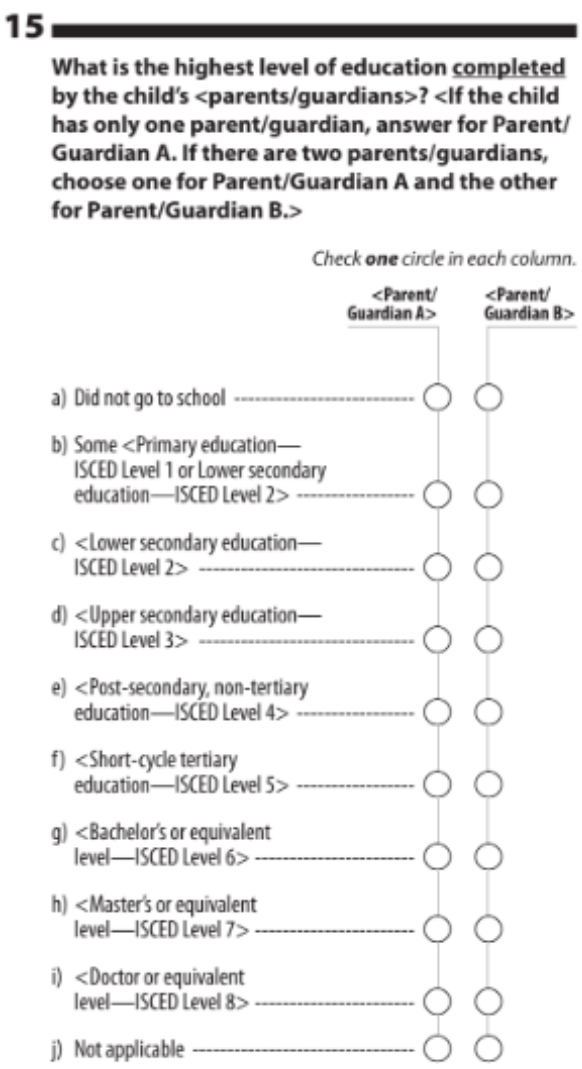
To better measure SDG 4.4.2, UNESCO should introduce objective assessments that evaluate actual proficiency levels in digital literacy, rather than relying on self-reported data. These assessments should include tasks that test problem-solving in technology-rich environments, which are central to digital literacy. Expanding the scope to include a formal proficiency scale would provide a more accurate and comprehensive measurement of whether youth and adults meet the minimum required skills. Additionally, integrating real-world digital tasks into the assessment can further ensure that the skills being measured align with the evolving demands of the digital world.

Recommendation:

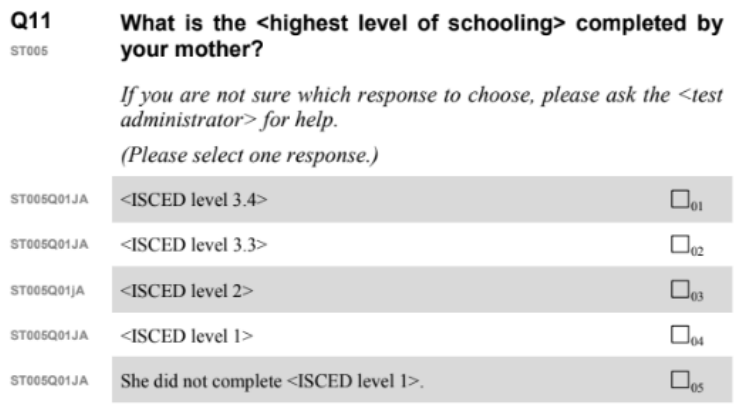
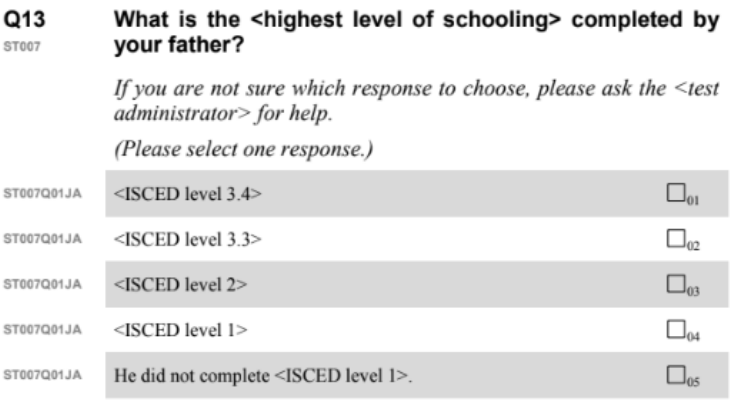
None of the existing ILSA tests like the PISA 2022 or ICILS 2018 questionnaires fully capture the required digital literacy proficiency. The main limitation is that they rely on self-reported data and lack direct assessments of problem-solving in technology-rich environments, which are crucial for measuring proficiency in digital literacy. None provide an objective digital skills assessment that directly evaluates proficiency levels in essential areas such as programming, content creation, and problem-solving in technology-rich environments. To measure this indicator the assessments should be integrated with national surveys or household surveys to ensure it captures the full scope of digital literacy skills required by the indicator.

4.4.3 Youth/adult educational attainment rates by age group and level of education

Classification: Searchable

Test name	PIRLS 2021 P21 Home Questionnaire
Analysis	This question is directly relevant to SDG 4.4.3, as it captures data on the highest level of education attained by individuals. Since it follows the ISCED framework, it provides standardized data that can be used for cross-national comparisons.
Item	Q15  **15** **What is the highest level of education completed by the child's <parents/guardians>? <If the child has only one parent/guardian, answer for Parent/ Guardian A. If there are two parents/guardians, choose one for Parent/Guardian A and the other for Parent/Guardian B.>** *Check **one** circle in each column.* <Parent/ Guardian A> <Parent/ Guardian B> a) Did not go to school b) Some <Primary education—ISCED Level 1 or Lower secondary education—ISCED Level 2> c) <Lower secondary education—ISCED Level 2> d) <Upper secondary education—ISCED Level 3> e) <Post-secondary, non-tertiary education—ISCED Level 4> f) <Short-cycle tertiary education—ISCED Level 5> g) <Bachelor's or equivalent level—ISCED Level 6> h) <Master's or equivalent level—ISCED Level 7> i) <Doctor or equivalent level—ISCED Level 8> j) Not applicable
Considerations	This question is limited to parents/guardians and does not extend to the full population of adults aged 25+ or youth aged 15-24. While it helps in

	understanding family education background, it doesn't cover the broader population needed for SDG 4.4.3 calculations.

Test name	PISA 2022 Student Questionnaire
Analysis	These questions capture family educational background, providing data on educational attainment at ISCED levels. They are useful for tracking educational trends across generations, indirectly informing analysis on attainment rates.
Item	Q11  **Q11** ST005 **What is the <highest level of schooling> completed by your mother?** *If you are not sure which response to choose, please ask the <test administrator> for help.* *(Please select one response.)* ST005Q01JA <ISCED level 3.4> ☐01 ST005Q01JA <ISCED level 3.3> ☐02 ST005Q01JA <ISCED level 2> ☐03 ST005Q01JA <ISCED level 1> ☐04 ST005Q01JA She did not complete <ISCED level 1>. ☐05 Q13  **Q13** ST007 **What is the <highest level of schooling> completed by your father?** *If you are not sure which response to choose, please ask the <test administrator> for help.* *(Please select one response.)* ST007Q01JA <ISCED level 3.4> ☐01 ST007Q01JA <ISCED level 3.3> ☐02 ST007Q01JA <ISCED level 2> ☐03 ST007Q01JA <ISCED level 1> ☐04 ST007Q01JA He did not complete <ISCED level 1>. ☐05
Considerations	The focus on parents limits the data to family structures and doesn't provide a complete picture of the overall population's educational attainment. For full SDG 4.4.3 analysis, broader data on youth and adult education levels are required.

Conclusions:

The PIRLS 2021 and PISA 2022 questionnaires capture data on family educational background, providing insights into the highest level of education attained, which aligns with SDG 4.4.3. These questions are valuable for tracking educational trends across generations using the ISCED framework. However, their focus on parents and family structures limits their scope, as they do not provide comprehensive data on the broader population of youth (aged 15-24) or adults (aged 25+), which is essential for calculating educational attainment rates as required by SDG 4.4.3.

To better measure SDG 4.4.3, UNESCO should ensure that assessments include questions targeting the youth and adult populations, rather than limiting the scope to family educational background. Expanding the questionnaire to gather direct data on educational attainment for individuals within the relevant age groups (15-24 and 25+ years) will provide a more complete and accurate analysis of attainment rates by education level. This will enable better cross-national comparisons and help track progress toward SDG 4.4.3 more effectively.

Recommendation:

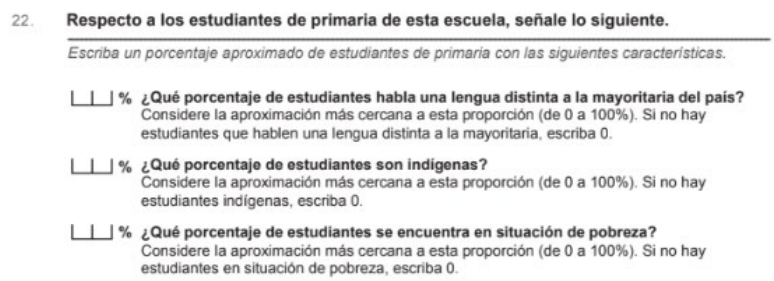
While national censuses and household surveys are ideal for measuring indicator 4.4.3, certain ILSAs can provide valuable, complementary information about educational backgrounds, particularly for younger age groups. Of the ILSAs analyzed, the PISA 2022 questionnaire offers the most relevant questions for this purpose.

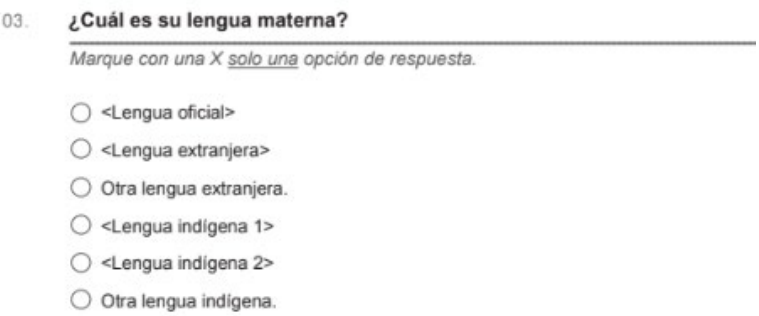
4.5.2 Percentage of students in a) early grades, b) at the end of primary, and c) at the end of lower secondary education who have their first or home language as language of instruction

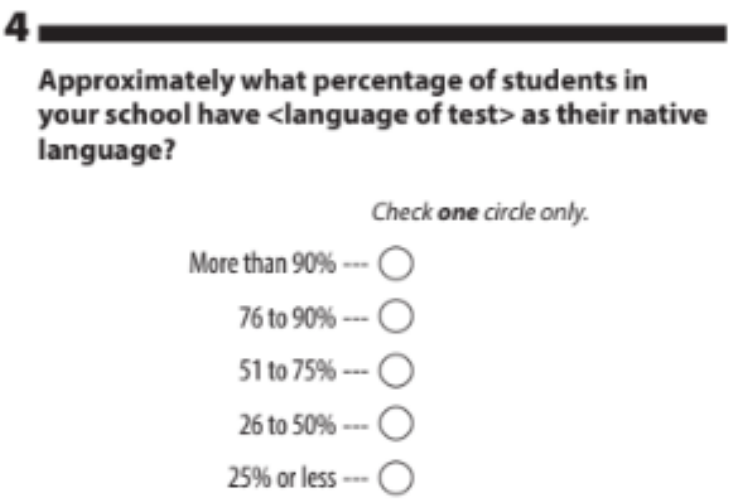
Classification: Searchable

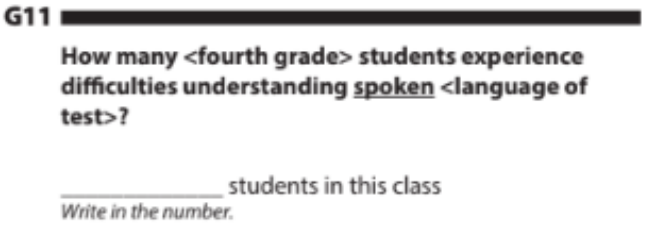
Test name	PISA 2022 Computer-Based Student Questionnaire
Analysis	This question is effective in determining the language spoken at home, which can be compared to the language of instruction to calculate the percentage of students whose first language is used in the classroom. This is a central requirement for SDG 4.5.2, as it allows direct analysis of linguistic alignment in education.
Item	Q21 (ST022) ST022 **What language do you speak at home most of the time?** *(Please select one response.)* ST022Q01TA <Language 1> ☐01 ST022Q01TA <Language 2> ☐02 ST022Q01TA <Language 3> ☐03 ST022Q01TA < …etc. > ☐04 ST022Q01TA Other language ☐05
Considerations	While the question captures the home language, it does not directly ask about the language of instruction, requiring a separate data source to make the comparison. Additionally, it doesn't specify whether the question targets early grades, the end of primary, or lower secondary education, which are necessary breakdowns for SDG 4.5.2.

Test name	T19_HQ_4 (Early Learning Survey)
Analysis	This question is effective in gathering data on the first language of children before entering school. It helps measure whether the language spoken at home is continued in school, which is relevant for analyzing early-grade language alignment for SDG 4.5.2.
Item	Q3 **3** **What language did your child speak before he/she began school?** *If your child spoke more than one language check "Yes" for more than one language.* *Check **one** circle for each line.* Yes No a) <language of test> ---------- ○ ○ b) <country-specific> ---------- ○ ○ c) <country-specific> ---------- ○ ○ d) <country-specific> ---------- ○ ○ e) <country-specific> ---------- ○ ○ f) Other ---------- ○ ○
Considerations	It doesn't capture the language of instruction, and additional data is needed to make the comparison necessary for calculating the indicator. Furthermore, it focuses on early childhood and doesn't explicitly cover students at the end of primary or lower secondary levels.

Test name	ERCE 2019 QD6 and QD3 Questionnaires (Director's Questionnaire)
Analysis	This question is directly relevant for SDG 4.5.2 as it helps to identify the proportion of students whose home language might differ from the language of instruction.
Item	Question 22  22. **Respecto a los estudiantes de primaria de esta escuela, señale lo siguiente.** *Escriba un porcentaje aproximado de estudiantes de primaria con las siguientes características.* ⌊_⌋⌊_⌋ % **¿Qué porcentaje de estudiantes habla una lengua distinta a la mayoritaria del país?** Considere la aproximación más cercana a esta proporción (de 0 a 100%). Si no hay estudiantes que hablen una lengua distinta a la mayoritaria, escriba 0. ⌊_⌋⌊_⌋ % **¿Qué porcentaje de estudiantes son indígenas?** Considere la aproximación más cercana a esta proporción (de 0 a 100%). Si no hay estudiantes indígenas, escriba 0. ⌊_⌋⌊_⌋ % **¿Qué porcentaje de estudiantes se encuentra en situación de pobreza?** Considere la aproximación más cercana a esta proporción (de 0 a 100%). Si no hay estudiantes en situación de pobreza, escriba 0.
Considerations	While this question helps identify the students' home languages, it doesn't directly ask about the language of instruction. To fully align with SDG 4.5.2, additional data on whether these students are taught in their home language would be needed.

Test name	ERCE 2019 QP6 (Teacher's Questionnaire)
Analysis	This question helps determine the teacher's language, which may indirectly reflect whether the language of instruction matches the teacher's and the students' languages.
Item	Question 03  03. **¿Cuál es su lengua materna?** *Marque con una X solo una opción de respuesta.* ○ <Lengua oficial> ○ <Lengua extranjera> ○ Otra lengua extranjera. ○ <Lengua indígena 1> ○ <Lengua indígena 2> ○ Otra lengua indígena.
Considerations	This question only addresses the teacher's language and does not provide direct information on whether the students are being taught in their first language, which is central to SDG 4.5.2.

Test name	P21 School Questionnaire
Analysis	It directly asks about the percentage of students whose home language is the same as the language of instruction (in this case, the language of the test). This is critical for measuring the percentage of students learning in their first language
Item	Question 4  **4** **Approximately what percentage of students in your school have <language of test> as their native language?** *Check **one** circle only.* More than 90% --- 76 to 90% --- 51 to 75% --- 26 to 50% --- 25% or less ---
Considerations	The question does not specify the grade levels (early grades, end of primary, or lower secondary), which is necessary for fully meeting the SDG criteria.

Test name	T19_TQ_4 (TIMSS Teacher Questionnaire)
Analysis	This question is highly relevant for SDG 4.5.2, as it directly asks about students' understanding of the language of instruction, which is a proxy for determining whether students are being taught in their first or home language.
Item	Question G11  **G11** **How many <fourth grade> students experience difficulties understanding spoken <language of test>?** _____ students in this class *Write in the number.*

Considerations	While the question is useful for identifying students who have difficulties with the language of instruction, it does not specifically ask whether the language of instruction is their first or home language. It also focuses on students struggling with language, rather than providing a complete percentage breakdown of all students by language alignment.

Test name	PILNA 2021 Student Questionnaire Y4 & Y6
Analysis	PILNA 2021 does not directly ask about the language of instruction used in the classroom. However, it does ask about the main language spoken at home, which can provide insights into the linguistic background of students.
Item	Question 18 – Language spoken at home 18. What is the main language spoken at your home? *Tick **one** box only.* English ☐1 National language 1 ☐2 National language 2 (if applicable) ☐3 Local vernacular (if applicable) (e.g. …) ☐4 Other language ☐5 Question 19 – Language used in other activities 19. What language do you mainly use for the following activities? *Tick **one** box in each row.* a) Talking with teachers in school. ☐1 ☐2 ☐3 b) Talking with friends. ☐1 ☐2 ☐3 c) Talking with father / mother / guardian. ☐1 ☐2 ☐3 d) Talking with brothers and sisters. ☐1 ☐2 ☐3 e) Talking with other relatives. ☐1 ☐2 ☐3 f) Talking to other people (e.g., shop, market). ☐1 ☐2 ☐3 g) Reading. ☐1 ☐2 ☐3 h) Listening to music. ☐1 ☐2 ☐3 i) Singing. ☐1 ☐2 ☐3 j) Watching TV. ☐1 ☐2 ☐3
Considerations	Using both questions, PILNA is perfect to analyze language of instruction and language used in home.

Conclusions:

The various questionnaires reviewed provide partial insight into measuring SDG 4.5.2, which requires identifying the percentage of students whose first or home language is also the language of instruction. Several questions, such as Q21 (ST022) from the PISA 2022 Computer-Based Student Questionnaire, effectively capture the language spoken at home. However, most of these questions fail to directly assess the language of instruction, which is necessary to make a direct comparison and fulfill the indicator's requirements. Moreover, while some items like TIMSS's Teacher Questionnaire (T19_TQ_4) ask about students' struggles with the language of instruction, they do not offer a comprehensive view across all students or across the required educational levels (early grades, primary, and lower secondary). PILNA design does a solid job to identify language used in home and with teachers (instruction).

To accurately measure SDG 4.5.2, future questionnaires should explicitly ask about both the language of instruction and the students' first/home language to allow a direct comparison. Additionally, the questions should be designed to cover specific grade levels (early grades, end of primary, and lower secondary) to ensure alignment with the SDG's required breakdowns. Implementing this would provide a clearer, more complete picture of linguistic alignment in education, especially in multilingual contexts. Collaborating with schools to gather information on both languages would allow for more accurate data collection and ensure effective measurement of this indicator.

Recommendation:

We recommend using PILNA 2021 to measure the indicator because its design effectively identifies both the language used at home and the language used by teachers (for instruction). This allows for a direct comparison to determine whether students are being taught in their first language.

4.5.4 Expenditure on education per student by level of education and source of funding

Classification: National Survey

This indicator cannot be accurately assessed using International Large-Scale Assessments (ILSAs) due to methodological limitations.

Conclusions:

None of the documents provided contain specific questions or data on expenditure per student by education level or source of funding, which are essential for measuring SDG 4.5.4. This indicator requires detailed financial information, such as government and private expenditures, which is typically collected through government budgets, household surveys, or reports from ministries of education or finance. Without these types of data, the tests and questionnaires in the current analysis do not directly contribute to measuring SDG 4.5.4.

Recommendation:

To effectively measure SDG 4.5.4, UNESCO should collaborate with ministries of education, finance, and other relevant stakeholders to collect detailed financial data on education expenditure. Future assessments should include questions or mechanisms for gathering data on per-student spending by level of education and source of funding (e.g., government, private, or household contributions). Integrating these financial metrics into broader education surveys or aligning with national budget reports would ensure more accurate tracking of education investment and resource allocation.

4.6.1. Proportion 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

Classification: Achievement tests

This indicator cannot be accurately assessed using International Large-Scale Assessments (ILSAs) due to methodological limitations.

Conclusion:

ILSA focus on academic skills for school-aged children and do not measure the literacy and numeracy skills of youth and adults aged 15 and above, as required by SDG 4.6.1. These assessments miss out on capturing functional literacy and numeracy skills applicable in real-life settings, and they do not assess out-of-school adults who may have gained skills through non-formal education or self-learning. Therefore, ILSAs are not suitable for measuring this indicator.

Recommendation:

To accurately measure Indicator 4.6.1, countries should prioritize the use of skills assessment surveys like PIAAC or STEP, which are designed to assess the functional literacy and numeracy skills of youth and adults aged 15+. These surveys provide data that aligns with the global proficiency standards needed for SDG reporting and focus on real-life applications of literacy and numeracy. If such surveys are not available, countries should develop national assessments using the PIAAC framework to ensure data comparability and rigor. Regular implementation of these assessments is essential for tracking progress and informing policies that aim to improve literacy and numeracy skills among adults, particularly in underserved populations.

4.6.2. Youth/adult literacy rate

Classification: Achievement tests

This indicator cannot be accurately assessed using International Large-Scale Assessments (ILSAs) due to methodological limitations.

Conclusion:

ILSAs focus on academic skills in school-based populations and target specific age groups, which makes them unsuitable for measuring SDG 4.6.2, which aims to capture basic literacy rates across the entire population aged 15 years and above. ILSAs do not measure functional literacy in daily life or include non-school populations, leaving significant gaps in coverage.

Recommendation:

To measure Indicator 4.6.2 accurately, countries should rely on national population censuses and household surveys such as DHS and MICS, which cover all age groups and include both school and non-school populations. These surveys should incorporate simple literacy assessments, where respondents are asked to read or write a sentence, to provide more accurate data on basic literacy levels. Expanding the use of standardized literacy assessments will help ensure that literacy rates are measured comprehensively across all relevant age groups, supporting national and global tracking of progress toward SDG 4.6.2.

4.7.1 Extent to which (i) global citizenship education and (ii) education for sustainable development are mainstreamed in (a) national education policies, (b) curricula, (c) teacher education and (d) student assessment

Classification: Achievement tests

This indicator cannot be accurately assessed using International Large-Scale Assessments (ILSAs) due to methodological limitations.

Conclusions:

This indicator is currently measured using data from Country reports on the implementation of the UNESCO 1974 Recommendation concerning Education for International Understanding, Co-operation and Peace and Education relating to Human Rights and Fundamental Freedoms.

ILSAs are not suitable for measuring Indicator 4.7.1 because they focus on assessing student academic performance, primarily in subjects like literacy and numeracy, and do not comprehensively examine broader systemic factors like national policies, curricula, and teacher education.

Recommendation:

None of the current ILSA instruments fully capture the depth of global citizenship education (GCED) and education for sustainable development (ESD) integration in policies, curricula, teacher education, and student assessments. The current method of measuring Indicator 4.7.1 through country reports on the UNESCO 1974 Recommendation should be continued. However, efforts should be made to improve the coverage, which currently includes only 62 countries (according to the UIS SDG Indicator Dashboard). Expanding participation would provide a more comprehensive understanding of how Global Citizenship Education and Education for Sustainable Development are being mainstreamed globally.

4.7.2. Percentage of schools that provide life skills-based HIV and sexuality education

Classification: National Surveys

This indicator cannot be accurately assessed using International Large-Scale Assessments (ILSAs) due to methodological limitations.

Conclusion:

Indicator 4.7.2 measures the percentage of schools providing life skills-based HIV and sexuality education within the formal curriculum or through extracurricular activities. The assessment of this indicator requires data on the number of schools offering these programs relative to the total number of schools at a given education level. While International Large-Scale Assessments (ILSAs) focus on learning outcomes, they do not provide insights into the presence of specific educational programs like HIV and sexuality education. As such, they cannot track this critical health-related educational component.

Recommendation:

To accurately measure Indicator 4.7.2, countries should rely on administrative data from schools and national surveys focused on educational content. Ministries of education should ensure that all schools report on the implementation of life skills-based HIV and sexuality education programs. Additionally, school-level surveys that capture detailed information on curriculum and extracurricular activities should be regularly conducted to provide comprehensive and reliable data for this indicator.

4.7.4. Percentage of students in lower secondary education showing adequate understanding of issues relating to global citizenship and sustainability

Classification: Achievement tests

This indicator is currently being measured using data from ICCS and PISA. The calculation method can be consulted here.

Conclusion:

International Large-Scale Assessments (ILSAs), specifically ICCS 2016 and PISA 2018, are currently being used by UIS to estimate SDG 4.7.4, providing valuable data on students' understanding of global citizenship and sustainability issues. These assessments serve as established tools for measuring relevant aspects of global citizenship education (GCED) and education for sustainable development (ESD). While they may not capture every dimension of these complex topics, they offer standardized, comparable data that allows for tracking progress on this indicator across participating countries.

Recommendation:

To strengthen the measurement of SDG 4.7.4, efforts should focus on expanding the coverage (currently 23 countries according to the UIS SDG Indicator Dashboard) of existing ILSAs by encouraging more countries to participate in ICCS and PISA. This would provide more comprehensive global data on students' understanding of global citizenship and sustainability.

Additionally, the international education community could work towards developing an assessment to measure a clearly defined minimum proficiency level for this indicator. This could include supplementing existing ILSA frameworks with additional components specifically designed to capture any critical aspects of GCED and ESD that may not be fully covered in current assessments. Regular participation in these assessments is crucial for tracking progress and informing policies aimed at improving students' understanding of global citizenship and sustainability issues.

4.7.5. Percentage of students in lower secondary showing proficiency in knowledge of environmental science and geoscience

Classification: Achievement tests

This indicator is currently being measured using data from TIMSS. The calculation method can be consulted here.

Conclusion:

International Large-Scale Assessments (ILSAs), particularly TIMSS, are currently being used by UIS to estimate SDG 4.7.5, providing standardized data on students' proficiency in environmental science and geoscience at the lower secondary level. These assessments offer valuable insights into students' understanding of environmental and geological concepts through their science frameworks, enabling cross-national comparisons and progress tracking on this indicator.

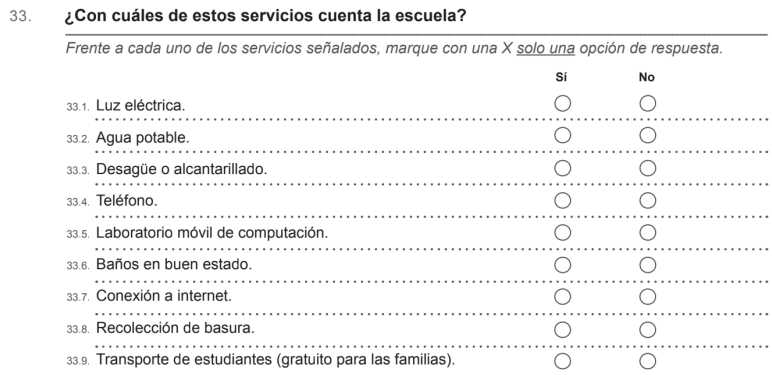
Recommendation:

To strengthen the measurement of SDG 4.7.5, priority should be given to expanding the coverage of existing ILSAs (currently 29 countries according to the UIS SDG Indicator Dashboard) by encouraging greater country participation in assessments that measure environmental science and geoscience proficiency.

Additionally, the international education community could work towards developing an assessment to measure a clearly defined minimum proficiency level for this indicator. This could include supplementing existing ILSA frameworks with additional components specifically designed to capture any critical aspects of environmental science and geoscience knowledge at the lower secondary level that may not be fully covered in current assessments. Regular participation in these assessments is crucial for tracking progress and informing policies aimed at improving students' understanding of global citizenship and sustainability issues.

4.a.1 Proportion of schools offering basic services, by type of service

Classification: Searchable

Test name	ERCE 2019 QD3 & QD6
Analysis	ERCE 2019 Director Questionnaire assesses dichotomically (yes / no) the presence of a list of services in a given assessed school
Item	Question 33  33. **¿Con cuáles de estos servicios cuenta la escuela?** *Frente a cada uno de los servicios señalados, marque con una X solo una opción de respuesta.* Sí / No 33.1. Luz eléctrica. 33.2. Agua potable. 33.3. Desagüe o alcantarillado. 33.4. Teléfono. 33.5. Laboratorio móvil de computación. 33.6. Baños en buen estado. 33.7. Conexión a internet. 33.8. Recolección de basura. 33.9. Transporte de estudiantes (gratuito para las familias). In English: 33.1 Electricity 33.2 Drinkable water 33.3 Drain or sewer 33.4 Phone 33.5 Computer lab 33.6 Bathrooms in good condition 33.7 Connection to internet 33.8 Garbage collection 33.9 Student transportation services (free for families)
Considerations	This item does not cover all services listed in 4.a.1. official metadata document. The services missing are: adapted infrastructure, adapted materials, and accessible learning materials.

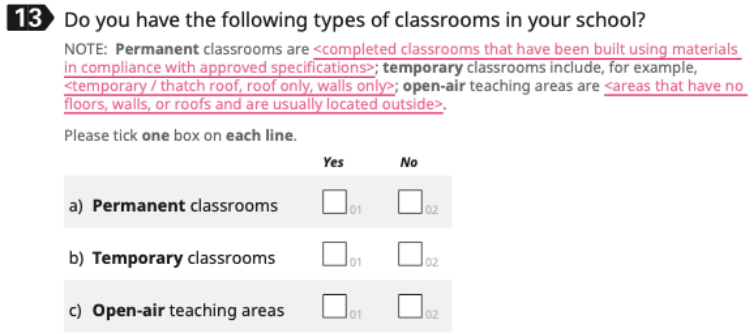
Test name	PISA 2022 School Questionnaire
Analysis	The goal of the SC004 set of questions is to gather information about the student-<digital device> ratio for students in the <national modal grade

	for 15-year-olds> at an assessed school. It comprises seven questions, of which only two apply for the 4.a.1. Indicator objective.
Item	SC004Q02TA SC004Q03TA SC004Q02TA Approximately, how many desktop or laptop computers are available for these students for educational purposes? _____ 01 SC004Q03TA Approximately, how many of these desktop or laptop computers are connected to the Internet? _____ 01
Considerations	This item does not cover all services listed in 4.a.1. official metadata document. The services missing are: electricity, adapted infrastructure, adapted materials, accessible learning materials, basic sanitation, and basic hand-washing

Test name	PASEC 2019 Director Questionnaire
Analysis	PASEC 2019 Director Questionnaire assesses dichotomically (yes / no) the presence of a list of services in a given assessed school
Item	QD_78

Pour les questions suivantes, donner vos réponses sur la base du matériel disponible dans l'école.			
Equipements et infrastructures			
QD_76. Nombre de salles de classe fonctionnelles dans l'école.	⌊_⌋⌊_⌋		
QD_77. Parmi les salles de classes fonctionnelles de l'école, combien sont en :			
A. Dur (ciment)	⌊_⌋⌊_⌋		
B. Banco	⌊_⌋⌊_⌋		
C. Paillote	⌊_⌋⌊_⌋		
QD_78. Y-a-t-il dans l'école ?			
A. Un bureau séparé pour le directeur	□ Oui	□ Non	⌊_⌋
B. Un secrétariat	□ Oui	□ Non	⌊_⌋
C. Un magasin pour stocker le matériel	□ Oui	□ Non	⌊_⌋
D. Une bibliothèque fonctionnelle	□ Oui	□ Non	⌊_⌋
E. Une salle informatique	□ Oui	□ Non	⌊_⌋
F. Une salle spécifique pour les maîtres	□ Oui	□ Non	⌊_⌋
G. Une cour de récréation	□ Oui	□ Non	⌊_⌋
H. Un terrain de sport indépendant	□ Oui	□ Non	⌊_⌋
I. Une clôture entourant complètement l'école	□ Oui	□ Non	⌊_⌋
J. Une boîte à pharmacie	□ Oui	□ Non	⌊_⌋
K. Une infirmerie	□ Oui	□ Non	⌊_⌋
L. Un ou des logements pour maitre/directeur	□ Oui	□ Non	⌊_⌋
M. L'eau courante	□ Oui	□ Non	⌊_⌋
N. Une autre source d'eau potable (puits, forage…)	□ Oui	□ Non	⌊_⌋
O. L'électricité	□ Oui	□ Non	⌊_⌋
P. Une photocopieuse	□ Oui	□ Non	⌊_⌋
Q. Un ordinateur	□ Oui	□ Non	⌊_⌋
R. Une connexion internet	□ Oui	□ Non	⌊_⌋
S. Un téléviseur	□ Oui	□ Non	⌊_⌋
T. Un magnétoscope ou un lecteur dvd	□ Oui	□ Non	⌊_⌋

Considerations	This item does not cover all services listed in 4.a.1. official metadata document. For concepts like "adapted infrastructure" and "adapted materials," further analysis and interpretation may be needed based on their definitions and the available data within the questionnaires, and for "basic hand-washing facilities," consideration is required of potential proxy measures or external data sources.

Test name	SEO-PLM 2019 School Questionnaire
Analysis	The school questionnaire extensively covers school facilities and resources, allowing for a direct analysis of the proportion of schools offering various basic services.
Item	SC13 - Asks about the availability of permanent classrooms, temporary classrooms, and open-air teaching areas.  13 Do you have the following types of classrooms in your school? NOTE: **Permanent** classrooms are <completed classrooms that have been built using materials in compliance with approved specifications>; **temporary** classrooms include, for example, <temporary / thatch roof, roof only, walls only>; **open-air** teaching areas are <areas that have no floors, walls, or roofs and are usually located outside>. Please tick **one** box on **each line**. *Yes* *No* a) **Permanent** classrooms 01 02 b) **Temporary** classrooms 01 02 c) **Open-air** teaching areas 01 02 SC15 - Inquires about the availability of basic services like electricity, safe drinking water, hand washing stations, first aid kits, and facilities for students with disabilities.

	15 Which of the following facilities does your school have? Please tick **one** box on **each line**. Only tick 'Yes' if the facility is in a usable conditi a) Canteen b) <Prayer room> c) School or community hall d) Sports area / playground e) Electricity f) Piped water / spring g) Water tank h) Safe drinking water i) Hand washing station j) Facilities for students with disabilities k) First aid kit l) Sick bay m) Landline telephone n) Television o) Digital video disc (DVD) player p) Overhead / LCD projector q) Photocopier r) Computer s) Internet access SC17 - Gathers information about the existence and functionality of a school library.

17 Does your school have a school library?

NOTE: A school library is a collection of books external to

Please tick **one** box **only**. (**If 'No', go to Q20.**)

Yes ☐ 01

No ☐ 02

SC18 - Further explores the types of resources available in the school library.

18 Which of the following features does your library have?

Please tick **one** box on **each line**.

	Yes	*No*
a) Newspapers	☐ 01	☐ 02
b) Magazines	☐ 01	☐ 02
c) Reading room for students	☐ 01	☐ 02
d) Issuing of books to students	☐ 01	☐ 02
e) Issuing of books to teachers	☐ 01	☐ 02
f) A librarian	☐ 01	☐ 02
g) Reference books	☐ 01	☐ 02
h) Computer available for use of students	☐ 01	☐ 02
i) Disability access	☐ 01	☐ 02

SC19 - Asks about the number of books available in the school library.

	
Considerations	SEA-PLM's school questionnaire primarily captures the availability of facilities and resources. It doesn't necessarily indicate the quality or functionality of those services. For example, having a library doesn't guarantee its effective use or that it meets students' needs. Further investigation beyond the questionnaire is needed for a complete understanding.

Conclusions:

The ERCE 2019 Director Questionnaire, the PISA 2022 School Questionnaire, PASEC 2019 and SEA-PLM School Questionnaire provide valuable data for assessing the availability of basic services in schools, such as electricity, drinkable water, and access to computer labs, which are essential for evaluating SDG 4.a.1. However, the instruments are limited in scope and do not fully capture all the services required by the official SDG 4.a.1 metadata, such as adapted infrastructure for students with disabilities, accessible learning materials, and basic sanitation facilities like hand-washing stations.

To improve the measurement of SDG 4.a.1, it is recommended that future surveys and questionnaires be expanded to include questions that address the full range of services listed in the official SDG 4.a.1 metadata, particularly regarding accessible infrastructure and sanitation. Incorporating questions that specifically target adapted materials and facilities for students with disabilities will provide a more comprehensive assessment of school readiness in offering inclusive and equitable education.

Recommendation:

The ERCE 2019 Director Questionnaire (Question 33) is the most effective ILSA instrument for measuring this indicator. The missing services are: adapted infrastructure, adapted materials, accessible learning materials.

4.a.2 Percentage of students experiencing bullying in the last 12 months in a) primary, and b) lower secondary education

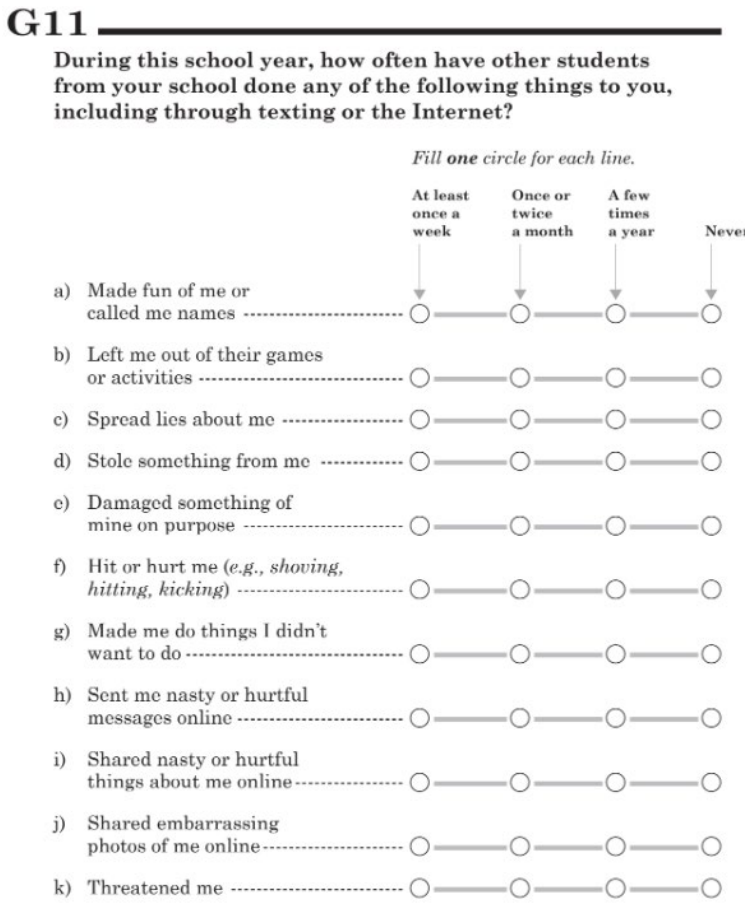
Classification: Searchable

Test name	PISA 2022 Student Questionnaire
Analysis	Q31 is highly effective in directly measuring SDG 4.a.2, as it captures the frequency and types of bullying incidents, including physical, verbal, and relational abuse. Q30 and Q32 offer indirect insights into the emotional and safety impacts of bullying. While Q30 helps identify feelings of exclusion and loneliness, and Q32 measures students' perceptions of safety at school, neither directly addresses specific bullying behaviors but complements the overall understanding of school climate.
Item	Q30 **Q30** ST034 **Thinking about your school: to what extent do you agree with the following statements?** *(Please select one response in each row.)* ST034Q01TA I feel like an outsider (or left out of things) at school. ☐01 ☐02 ☐03 ☐04 ST034Q02TA I make friends easily at school. ☐01 ☐02 ☐03 ☐04 ST034Q03TA I feel like I belong at school. ☐01 ☐02 ☐03 ☐04 ST034Q04TA I feel awkward and out of place in my school. ☐01 ☐02 ☐03 ☐04 ST034Q05TA Other students seem to like me. ☐01 ☐02 ☐03 ☐04 ST034Q06TA I feel lonely at school. ☐01 ☐02 ☐03 ☐04 *Strongly agree* *Agree* *Disagree* *Strongly disagree* Q31

	Q31 ST038 **During the past 12 months, how often have you had the following experiences in school?** *(Some experiences can also happen in social media.)* *(Please select one response in each row.)* Q32 **Q32** ST265 **To what extent do you agree or disagree with the following statements?** *(Please select one response in each row.)*
Considerations	Q31's reliance on self-reported data may introduce bias or underreporting, and it does not differentiate between primary and lower secondary education, as required by the indicator. Q30 and Q32, while relevant to understanding the effects of bullying on emotional well-being and feelings of safety, lack the specificity to identify actual bullying incidents, making them less precise for measuring SDG 4.a.2.

		Never or almost never	*A few times a year*	*A few times a month*	*Once a week or more*
ST038Q03NA	Other students left me out of things on purpose.	☐01	☐02	☐03	☐04
ST038Q04NA	Other students made fun of me.	☐01	☐02	☐03	☐04
ST038Q05NA	I was threatened by other students.	☐01	☐02	☐03	☐04
ST038Q06NA	Other students took away or destroyed things that belonged to me.	☐01	☐02	☐03	☐04
ST038Q07NA	I got hit or pushed around by other students.	☐01	☐02	☐03	☐04
ST038Q08NA	Other students spread nasty rumours about me.	☐01	☐02	☐03	☐04
ST038Q09JA	I was in a physical fight on school property.	☐01	☐02	☐03	☐04
ST038Q10JA	I stayed home from school because I felt unsafe.	☐01	☐02	☐03	☐04
ST038Q11JA	I gave money to someone at school because they threatened me.	☐01	☐02	☐03	☐04

		Strongly agree	*Agree*	*Disagree*	*Strongly Disagree*
ST265Q01JA	I feel safe on my way to school.	☐01	☐02	☐03	☐04
ST265Q02JA	I feel safe on my way home from school.	☐01	☐02	☐03	☐04
ST265Q03JA	I feel safe in my classrooms at school.	☐01	☐02	☐03	☐04
ST265Q04JA	I feel safe at other places at school (e.g. hallway, cafeteria, restroom).	☐01	☐02	☐03	☐04

Test name	TIMSS 4th-grade student questionnaire TIMSS 8th-grade student questionnaire
Analysis	These questions effectively capture a range of bullying behaviors, including physical, verbal, relational, and cyberbullying. The comprehensive nature of the questions allows for a detailed assessment of students' experiences with bullying across various mediums, including in-person interactions and online platforms.
Item	G11  Q14

	14 **During this school year, how often have other students from your school done any of the following things to you, including through texting or the Internet?** *Fill **one** circle for each line.* 
Considerations	While these questions provide valuable data on students' experiences with bullying, they focus on self-reported data, which may be influenced by personal perceptions and willingness to disclose. Additionally, although the questions cover a wide variety of bullying behaviors, they do not specifically differentiate between types of educational settings (e.g., primary or lower secondary), which could complicate efforts to disaggregate data by school level as required by SDG 4.a.2. Finally, the questionnaires focus on the frequency of incidents but may not capture the severity or impact of the bullying, which could be critical for understanding the full scope of the problem.

Test name	SEA-PLM 2019 School Quetionnaire
Analysis	The school questionnaire addresses the frequency of bullying in schools, but it doesn't specifically ask about the percentage of students affected within a 12-month timeframe.
Item	SC22 – Inquires about the frequency of bullying among students. **22** Please indicate how frequently each of the following issues occurs at your school among students? Please tick **one** box on **each line**. a) Coming late for class ☐01 ☐02 ☐03 ☐04 b) Truancy ☐01 ☐02 ☐03 ☐04 c) Classroom disturbance ☐01 ☐02 ☐03 ☐04 d) Cheating ☐01 ☐02 ☐03 ☐04 e) Vandalism ☐01 ☐02 ☐03 ☐04 f) Aggression between students from different <ethnic groups> ☐01 ☐02 ☐03 ☐04 g) Aggression between students due to religious differences ☐01 ☐02 ☐03 ☐04 h) Bullying ☐01 ☐02 ☐03 ☐04 i) Violence ☐01 ☐02 ☐03 ☐04 j) Offensive behaviours towards girls ☐01 ☐02 ☐03 ☐04 k) Offensive behaviours towards students with disabilities ☐01 ☐02 ☐03 ☐04 l) Offensive behaviours towards teachers ☐01 ☐02 ☐03 ☐04 *Never or hardly ever* / *Monthly (at least once a month)* / *Weekly (at least once a week)* / *Daily or almost daily*
Considerations	The school questionnaire doesn't specifically ask about the percentage of students experiencing bullying within a 12-month period, limiting direct comparison to the indicator. While the frequency of bullying can provide some indication, it doesn't offer a precise measurement for this SDG indicator.

<table>
<tr><th>Test name</th><th>PILNA 2021 Student Questionnaire Y4 & Y6</th></tr>
<tr><td>Analysis</td><td>PILNA 2021 includes questions in its student questionnaires that specifically address bullying, aligning with SDG 4.a.2. These questions ask students about different forms of bullying they may have experienced, making it possible to measure the prevalence of bullying in line with the indicator's definition.</td></tr>
<tr><td>Item</td><td>SC22 – Inquires about the frequency of bullying among students.

8. At school, how often did you experience any of the following in the past year?
Tick one box in each row.

<table>
<tr><th></th><th></th><th>Never</th><th>Sometimes</th><th>Most of the time</th><th>Always</th></tr>
<tr><td>a)</td><td>I was hit, pushed, slapped, kicked, beaten up.</td><td>☐ 1</td><td>☐ 2</td><td>☐ 3</td><td>☐ 4</td></tr>
<tr><td>b)</td><td>I had something belonging to me broken on purpose or stolen.</td><td>☐ 1</td><td>☐ 2</td><td>☐ 3</td><td>☐ 4</td></tr>
<tr><td>c)</td><td>I was called offensive names.</td><td>☐ 1</td><td>☐ 2</td><td>☐ 3</td><td>☐ 4</td></tr>
<tr><td>d)</td><td>I was threatened.</td><td>☐ 1</td><td>☐ 2</td><td>☐ 3</td><td>☐ 4</td></tr>
<tr><td>e)</td><td>I was left out from a group or talked badly about.</td><td>☐ 1</td><td>☐ 2</td><td>☐ 3</td><td>☐ 4</td></tr>
<tr><td>f)</td><td>I had something upsetting said about me on the internet (e.g., Facebook / TikTok / Instagram).</td><td>☐ 1</td><td>☐ 2</td><td>☐ 3</td><td>☐ 4</td></tr>
</table>
</td></tr>
<tr><td>Considerations</td><td>The questions rely on students' self-reporting of bullying experiences. While self-reporting is a common method for measuring bullying, it is important to acknowledge that some students might be reluctant to disclose their experiences due to fear, shame, or a desire to protect others.</td></tr>
</table>

Conclusions:

The questions from the PISA 2022 Student Questionnaire (Q30, Q31, Q32), TIMSS 4th and 8th-grade student questionnaires, SEA-PLM 2019 School Questionnaire and PINA 2021 effectively capture various aspects of bullying behaviors, aligning with the requirements of SDG 4.a.2. Q31 from PISA directly addresses bullying incidents by type (physical, verbal, relational), while Q30 and Q32 offer complementary insights into students' emotional well-being and perceived safety. The TIMSS questionnaires provide a thorough look at bullying behaviors, including both in-person and cyberbullying, across different settings. However, none of these questionnaires explicitly differentiate between primary and lower secondary education, as required by the indicator. Same thing with SEA-PLM 2019 School Questionnaire: it has limiting factors for precise measurement but covers essential information to comprehend bullying dynamics.

Recommendation:

PISA 2022 Student Questionnaire offers the most comprehensive and direct assessment of bullying experiences. This is primarily due to Question 31, which directly asks students about the frequency and types of bullying they have encountered, encompassing physical, verbal, and relational forms of abuse.

In addition to Question 31, the PISA 2022 Student Questionnaire includes other relevant items:

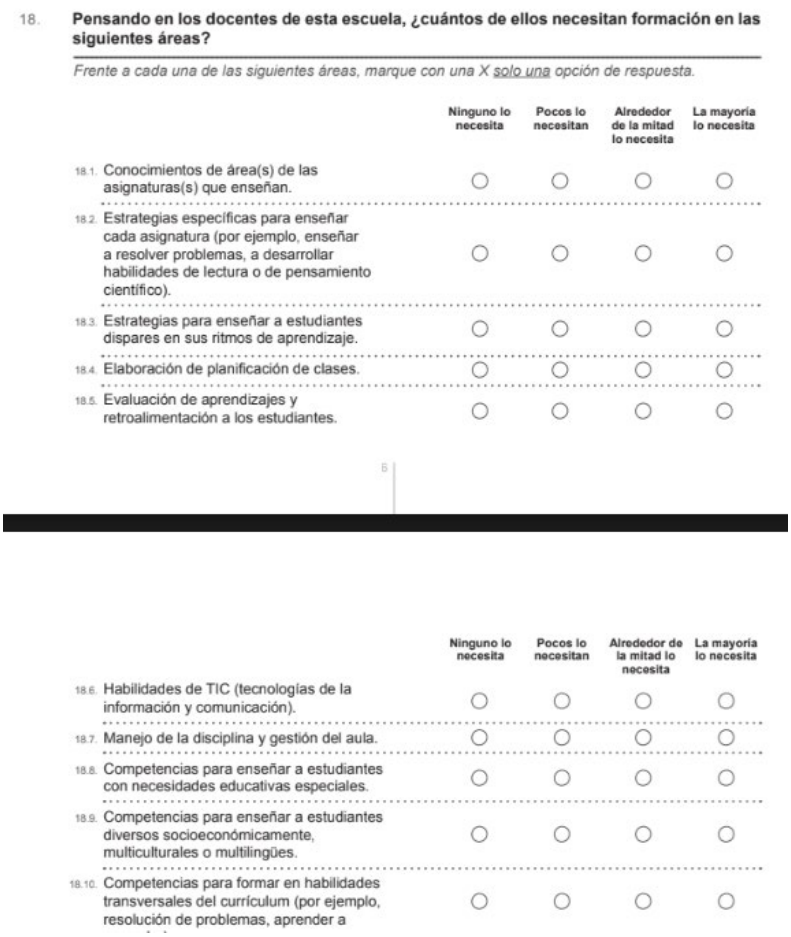
- Question 30 asks students about their feelings of belonging and inclusion at school, providing insights into the potential social and emotional impacts of bullying.
- Question 32 gauges students' perceptions of safety at school, offering another perspective on the overall environment and the potential presence of bullying.

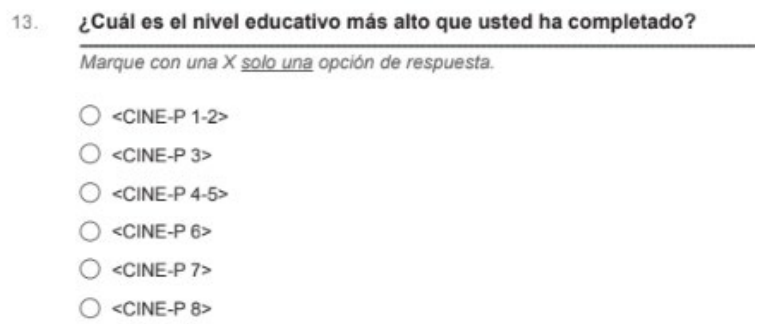
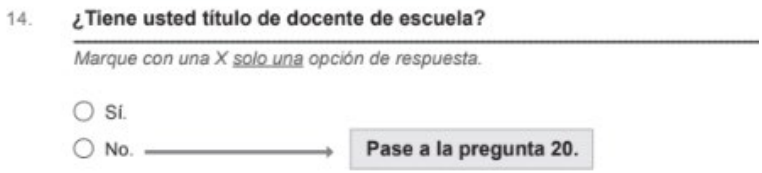
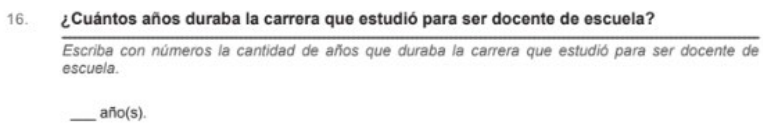
While other ILSAs like TIMSS, PILNA, and LLECE also assess bullying, their approaches are less direct or comprehensive than PISA's.

4.c.1 Proportion of teachers with the minimum required qualifications, by education level

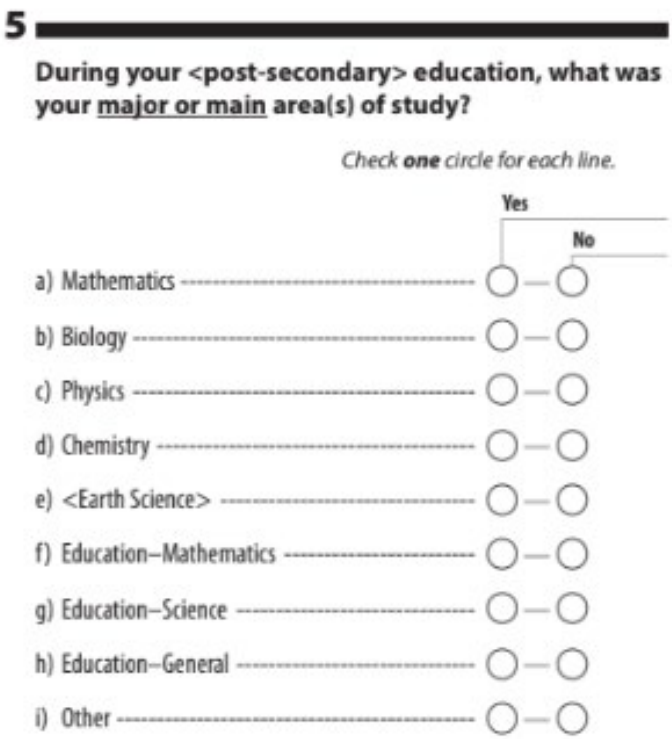
Classification: Searchable

Test name	ERCE 2019 Director Questionnaire (ERCE_2019_QD3 and ERCE_2019_QD6)
Analysis	These questions effectively assess both the director's qualifications and the training needs of teachers, giving insights into the qualifications of key educational personnel relevant to SDG 4.c.1.
Item	Q9 09. **¿Cuál es el nivel educativo más alto que usted ha completado?** *Marque con una X solo una opción de respuesta.* ○ <CINE-P 1-2> ○ <CINE-P 3> ○ <CINE-P 4-5> ○ <CINE-P 6> ○ <CINE-P 7> ○ <CINE-P 8> Q10: 10. **¿Tiene usted título de docente de escuela?** *Marque con una X solo una opción de respuesta.* ○ Sí. ○ No. → **Pase a la pregunta 14.**

	Q18.1 - Q18.  18. **Pensando en los docentes de esta escuela, ¿cuántos de ellos necesitan formación en las siguientes áreas?** *Frente a cada una de las siguientes áreas, marque con una X solo una opción de respuesta.* Ninguno lo necesita / Pocos lo necesitan / Alrededor de la mitad lo necesita / La mayoría lo necesita 18.1. Conocimientos de área(s) de las asignaturas(s) que enseñan. 18.2. Estrategias específicas para enseñar cada asignatura (por ejemplo, enseñar a resolver problemas, a desarrollar habilidades de lectura o de pensamiento científico). 18.3. Estrategias para enseñar a estudiantes dispares en sus ritmos de aprendizaje. 18.4. Elaboración de planificación de clases. 18.5. Evaluación de aprendizajes y retroalimentación a los estudiantes. Ninguno lo necesita / Pocos lo necesitan / Alrededor de la mitad lo necesita / La mayoría lo necesita 18.6. Habilidades de TIC (tecnologías de la información y comunicación). 18.7. Manejo de la disciplina y gestión del aula. 18.8. Competencias para enseñar a estudiantes con necesidades educativas especiales. 18.9. Competencias para enseñar a estudiantes diversos socioeconómicamente, multiculturales o multilingües. 18.10. Competencias para formar en habilidades transversales del currículum (por ejemplo, resolución de problemas, aprender a
Considerations	The questions do not specify the education level to which qualifications apply and focus more on identifying needs rather than confirming existing qualifications.

Test name	ERCE 2019 Teacher Questionnaire (ERCE_2019_QP3)
Analysis	These questions directly address the presence of formal teaching qualifications, the duration of training, and the quality of initial training experiences. This provides useful data for evaluating the proportion of teachers who meet the minimum qualification standards and the thoroughness of their training, both key elements in measuring SDG 4.c.1. The focus on specific training experiences also allows for insights into how well-prepared teachers are when they enter the profession.
Item	Q13  13. **¿Cuál es el nivel educativo más alto que usted ha completado?** *Marque con una X solo una opción de respuesta.* ○ <CINE-P 1-2> ○ <CINE-P 3> ○ <CINE-P 4-5> ○ <CINE-P 6> ○ <CINE-P 7> ○ <CINE-P 8> Q14  14. **¿Tiene usted título de docente de escuela?** *Marque con una X solo una opción de respuesta.* ○ Sí. ○ No. → **Pase a la pregunta 20.** Q16  16. **¿Cuántos años duraba la carrera que estudió para ser docente de escuela?** *Escriba con números la cantidad de años que duraba la carrera que estudió para ser docente de escuela.* ___ año(s).

	Q18.1 - Q18.9:  18. **En su formación inicial de docente de escuela, ¿tuvo las siguientes experiencias?** *Frente a cada experiencia listada, marque con una X solo una opción de respuesta.* Sí / No 18.1. Leer investigaciones y estudios sobre enseñanza o aprendizaje. 18.2. Estudiar los contenidos y habilidades que el currículo <nacional/estatal> requiere enseñar. 18.3. Analizar detalladamente la práctica de aula de un docente después de observarlo. 18.4. Hacer clases en una escuela como parte de una práctica profesional. 18.5. Ser observado por un <formador> mientras hacía clases. 18.6. Recibir retroalimentación de un <formador> sobre mi práctica pedagógica, después de observarme haciendo clases. 18.7. Ensayar prácticas específicas con mis compañeros (por ejemplo, cómo guiar una discusión grupal, explicar un contenido, cómo iniciar o cerrar una clase). 18.8. Ver a un <formador> haciendo una demostración de cómo enseñar una habilidad o contenido. 18.9. Revisar trabajos o respuestas de estudiantes para analizar su nivel de comprensión o aprendizaje.
Considerations	These questions do not capture whether the qualifications align with the specific level of education the teacher is currently teaching. Furthermore, the questions primarily focus on initial teacher education, leaving gaps in understanding the extent and impact of ongoing in-service training, which is also a critical part of SDG 4.c.1.

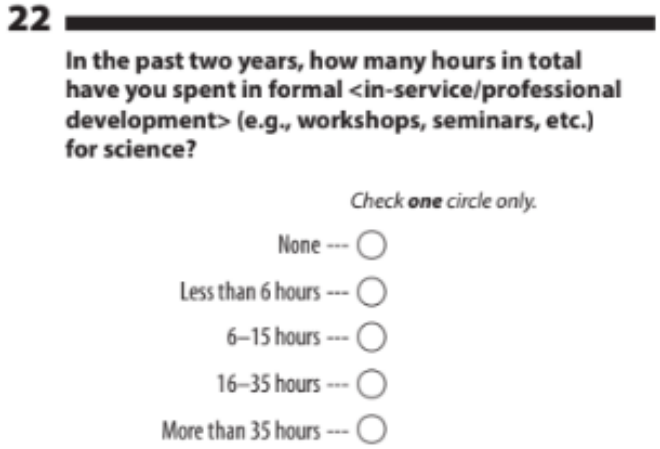
Test name	TIMSS 2019 Grade 8 Science Teacher Questionnaire (T19_TQS_8)
Analysis	These questions are effective in determining whether teachers possess the required academic qualifications and have engaged in ongoing professional development, which are crucial for evaluating their readiness to teach at relevant educational levels as required by SDG 4.c.1.
Item	Q5 

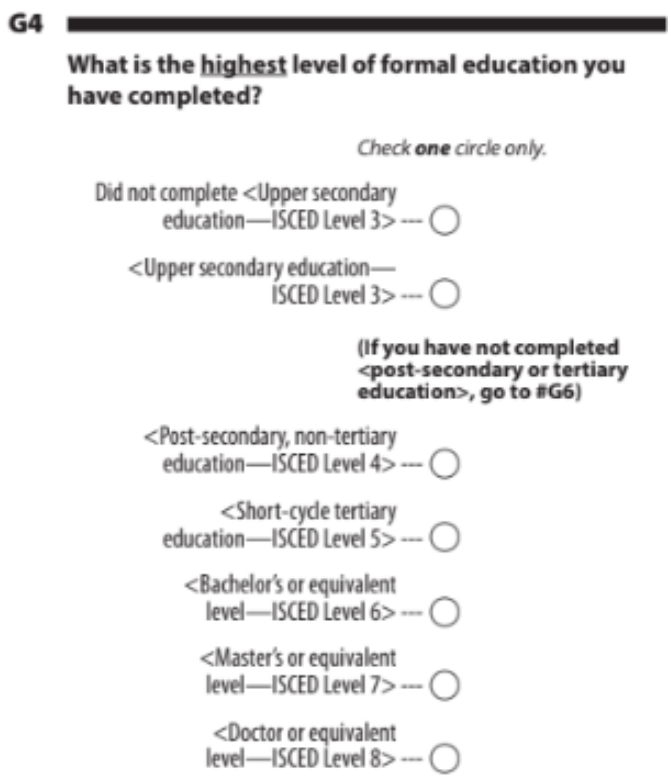
Q6

6 How would you characterize each of the following within your school?

*Check **one** circle for each line.*

	Very high	High	Medium	Low	Very low
a) Teachers' understanding of the school's curricular goals	○	○	○	○	○
b) Teachers' degree of success in implementing the school's curriculum	○	○	○	○	○
c) Teachers' expectations for student achievement	○	○	○	○	○
d) Teachers' ability to inspire students	○	○	○	○	○
e) Parental involvement in school activities	○	○	○	○	○
f) Parental commitment to ensure that students are ready to learn	○	○	○	○	○
g) Parental expectations for student achievement	○	○	○	○	○
h) Parental support for student achievement	○	○	○	○	○
i) Students' desire to do well in school	○	○	○	○	○
j) Students' ability to reach school's academic goals	○	○	○	○	○
k) Students' respect for classmates who excel academically	○	○	○	○	○
l) Collaboration between school leadership (including master teachers) and teachers to plan instruction	○	○	○	○	○

	Q22  **22** **In the past two years, how many hours in total have you spent in formal <in-service/professional development> (e.g., workshops, seminars, etc.) for science?** *Check **one** circle only.* None --- Less than 6 hours --- 6–15 hours --- 16–35 hours --- More than 35 hours ---
Considerations	These questions do not specify whether the qualifications or professional development directly align with the minimum requirements for the specific education levels they are teaching. Additionally, they focus more on participation in professional development than on its impact on teaching effectiveness.

Test name	TIMSS 2019 Grade 4 Teacher Questionnaire (T19_TQ_4)
Analysis	These questions help assess whether Grade 4 teachers possess the necessary qualifications and whether they engage in continuous professional development, directly contributing to measuring the proportion of qualified teachers as required by SDG 4.c.1.
Item	Q4 

G4

What is the highest level of formal education you have completed?

*Check **one** circle only.*

- Did not complete <Upper secondary education—ISCED Level 3>
- <Upper secondary education—ISCED Level 3>

(If you have not completed <post-secondary or tertiary education>, go to #G6)

- <Post-secondary, non-tertiary education—ISCED Level 4>
- <Short-cycle tertiary education—ISCED Level 5>
- <Bachelor's or equivalent level—ISCED Level 6>
- <Master's or equivalent level—ISCED Level 7>
- <Doctor or equivalent level—ISCED Level 8>

Q5

G5

A. During your <post-secondary> education, what was your major or main area(s) of study?

*Check **one** circle for each line.*

	Yes	No
a) Education—Primary/Elementary	○	○
b) Education—Secondary	○	○
c) Mathematics	○	○
d) Science	○	○
e) <language of test>	○	○
f) Other	○	○

B. If your major or main area of study was education, did you have a <specialization> in any of the following?

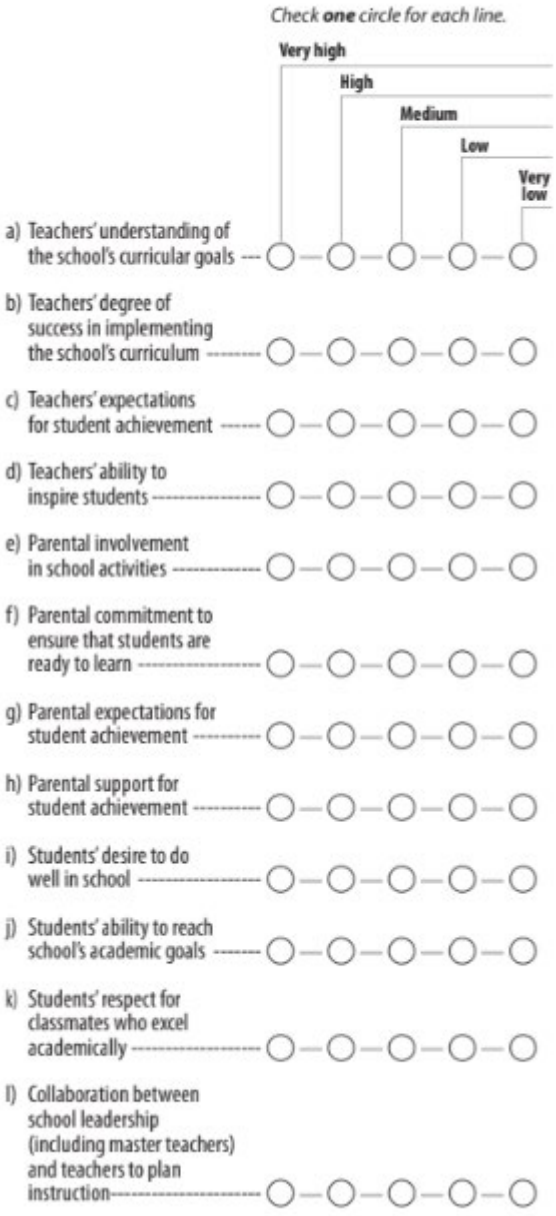
*Check **one** circle for each line.*

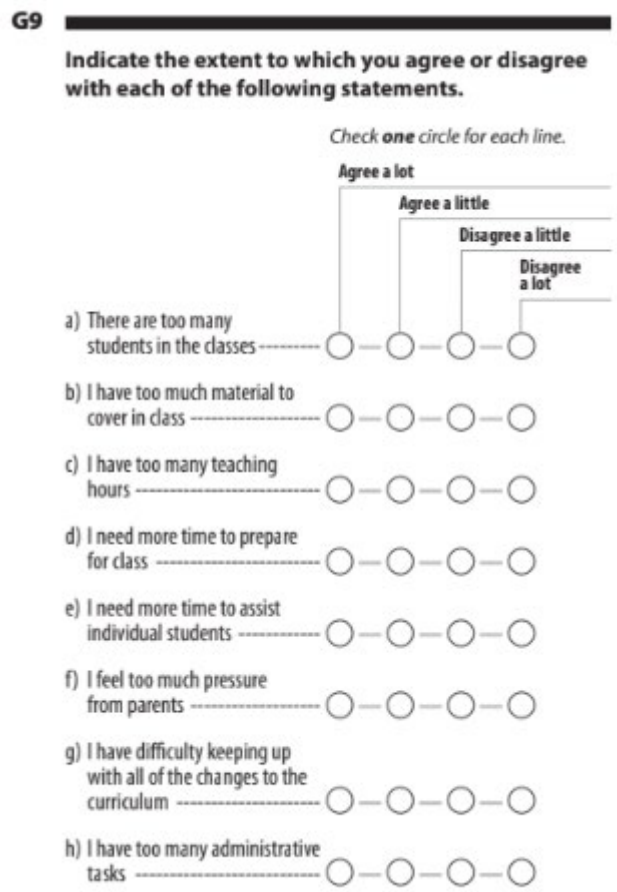
	Yes	No
a) Mathematics	○	○
b) Science	○	○
c) Language/reading	○	○
d) Other subject	○	○

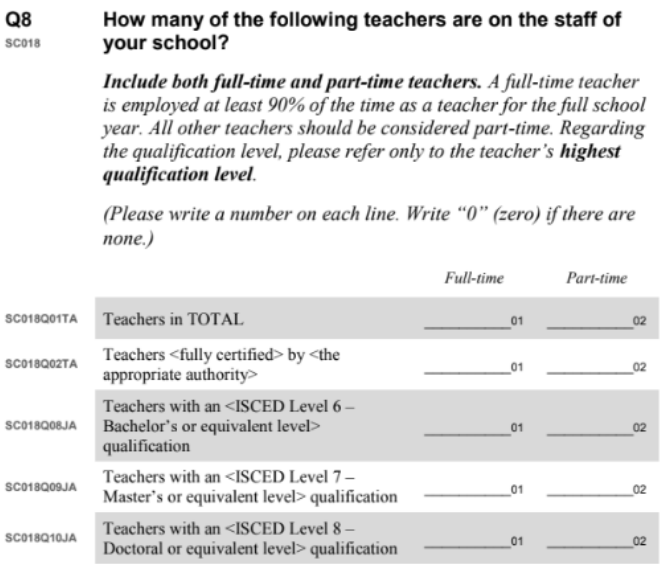
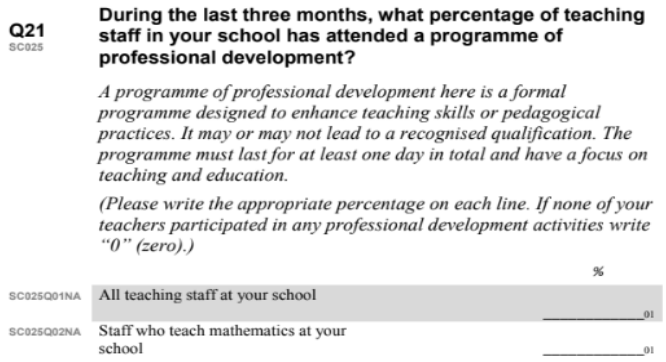
Q6

G6

How would you characterize each of the following within your school?



	Q9 
Considerations	The questions provide general data on participation in professional development but lack depth regarding the specific competencies gained or whether these align with the official qualification standards for primary education.

Test name	PISA 2022 School Questionnaire
Analysis	These questions are directly relevant to SDG 4.c.1 as they assess the formal qualifications of teachers and their engagement in professional development. They provide clear data on whether teachers meet the minimum qualification requirements and are receiving ongoing training, which helps evaluate both initial qualifications and continuous education.
Item	Q8  **Q8** SC018 **How many of the following teachers are on the staff of your school?** ***Include both full-time and part-time teachers.*** *A full-time teacher is employed at least 90% of the time as a teacher for the full school year. All other teachers should be considered part-time. Regarding the qualification level, please refer only to the teacher's* ***highest qualification level****.* *(Please write a number on each line. Write "0" (zero) if there are none.)* Full-time / Part-time SC018Q01TA Teachers in TOTAL ____01 ____02 SC018Q02TA Teachers <fully certified> by <the appropriate authority> ____01 ____02 SC018Q08JA Teachers with an <ISCED Level 6 – Bachelor's or equivalent level> qualification ____01 ____02 SC018Q09JA Teachers with an <ISCED Level 7 – Master's or equivalent level> qualification ____01 ____02 SC018Q10JA Teachers with an <ISCED Level 8 – Doctoral or equivalent level> qualification ____01 ____02 Q21  **Q21** SC025 **During the last three months, what percentage of teaching staff in your school has attended a programme of professional development?** *A programme of professional development here is a formal programme designed to enhance teaching skills or pedagogical practices. It may or may not lead to a recognised qualification. The programme must last for at least one day in total and have a focus on teaching and education.* *(Please write the appropriate percentage on each line. If none of your teachers participated in any professional development activities write "0" (zero).)* % SC025Q01NA All teaching staff at your school ____01 SC025Q02NA Staff who teach mathematics at your school ____01
Considerations	The questions do not specify whether the qualifications or professional development directly match the teaching levels (e.g., pre-primary, primary, secondary) for SDG 4.c.1. Additionally, participation in professional development is measured in terms of attendance rather than the effectiveness or impact of the training.

<table>
<tr><th>Test name</th><th>PASEC 2019 Teacher Questionnaire</th></tr>
<tr><td>Analysis</td><td>PASEC 2019 teacher Questionnaire gathers data on teacher qualifications such as teacher's highest level of academic education, teaching certificate type, duration of initial teacher training, and length of practical classroom experience during training.</td></tr>
<tr><td>Item</td><td>QM_3 - "What is your highest level of academic education?" This question captures the teacher's academic qualifications, but it doesn't directly address whether these qualifications meet the minimum requirements for teaching at their specific level.
<table>
<tr><td>QM_3. Quel est votre niveau de formation académique le plus élevé ?</td><td>☐ Inférieure à la 6e
☐ 6e
☐ 5e
☐ 4e
☐ 3e
☐ 2nde
☐ 1ère
☐ Terminale
☐ BAC+1
☐ BAC+2
☐ BAC+3
☐ BAC+4 ou plus</td><td>|_|_|</td></tr>
</table>
QM_4 - "What is your professional teaching qualification?" This question directly addresses teaching qualifications. It provides options ranging from no professional diploma to specific diplomas and certificates (CEAP, DFENEP, CAP, CSAP). By comparing these responses to national standards for teacher qualifications, researchers can determine the proportion of teachers with the minimum required qualifications.
<table>
<tr><td>QM_4. Quel est votre diplôme professionnel d'enseignement ?</td><td>☐ Aucun diplôme professionnel
☐ DFEENI (Diplôme de Fin d'Etude d'École Normale d'Instituteurs)
☐ DFEENS (Certificat de Fin d'Etude d'École Normale Supérieure)
☐ DFEIFAENF (Diplôme de fin d'étude de l''Institut de Formation en Alphabétisation et Education Non Formelle)</td><td>|_|</td></tr>
</table>
QM_5 & QM_6 - "What is the duration of your initial teacher training?" and "During this initial training, what was the total duration of practical training in a classroom setting?" These questions provide insights into the length and structure of initial teacher training programs, offering additional context for evaluating teacher qualifications. They can be used to assess if teachers have completed sufficient pedagogical training, a key component of the minimum required qualifications.
<table>
<tr><td>QM_5. Quelle a été la durée de votre formation professionnelle initiale d'enseignant ?</td><td>☐ Aucune formation professionnelle initiale
☐ Moins de six mois
☐ Un an (une année scolaire)
☐ Deux ans (deux années scolaires)
☐ Trois ans (trois années scolaires)
☐ Plus de trois ans (plus de trois années scolaires)</td><td>|_|</td></tr>
<tr><td>QM_6. Durant cette formation initiale, quelle a été la durée totale de la formation pratique en situation de classe ?</td><td>|_|_| mois</td><td></td></tr>
</table></td></tr>
<tr><td>Considerations</td><td>To operationalize Indicator 4.c.1 using PASEC data, it's crucial to have information on the minimum required qualifications for teachers at different education levels. This external data is necessary to categorize teachers based on whether their reported qualifications meet the</td></tr>
</table>

	national standards. Additionally, while PASEC doesn't directly address in-service training requirements, QM_7 & QM_8 ask about the frequency of in-service training received in the past two years. This data can provide supplementary information about ongoing professional development, which might be considered a component of maintaining minimum qualifications in some contexts.

Test name	SEA-PLM 2019 School Questionnaire
Analysis	The school questionnaire provides data on teacher qualifications, but it doesn't explicitly link these qualifications to the minimum requirements for teaching at different education levels.
Item	SC25 – Asks about the percentage of teachers who have completed specific qualification types, such as an ISCED level 6 degree or higher, or a formal pre-teaching qualification. **25** What percentages of teachers in your school have **completed** the following qualification types? Please tick **one** box on **each line**. *Less than 30%* / *Between 30% and 60%* / *More than 60%* a) An <ISCED level 6> degree (or higher) ☐01 ☐02 ☐03 b) A formal **pre-teaching** qualification ☐01 ☐02 ☐03
Considerations	SEA-PLM gathers information on teacher qualifications but lacks a direct link to the minimum requirements set by each participating country for teaching at different levels. Therefore, while it provides data on qualifications, it doesn't allow for a definitive analysis of whether teachers meet the nationally mandated minimum standards.

<table>
<tr><th>Test name</th><th>PILNA 2021 Teacher Questionnaire</th></tr>
<tr><td>Analysis</td><td>The PILNA 2021 Teacher Questionnaire includes several questions that can be used to assess certain aspects of teacher qualifications, aligning partially with the requirements of SDG 4.c.1.</td></tr>
<tr><td>Item</td><td>
Question 4 – assessing teacher's highest academic qualification

4. What is your highest academic qualification? Tick one box only.
<table>
<tr><td>Higher degree (e.g., Post-graduate Certificate/Diploma, Masters, PhD)</td><td>☐ 1</td></tr>
<tr><td>Bachelor's degree</td><td>☐ 2</td></tr>
<tr><td>Diploma</td><td>☐ 3</td></tr>
<tr><td>Tertiary certificate</td><td>☐ 4</td></tr>
<tr><td>High school certificate (Year/Grade 12 or 13)</td><td>☐ 5</td></tr>
<tr><td>Year/Grade 10 certificate</td><td>☐ 6</td></tr>
<tr><td>Did not complete Year/Grade 10</td><td>☐ 7</td></tr>
</table>

Question 5 – teacher training qualification completion

5. Have you completed a teacher training qualification? If yes, select the highest level of qualification you have completed from the following.
Tick one box only.
<table>
<tr><td>No</td><td>☐ 1</td></tr>
<tr><td>Yes, diploma level</td><td>☐ 2</td></tr>
<tr><td>Yes, bachelor level</td><td>☐ 3</td></tr>
<tr><td>Yes, post-graduate diploma level</td><td>☐ 4</td></tr>
</table>

Question 13 – professional development programme attendance

13. How many times in the past 3 years did you attend a professional development programme in the following areas?
Tick one box in <u>each row.</u>
<table>
<tr><th></th><th></th><th>Never</th><th>Once or twice</th><th>Three or four times</th><th>More than four times</th></tr>
<tr><td>a)</td><td>Reading</td><td>☐ 1</td><td>☐ 2</td><td>☐ 3</td><td>☐ 4</td></tr>
<tr><td>b)</td><td>Writing</td><td>☐ 1</td><td>☐ 2</td><td>☐ 3</td><td>☐ 4</td></tr>
<tr><td>c)</td><td>Numeracy</td><td>☐ 1</td><td>☐ 2</td><td>☐ 3</td><td>☐ 4</td></tr>
<tr><td>d)</td><td>Classroom-based assessment</td><td>☐ 1</td><td>☐ 2</td><td>☐ 3</td><td>☐ 4</td></tr>
<tr><td>e)</td><td>Curriculum</td><td>☐ 1</td><td>☐ 2</td><td>☐ 3</td><td>☐ 4</td></tr>
<tr><td>f)</td><td>Student welfare</td><td>☐ 1</td><td>☐ 2</td><td>☐ 3</td><td>☐ 4</td></tr>
<tr><td>g)</td><td>Classroom management</td><td>☐ 1</td><td>☐ 2</td><td>☐ 3</td><td>☐ 4</td></tr>
<tr><td>h)</td><td>Inclusive education</td><td>☐ 1</td><td>☐ 2</td><td>☐ 3</td><td>☐ 4</td></tr>
<tr><td>i)</td><td>Leadership skills</td><td>☐ 1</td><td>☐ 2</td><td>☐ 3</td><td>☐ 4</td></tr>
<tr><td>j)</td><td>Use of ICT in teaching and learning</td><td>☐ 1</td><td>☐ 2</td><td>☐ 3</td><td>☐ 4</td></tr>
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Considerations	Consider that PILNA 2021 does not explicitly ask whether teachers' qualifications meet the minimum requirements set by their respective countries. To fully assess SDG 4.c.1, it would be necessary to compare the reported qualifications with national standards. Also, consider that PILNA 2021 does not collect data on the specific education levels (pre-primary, primary, lower secondary, upper secondary) where teachers are teaching. To meet the requirements of SDG 4.c.1, which calls for disaggregation by education level, additional data would be needed.

Conclusions:

The ERCE 2019, TIMSS 2019, PISA 2022, PASEC 2019, SEA-PLM 2019, and PILNA 2021 questionnaires provide relevant data for measuring the proportion of teachers with the minimum required qualifications as required by SDG 4.c.1. These questions capture critical information about formal qualifications and professional development but tend to focus on either initial qualifications or participation in training without directly assessing whether these qualifications align with specific education levels (e.g., pre-primary, primary, or secondary). Additionally, many questions assess participation in ongoing professional development but lack insight into the effectiveness or impact of this training on teaching quality.

To better measure SDG 4.c.1, UNESCO should ensure that questions in future assessments directly link teacher qualifications to the specific education levels they teach. Moreover, the assessments should move beyond measuring participation in professional development by evaluating the competencies gained and their impact on teaching effectiveness. Including questions that ask about alignment with national qualification standards would help ensure that data collected is more comprehensive and reflective of actual teacher readiness across all education levels.

Recommendation:

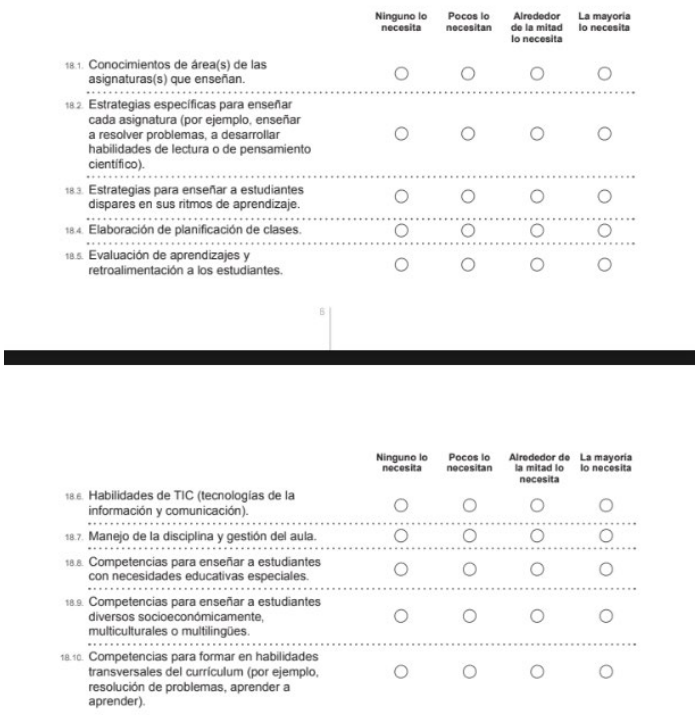
We recommend using PASEC 2019 Teacher Questionnaire which includes the following questions that can be used to estimate this indicator:

- QM_3: "What is your highest level of academic education?" This question captures data on teachers' academic qualifications.
- QM_4: "What is your professional teaching qualification?" This question captures data on teachers' specific teaching qualifications.

It should be noted that to use PASEC data to measure this indicator, you must also have information on the minimum required qualifications for teachers at different education levels in the country being assessed. This information is not included in the PASEC questionnaire and must be obtained from another source.

4.c.2 Pupil-trained teacher ratio by education level

Classification: Searchable

Test name	ERCE 2019 Director Questionnaire (ERCE_2019_QD3 and ERCE_2019_QD6)
Analysis	Pregunta 21 is highly effective in providing the number of pupils, which is crucial for calculating the pupil-trained teacher ratio. This data, when combined with information about teacher qualifications, allows for accurate calculations of this indicator. Pregunta 18 helps identify the areas where teachers require further training. While it doesn't directly measure the number of trained teachers, it is effective in identifying potential gaps in training that affect the overall ratio of trained teachers to pupils.
Item	Pregunta 21 21. **¿Cuál es la matrícula del nivel de <primaria> de esta escuela?** *Indique el número de estudiantes de todos los cursos/edades de primaria de esta escuela, distinguiendo entre mujeres y hombres. Si no hay mujeres u hombres escriba 0.* ⌊_⌊_⌋ Estudiantes mujeres. ⌊_⌊_⌋ Estudiantes hombres. Pregunta 18 18. **Pensando en los docentes de esta escuela, ¿cuántos de ellos necesitan formación en las siguientes áreas?** *Frente a cada una de las siguientes áreas, marque con una X solo una opción de respuesta.*  Ninguno lo necesita / Pocos lo necesitan / Alrededor de la mitad lo necesita / La mayoría lo necesita 18.1. Conocimientos de área(s) de las asignaturas(s) que enseñan. 18.2. Estrategias específicas para enseñar cada asignatura (por ejemplo, enseñar a resolver problemas, a desarrollar habilidades de lectura o de pensamiento científico). 18.3. Estrategias para enseñar a estudiantes dispares en sus ritmos de aprendizaje. 18.4. Elaboración de planificación de clases. 18.5. Evaluación de aprendizajes y retroalimentación a los estudiantes. 18.6. Habilidades de TIC (tecnologías de la información y comunicación). 18.7. Manejo de la disciplina y gestión del aula. 18.8. Competencias para enseñar a estudiantes con necesidades educativas especiales. 18.9. Competencias para enseñar a estudiantes diversos socioeconómicamente, multiculturales o multilingües. 18.10. Competencias para formar en habilidades transversales del currículum (por ejemplo, resolución de problemas, aprender a aprender).

Considerations	Pregunta 21 provides only student numbers, without information on the qualifications of teachers, which is necessary to complete the ratio. Pregunta 18 focuses on training needs rather than the number of already qualified teachers, limiting its ability to directly measure the current proportion of trained teachers.

Test name	ERCE 2019 Teacher Questionnaire (ERCE_2019_QP3 & ERCE_2019_QP6)
Analysis	These questions are very effective in directly assessing whether teachers are trained, as they cover the presence of teaching qualifications (Pregunta 13, 14), the quality and scope of teacher training (Pregunta 18), and participation in professional development (Preguntas 19-24). Together, these data points help determine whether teachers meet the minimum training standards, essential for measuring the indicator.
Item	Pregunta 13 13. **¿Cuál es el nivel educativo más alto que usted ha completado?** *Marque con una X solo una opción de respuesta.* ○ <CINE-P 1-2> ○ <CINE-P 3> ○ <CINE-P 4-5> ○ <CINE-P 6> ○ <CINE-P 7> ○ <CINE-P 8> Pregunta 14 14. **¿Tiene usted título de docente de escuela?** *Marque con una X solo una opción de respuesta.* ○ Sí. ○ No. → **Pase a la pregunta 20.** Pregunta 15 - 17

15. **¿En qué tipo de institución obtuvo el título de docente de escuela?**

Marque con una X solo una opción de respuesta. Si tiene más de un título de docente de escuela, considere la última institución en que lo obtuvo.

- ○ En una escuela normal de nivel educativo secundario <CINE-P 3>
- ○ En una escuela normal de nivel educativo superior (universitario, técnico) <CINE-P 4-5-6>
- ○ En una universidad <CINE-P 6>
- ○ Una institución técnica de nivel educativo secundario <CINE-P 3>
- ○ Una institución técnica de nivel educativo superior <CINE-P 4-5>

16. **¿Cuántos años duraba la carrera que estudió para ser docente de escuela?**

Escriba con números la cantidad de años que duraba la carrera que estudió para ser docente de escuela.

___ año(s).

17. **¿En qué modalidad estudió la carrera en que obtuvo el título de docente de escuela?**

Marque con una X solo una opción de respuesta.

- ○ Presencial.
- ○ Semi-presencial (en parte a distancia y en parte presencial).
- ○ A distancia.

Pregunta 18

18. **En su formación inicial de docente de escuela, ¿tuvo las siguientes experiencias?**

Frente a cada experiencia listada, marque con una X solo una opción de respuesta.

	Sí	No
18.1. Leer investigaciones y estudios sobre enseñanza o aprendizaje.	○	○
18.2. Estudiar los contenidos y habilidades que el currículo <nacional/estatal> requiere enseñar.	○	○
18.3. Analizar detalladamente la práctica de aula de un docente después de observarlo.	○	○
18.4. Hacer clases en una escuela como parte de una práctica profesional.	○	○
18.5. Ser observado por un <formador> mientras hacía clases.	○	○
18.6. Recibir retroalimentación de un <formador> sobre mi práctica pedagógica, después de observarme haciendo clases.	○	○
18.7. Ensayar prácticas específicas con mis compañeros (por ejemplo, cómo guiar una discusión grupal, explicar un contenido, cómo iniciar o cerrar una clase).	○	○
18.8. Ver a un <formador> haciendo una demostración de cómo enseñar una habilidad o contenido.	○	○
18.9. Revisar trabajos o respuestas de estudiantes para analizar su nivel de comprensión o aprendizaje.	○	○

Preguntas 19 - 24

19. **¿Cuánto le aportó su formación inicial docente?**

Marque con una X solo una opción de respuesta.

No aportó nada a mi desempeño como docente				Aportó mucho a mi desempeño como docente
1	2	3	4	5
○	○	○	○	○

20. **En los últimos 2 años, ¿ha participado en alguna de las siguientes actividades de <perfeccionamiento> profesional docente ?**

Frente a cada actividad listada, marque con una X solo una opción de respuesta.

	Si	No
20.1. Magíster.	○	○
20.2. Diplomado o postítulo.	○	○
20.3. Curso de <perfeccionamiento> (de 60 horas o más) en pedagogía general (evaluación, currículo, procesos de aprendizaje).	○	○
20.4. Curso de <perfeccionamiento> (de 60 horas o más) en lenguaje.	○	○
20.5. Curso de <perfeccionamiento> (de 60 horas o más) en matemática.	○	○
20.6. Curso de <perfeccionamiento> (de 60 horas o más) en ciencias.	○	○

21. **Durante este <año escolar>, ¿ha participado en algunas de las siguientes actividades de<perfeccionamiento> profesional docente?**

Frente a cada actividad listada, marque con una X solo una opción de respuesta.

	Si	No
21.1. Una red de docentes formada específicamente para el desarrollo profesional.	○	○
21.2. Trabajo grupal con docentes de mi escuela para mejorar nuestras capacidades pedagógicas.	○	○
21.3. Conferencias o seminarios sobre educación (donde docentes o investigadores presentan los resultados de su investigación y analizan temas educacionales).	○	○
21.4. Observación del trabajo en aula de otros docentes de la misma escuela.	○	○
21.5. Reuniones de trabajo periódicas con otros docentes que enseñan la misma asignatura.	○	○
21.6. Reuniones de trabajo periódicas con otros docentes que enseñan a los mismos estudiantes.	○	○

22. **Si respondió NO a todas las actividades de <perfeccionamiento> profesional docente en las preguntas 20 y/o 21, pase a la pregunta 23. Si respondió SÍ a algunas de las actividades, ¿cuánto le aportó su <perfeccionamiento> profesional docente?**

Marque con una X solo una opción de respuesta.

No aportó nada a mi desempeño como docente				Aportó mucho a mi desempeño como docente
1	2	3	4	5
○	○	○	○	○

23. **Indique si en su formación inicial o <perfeccionamiento> profesional docente recibió preparación para realizar las siguientes actividades.**

Frente a cada actividad listada, marque con una X solo una opción de respuesta

	No	Sí, solo en mi formación inicial	Sí, solo en mi actualización	Sí, en ambas (inicial y actualización)
23.1. Usar estrategias para promover en los estudiantes habilidades como: inferir, interpretar, abstraer, o evaluar críticamente.	○	○	○	○
23.2. Enseñar en aulas con estudiantes con dificultades de aprendizaje.	○	○	○	○
23.3. Plantear tareas o actividades adecuadas y desafiantes para estudiantes más avanzados.	○	○	○	○
23.4. Promover habilidades socio-emocionales de los estudiantes (por ejemplo, empatía, manejo de sí mismo, tolerancia).	○	○	○	○
23.5. Enseñar usando computadores, tablets u otras tecnologías digitales.	○	○	○	○
23.6. Enseñar a estudiantes con discapacidad (sensorial, cognitiva o motora).	○	○	○	○

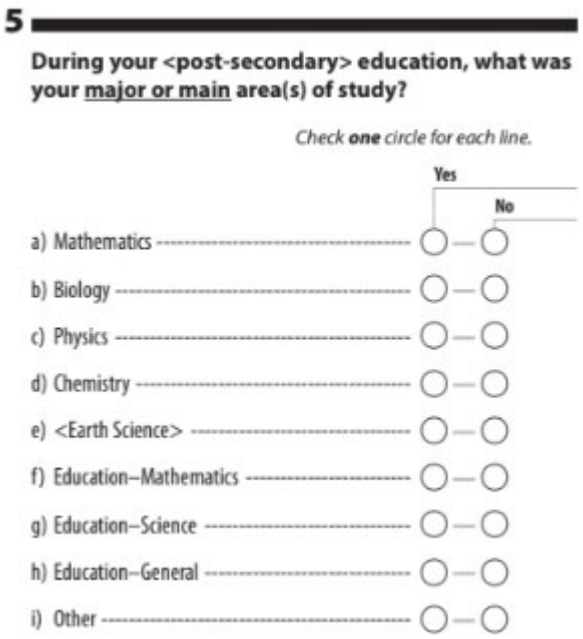
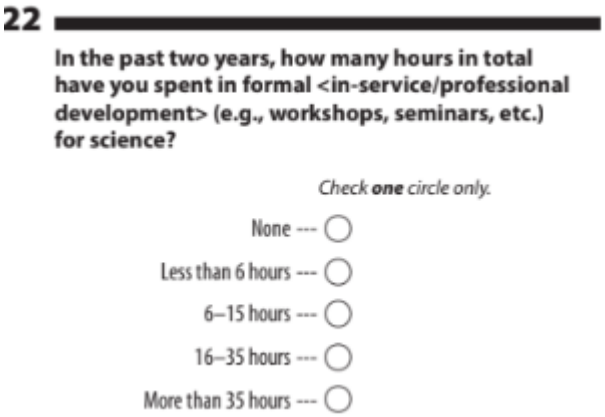
24. **Indique si en su formación inicial docente o su <perfeccionamiento> profesional docente recibió preparación para realizar las siguientes actividades.**

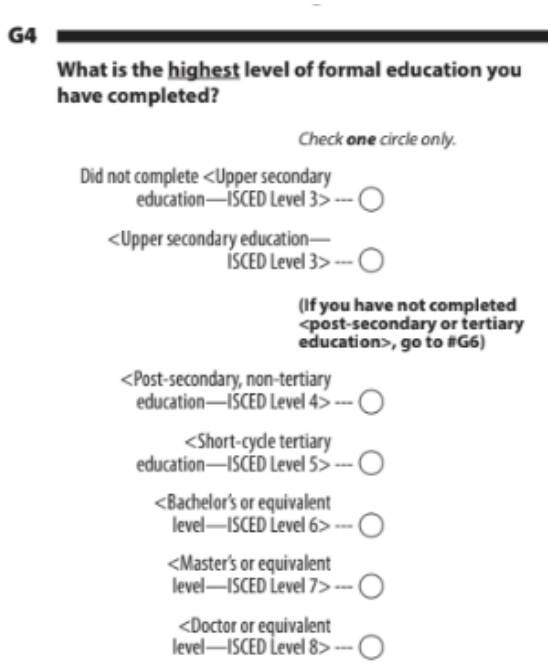
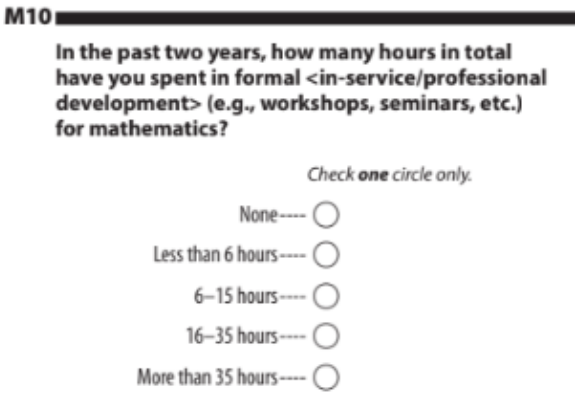
Frente a cada actividad listada, marque con una X solo una opción de respuesta.

	No	Sí, solo en mi formación inicial	Sí, solo en mi actualización	Sí, en ambas (inicial y actualización)
24.1. Emplear experimentos para explicar conceptos y principios científicos.	○	○	○	○
24.2. Desarrollar habilidades científicas como formular preguntas de investigación, hipótesis, concluir sobre evidencia, etc.	○	○	○	○
24.3. Evaluar los aprendizajes de mis estudiantes en el área de ciencias.	○	○	○	○
24.4. Enseñar a resolver un problema matemático de variadas formas.	○	○	○	○
24.5. Aplicar contenido de matemática a la vida cotidiana o para resolver problemas comunes.	○	○	○	○
24.6. Evaluar los aprendizajes de mis estudiantes en el área de matemática	○	○	○	○
24.7. Desarrollar en mis estudiantes habilidades específicas de comprensión lectora (por ejemplo, inferir, extraer información explícita, hacer una interpretación global).	○	○	○	○
24.8. Desarrollar habilidades de expresión escrita en mis estudiantes.	○	○	○	○
24.9. Evaluar los aprendizajes de mis estudiantes en el área de la escritura.	○	○	○	○
24.10. Evaluar los aprendizajes de mis estudiantes en el área de lectura.	○	○	○	○

Considerations	While the questions effectively assess whether a teacher is trained, they do not provide information about the number of pupils, which is the other half of the ratio required for the indicator. Also, some questions focus on the quality of training, which, although important, is not directly needed for the ratio itself.

Test name	SCHOOL QUESTIONNAIRE computer PISA 2022.pdf SCHOOL QUESTIONNAIRE paper PISA 2022.pdf
Analysis	This question mirrors the one in the computer version and is equally relevant. It provides critical data on teacher qualifications, which is necessary for determining how many teachers meet the minimum qualifications for their education level.
Item	SC018 **Q8** SC018 **How many of the following teachers are on the staff of your school?** ***Include both full-time and part-time teachers.*** *A full-time teacher is employed at least 90% of the time as a teacher for the full school year. All other teachers should be considered part-time. Regarding the qualification level, please refer only to the teacher's* ***highest qualification level****.* *(Please write a number on each line. Write "0" (zero) if there are none.)* SC018Q01TA Teachers in TOTAL _____01 _____02 SC018Q02TA Teachers <fully certified> by <the appropriate authority> _____01 _____02 SC018Q08JA Teachers with an <ISCED Level 6 – Bachelor's or equivalent level> qualification _____01 _____02 SC018Q09JA Teachers with an <ISCED Level 7 – Master's or equivalent level> qualification _____01 _____02 SC018Q10JA Teachers with an <ISCED Level 8 – Doctoral or equivalent level> qualification _____01 _____02
Considerations	It does not provide pupil numbers, which are needed to calculate the actual ratio.

Test name	TIMSS 2019 Teacher Questionnaire for 8th Grade (T19_TQS_8)
Analysis	Pregunta 5 helps assess whether teachers meet the minimum qualification requirements. Pregunta 22 is relevant as ongoing professional development can ensure that teachers remain qualified.
Item	Pregunta 5  5 During your <post-secondary> education, what was your major or main area(s) of study? Check one circle for each line. Yes / No a) Mathematics b) Biology c) Physics d) Chemistry e) <Earth Science> f) Education–Mathematics g) Education–Science h) Education–General i) Other Pregunta 22  22 In the past two years, how many hours in total have you spent in formal <in-service/professional development> (e.g., workshops, seminars, etc.) for science? Check one circle only. None Less than 6 hours 6–15 hours 16–35 hours More than 35 hours
Considerations	These questions focus on teacher qualifications but lack information about the number of pupils.

Test name	TIMSS 2019 Teacher Questionnaire for 4th Grade (T19_TQ_4.pdf)
Analysis	Pregunta G4 provides important data on teacher qualifications, essential for identifying trained teachers. Pregunta M10 addresses the continuous professional development of teachers, which helps maintain their status as trained.
Item	Pregunta G4  Pregunta M10 
Considerations	These questions focus on qualifications but don't cover the number of pupils, which is necessary for the ratio.

Test name	Teacher Questionnaire PISA 2022
Analysis	These questions directly assess whether teachers have the necessary qualifications to be classified as trained. TC020 addresses continuous professional development, relevant for maintaining teacher qualifications.
Item	Preguntas TC004 to TC019 TC007 **How many years of work experience do you have?** *(Please round up to whole years no matter whether you worked part-time or full-time and move the slider to the appropriate number of years. If any option did not apply to you select "0" (zero).)* TC007Q01NA Year(s) working as a teacher at this school 04 TC007Q02NA Year(s) working as a teacher in total 01 Slider bar: Parking position; range: "0 years"-"50 years or more"; step=1. Consistency check/soft reminder if no response on any item on the screen: To enter a response of "0" (zero) for a question, please move the slider to the "0" position on the scale. Consistency check/soft reminder if the response to item TC007Q01NA is bigger than to item TC007Q02NA: The number of years working at this school is greater than the number of years working in total. Please check your response. TC015 **How did you receive your initial teaching qualifications?** *(Please select one response.)* TC015Q01NA I attended a standard teacher education or training programme at an <educational institute which is eligible to educate or train teachers>. ☐01 TC015Q01NA I attended an in-service teacher education or training programme. ☐02 TC015Q01NA I attended a work-based teacher education or training programme. ☐03 TC015Q01NA I attended training in another pedagogical profession. ☐04 TC015Q01NA Other ☐05 TC014 **Did you complete a teacher education or training programme?** *(Please select one response.)* TC014Q01HA Yes, a programme of 1 year or less TC014Q01HA Yes, a programme longer than 1 year TC014Q01HA No

TC210 **Do you have any of the following degrees?**

(Please select one response in each row.)

		Yes	*No*
TC210Q01JA	<ISCED level 3.3>	☐01	☐02
TC210Q02JA	<ISCED level 3.4>	☐01	☐02
TC210Q03JA	<ISCED level 4>	☐01	☐02
TC210Q04JA	<ISCED level 5>	☐01	☐02
TC210Q05JA	<ISCED level 6>	☐01	☐02
TC210Q06JA	<ISCED level 7>	☐01	☐02
TC210Q07JA	<ISCED level 8>	☐01	☐02

TC018 **Were any of the following included in your teacher education or training programme or other professional qualification and do you teach them to the <national modal grade for 15-year-olds> in the current school year?**

(Because this is an international survey, we had to categorise many of the actual subjects taught in schools into broad categories. If the exact name of one of your subjects is not listed, please mark the category you think best fits the subject.)

(If you need further explanation for terms used in this question, please use the help button.)

(Please select all that apply.)

		Included in my teacher education or training programme or other professional qualification A	*I teach it to the <national modal grade for 15-year-olds> in the current school year* B
TC018Q01N	Reading, writing, and literature	☐01	☐01
TC018Q02N	Mathematics	☐01	☐01
TC018Q03N	Science	☐01	☐01
TC018Q04N	Technology	☐01	☐01
TC018Q05N	Social studies	☐01	☐01
TC018Q06N	Modern foreign languages	☐01	☐01
TC018Q07N	Ancient languages (e.g. Latin)	☐01	☐01
TC018Q08N	Arts	☐01	☐01
TC018Q09N	Physical education	☐01	☐01
TC018Q10N	Religion and/or ethics	☐01	☐01
TC018Q11N	Practical and vocational skills	☐01	☐01

	TC219 **Thinking of all of your professional development activities during the last 12 months, did any of these have a positive impact on your teaching practice?** *(Please select one response.)* TC219Q01JA Yes ☐01 TC219Q01JA No ☐02 TC219Q01JA I did not participate in any professional development during the last 12 months. ☐03 Pregunta TC020 TC020 **During the last 12 months, did you participate in any of the following activities?** *(If you need further explanation of the term "<digital resources>", please use the help button.)* *(Please select one response in each row.)* *Yes* *No* TC020Q01NA Qualification programme (e.g. a <degree programme>) ☐01 ☐02 TC020Q02NA Participation in a network of teachers formed specifically for the professional development of teachers ☐01 ☐02 TC020Q03NA Individual or collaborative research on a topic of interest to you professionally ☐01 ☐02 TC020Q04NA Mentoring and/or peer observation and coaching, as part of a formal school arrangement ☐01 ☐02 TC020Q05NA Reading professional literature (e.g. journals, evidence-based papers, thesis papers) ☐01 ☐02 TC020Q06NA Engaging in informal dialogue with your colleagues on how to improve your teaching ☐01 ☐02 TC020Q07JA Course, workshop, or conference on teaching methods ☐01 ☐02 TC020Q08JA Course, workshop, or conference relevant to your subject-matter field ☐01 ☐02 TC020Q09JA Observation visits to other schools ☐01 ☐02 TC020Q10JA Training courses in private companies or other organisations ☐01 ☐02 TC020Q11JA Listening to or watching recorded seminars or online courses (e.g. <MOOCs>) about the use of <digital resources> for teaching ☐01 ☐02 TC020Q12JA Course, workshop, or conference about the use of <digital resources> for teaching ☐01 ☐02
Considerations	These questions lack information on pupil numbers.

Conclusions:

The ERCE 2019, TIMSS 2019, and PISA 2022 questionnaires effectively capture data on teacher qualifications and professional development, which are critical components of measuring the pupil-trained teacher ratio for SDG 4.c.2. However, while these assessments provide valuable information on whether teachers meet the minimum training standards, they often lack data on the number of pupils, which is essential for calculating the complete ratio. Furthermore, some questions focus on training needs and professional development, which, while important, do not directly contribute to measuring the current proportion of trained teachers.

To accurately measure SDG 4.c.2, future assessments should integrate questions that gather data on both teacher qualifications and pupil numbers at the same time. This will allow for a direct calculation of the pupil-trained teacher ratio. Additionally, while professional development data is useful, more emphasis should be placed on measuring the number of currently qualified teachers rather than focusing on future training needs. Combining this data in a comprehensive manner will provide a more complete and accurate picture of the teacher-pupil ratio by education level.

Recommendation:

TIMSS is recommended for measuring indicator 4.c.1. Although it doesn't directly assess alignment with national standards, it provides the most comprehensive set of questions covering teacher education, training, and professional development, allowing for a broader understanding of teacher qualifications. However, it's crucial to address the limitations of TIMSS by incorporating supplementary data from national sources.

4.c.3. Percentage of teachers qualified according to national standards by education level and type of institution

Classification: National Survey

This indicator cannot be accurately assessed using International Large-Scale Assessments (ILSAs) due to methodological limitations.

Conclusion:

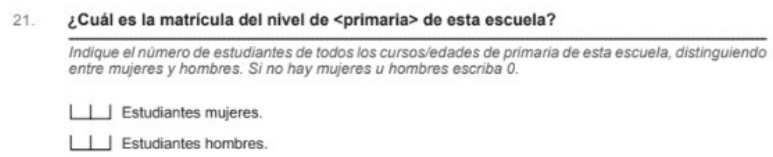
ILSAs provide valuable information on teacher characteristics, but they do not specifically address whether teachers meet the minimum academic qualifications required by national standards. These assessments are designed for cross-national comparisons, which often overlook country-specific qualification standards. Furthermore, ILSAs do not differentiate between public and private institutions, a critical aspect for calculating SDG 4.c.3.

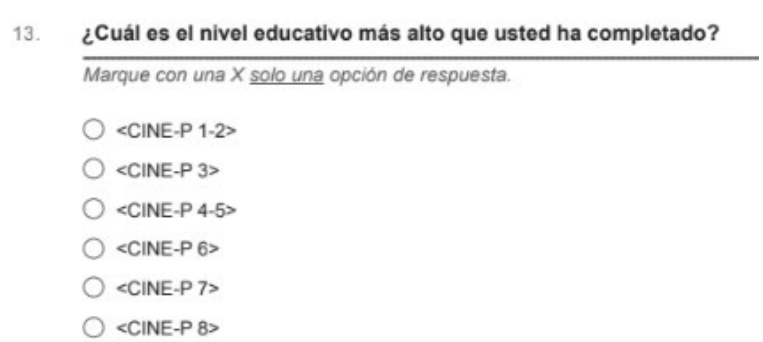
Recommendation:

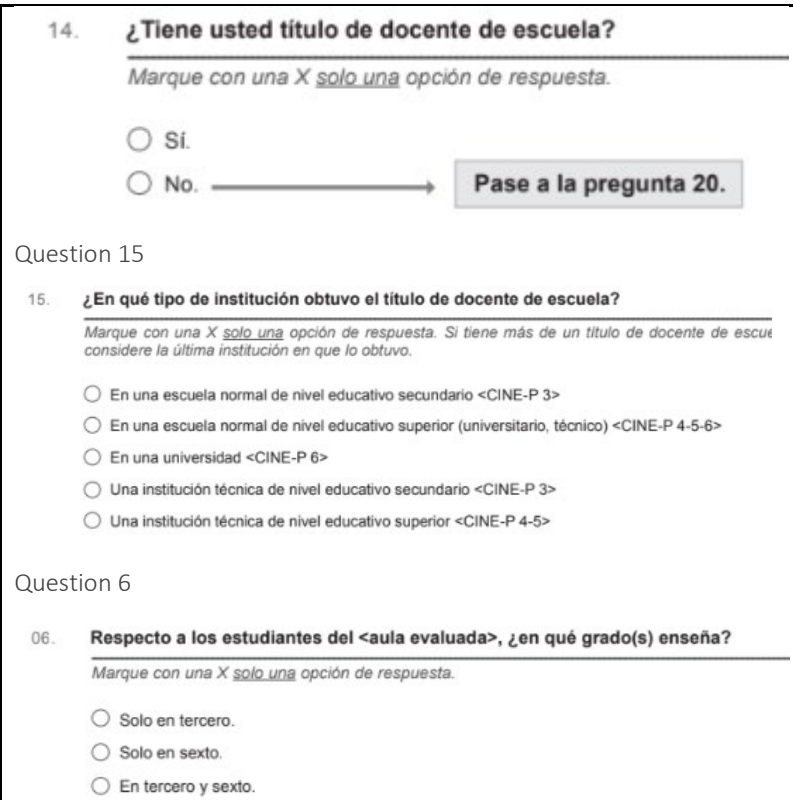
To accurately measure SDG 4.c.3, countries should rely on administrative data from national education ministries and schools. This data source provides direct insights into whether teachers meet the minimum required qualifications as per national standards and can differentiate between public and private institutions. Strengthening national administrative data systems will enable countries to capture detailed information on teacher qualifications, ensuring comprehensive and accurate tracking of this indicator across all education levels and institution types.

4.c.4 Pupil-qualified teacher ratio by education level

Classification: Searchable

Test name	ERCE 2019 Cuestionario para Directores (QD6)
Analysis	This question is highly relevant because it provides the number of students enrolled at different educational levels, which is critical for calculating the pupil-to-teacher ratio. It allows data to be categorized by gender as well, providing more detailed insights.
Item	Pregunta 21  21. **¿Cuál es la matrícula del nivel de <primaria> de esta escuela?** *Indique el número de estudiantes de todos los cursos/edades de primaria de esta escuela, distinguiendo entre mujeres y hombres. Si no hay mujeres u hombres escriba 0.* ⌊_⌋⌊_⌋ Estudiantes mujeres. ⌊_⌋⌊_⌋ Estudiantes hombres.
Considerations	It only addresses student enrollment and does not provide information about teacher qualifications, which is necessary for completing the ratio calculation.

Test name	ERCE 2019 Cuestionario para Docentes (QP3 & QP6)
Analysis	These questions help identify the level of teacher qualifications, which is crucial for determining whether they meet the minimum qualifications required for teaching at different education levels. The combination of questions regarding their teaching certification, highest education level, and the grades they teach directly contributes to understanding the qualification of teachers at various levels of education
Item	Question 13  13. **¿Cuál es el nivel educativo más alto que usted ha completado?** *Marque con una X solo una opción de respuesta.* ○ <CINE-P 1-2> ○ <CINE-P 3> ○ <CINE-P 4-5> ○ <CINE-P 6> ○ <CINE-P 7> ○ <CINE-P 8> Question 14

	 14. **¿Tiene usted título de docente de escuela?** *Marque con una X solo una opción de respuesta.* ○ Sí. ○ No. → **Pase a la pregunta 20.** Question 15 15. **¿En qué tipo de institución obtuvo el título de docente de escuela?** *Marque con una X solo una opción de respuesta. Si tiene más de un título de docente de escue considere la última institución en que lo obtuvo.* ○ En una escuela normal de nivel educativo secundario <CINE-P 3> ○ En una escuela normal de nivel educativo superior (universitario, técnico) <CINE-P 4-5-6> ○ En una universidad <CINE-P 6> ○ Una institución técnica de nivel educativo secundario <CINE-P 3> ○ Una institución técnica de nivel educativo superior <CINE-P 4-5> Question 6 06. **Respecto a los estudiantes del <aula evaluada>, ¿en qué grado(s) enseña?** *Marque con una X solo una opción de respuesta.* ○ Solo en tercero. ○ Solo en sexto. ○ En tercero y sexto.
Considerations	Although the questions address the qualifications of teachers, they do not directly confirm whether the teachers are qualified for the specific grades or subjects they are teaching, which could affect the accuracy of the ratio calculation.

Conclusions:

The ERCE 2019 Director and Teacher Questionnaires provide valuable data for calculating the pupil-qualified teacher ratio by capturing both student enrollment and teacher qualifications, which are key components for SDG 4.c.4. The director questionnaire effectively gathers data on student numbers, while the teacher questionnaire assesses teachers' qualifications, such as certification and education level. However, these questionnaires do not fully integrate the two data points necessary for calculating the ratio, and there is no confirmation of whether teachers are qualified for the specific grades or subjects they are teaching.

To improve the measurement of SDG 4.c.4, future assessments should directly link teacher qualifications to the specific subjects and grades they are teaching, ensuring a more accurate representation of the pupil-qualified teacher ratio. Additionally, data collection should integrate both student numbers and teacher qualifications within the same survey to facilitate easier calculation of the ratio. This will lead to a more precise and

comprehensive understanding of the availability of qualified teachers across different education levels.

Recommendation:

None of the ILSAs analyzed could independently measure this indicator due to the lack of questions on student enrollment. Combining ILSA data on teacher qualifications with national administrative data on student numbers was deemed necessary. Considering these findings, TIMSS appears to be the most suitable option for combining with national administrative data sources.

4.c.5. Average teacher salary relative to other professions requiring a comparable level of qualification

Classification: National Surveys

This indicator cannot be accurately assessed using International Large-Scale Assessments (ILSAs) due to methodological limitations.

Conclusion:

ILSAs do not collect data on teacher salaries or compare teacher salaries to other professions requiring similar qualifications. ILSAs focus on academic performance and educational contexts rather than economic data related to employment conditions. Data on teacher salaries and comparisons with other professions are administrative and financial in nature, and thus ILSAs are not suitable for measuring this indicator. Instead, national administrative data and surveys are needed to assess teacher salaries relative to similarly qualified workers. International bodies like the OECD and ILO also provide salary data, but these are usually aggregated and may not always offer granular comparisons for specific educational levels.

Recommendation:

To measure SDG 4.c.5 effectively, countries should rely on national administrative data on teacher salaries, collected by ministries of education or national statistical offices. This data should be compared with average salaries of individuals in other professions requiring comparable qualifications, ideally obtained from labor market surveys or data from national wage databases. Countries should also engage with international organizations such as the OECD, which already provide detailed salary comparisons, to align methodologies and ensure consistency in global reporting. Periodic reviews of teacher salaries relative to other professions will help track progress and highlight areas needing policy adjustments.

4.c.6. Teacher attrition rate by education level

Classification: National Surveys

This indicator cannot be accurately assessed using International Large-Scale Assessments (ILSAs) due to methodological limitations.

Conclusion:

ILSAs such as PISA and TIMSS do not gather data on teacher turnover or attrition rates, as their primary focus is on assessing student performance and educational contexts. Tracking the percentage of teachers leaving the profession requires administrative data from schools and human resources (HR) records, which provide comprehensive information on teacher retention and turnover. Such data is crucial for understanding trends in teacher attrition, identifying underlying causes, and addressing staffing shortages in the education sector.

Recommendation:

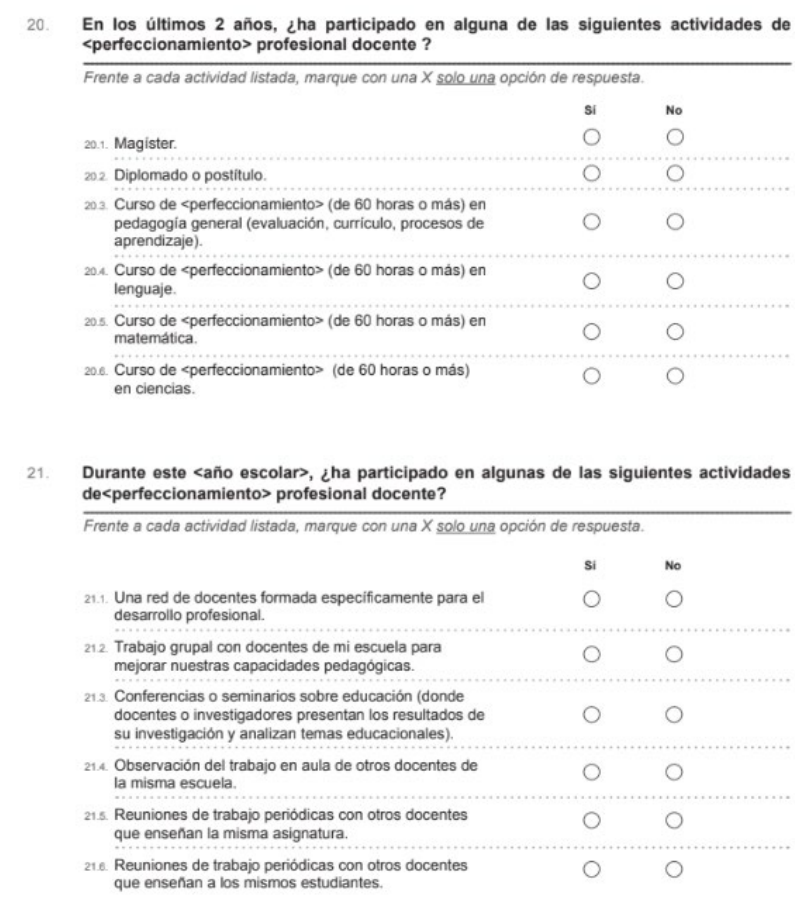
To accurately measure teacher turnover for SDG 4.c.6, countries should collect and maintain standardized administrative data from schools and HR departments. This data should track teacher employment statuses, including those leaving the profession each year, across all educational levels. Implementing digital record-keeping systems can improve the consistency and reliability of this data, enabling more effective monitoring of teacher attrition rates. National education systems should also ensure that data collection is consistent across regions to allow for year-over-year comparisons, helping policymakers to identify trends and address teacher retention challenges.

4.c.7 Percentage of teachers who received in-service training in the last 12 months by type of training

Classification: Searchable

Test name	PISA 2022 Teacher Questionnaire
Analysis	This question is moderately effective because it captures whether teachers participated in professional development activities within the past 12 months, which is aligned with the 4.c.7 indicator. It also asks about the perceived impact of these activities on teaching practice, which can provide valuable insights into the effectiveness of the training.
Item	Pregunta TC219: TC219 **Thinking of all of your professional development activities during the last 12 months, did any of these have a positive impact on your teaching practice?** *(Please select one response.)* TC219Q01JA Yes ☐01 TC219Q01JA No ☐02 TC219Q01JA I did not participate in any professional development during the last 12 months. ☐03
Considerations	The main limitation is that TC219 doesn't specify the type of training received, which limits its ability to fully meet the indicator's criteria of classifying teachers by the type of in-service training. Additionally, it focuses on subjective impact rather than objective measures of participation.

Test name	ERCE 2019 Teacher Questionnaire (ERCE_2019_QP3 & ERCE_2019_QP6)
Analysis	These questions are effective in capturing teacher participation in professional development activities, including both formal programs and more informal types of professional development. They align well with the 4.c.7 indicator, which measures the percentage of teachers receiving in-service training in the last 12 months. Both questions provide detailed data that allows differentiation by type of training, which is critical for understanding the variety of in-service training activities teachers engage in.
Item	Pregunta 20 Pregunta 21



20. **En los últimos 2 años, ¿ha participado en alguna de las siguientes actividades de <perfeccionamiento> profesional docente ?**

Frente a cada actividad listada, marque con una X solo una opción de respuesta.

	Sí	No
20.1. Magíster.	○	○
20.2. Diplomado o postítulo.	○	○
20.3. Curso de <perfeccionamiento> (de 60 horas o más) en pedagogía general (evaluación, currículo, procesos de aprendizaje).	○	○
20.4. Curso de <perfeccionamiento> (de 60 horas o más) en lenguaje.	○	○
20.5. Curso de <perfeccionamiento> (de 60 horas o más) en matemática.	○	○
20.6. Curso de <perfeccionamiento> (de 60 horas o más) en ciencias.	○	○

21. **Durante este <año escolar>, ¿ha participado en algunas de las siguientes actividades de<perfeccionamiento> profesional docente?**

Frente a cada actividad listada, marque con una X solo una opción de respuesta.

	Sí	No
21.1. Una red de docentes formada específicamente para el desarrollo profesional.	○	○
21.2. Trabajo grupal con docentes de mi escuela para mejorar nuestras capacidades pedagógicas.	○	○
21.3. Conferencias o seminarios sobre educación (donde docentes o investigadores presentan los resultados de su investigación y analizan temas educacionales).	○	○
21.4. Observación del trabajo en aula de otros docentes de la misma escuela.	○	○
21.5. Reuniones de trabajo periódicas con otros docentes que enseñan la misma asignatura.	○	○
21.6. Reuniones de trabajo periódicas con otros docentes que enseñan a los mismos estudiantes.	○	○

Considerations	While both questions are effective, Pregunta 20 covers a period of two years, which slightly exceeds the 12-month focus of the indicator. Additionally, the questions focus on teacher participation and don't directly assess the impact or effectiveness of the training received.

Test name	PASEC 2019 Director Questionnaire
Analysis	The Teacher Questionnaire effectively addresses this indicator by asking about participation in in-service training over the past two years, training frequency, and specific areas covered. This information provides a good basis for examining teacher professional development.
Item	QM_7 & QM_8 - "Have you benefited from any additional and ongoing in-service training during the last two years (pedagogical internship, training seminar, pedagogical animation unit)?" This is the key question to identify

	teachers who have participated in in-service training. **QM_7. Avez-vous bénéficié de formations complémentaires et continues en cours d'emploi durant les deux dernières années** *(stage pédagogique, séminaire de formation, cellule d'animation pédagogique)* **?** — ☐ Oui ☐ Non — ☐☐ **QM_8. Si oui, combien de fois ?** — ☐☐ fois QM_9 - "If yes, in which area(s) did you receive this additional training?" This question provides details about the types of in-service training received. **QM_9. Si oui, dans quel(s) domaine(s) avez-vous reçu ces formations complémentaires ?** A. Didactique du français — ☐ Oui ☐ Non — ☐☐ B. Didactique des mathématiques — ☐ Oui ☐ Non — ☐☐ C. Didactique de disciplines autres que le français et les mathématiques (histoires, sciences, TIC, etc.) — ☐ Oui ☐ Non — ☐☐ D. Pédagogie — ☐ Oui ☐ Non — ☐☐ E. Evaluation des apprentissages — ☐ Oui ☐ Non — ☐☐
Considerations	QM_7 asks about training received within the last two years, which is broader than the 12-month timeframe specified by the indicator. This might lead to an overestimation of the percentage if teachers who received training more than 12 months ago are included. Additionally, the training categories provided in QM_9 might not perfectly align with the specific training types being monitored for the indicator. Further analysis and categorization might be necessary.

Test name	SEA-PLM 2019 School Questionnaire SEA-PLM 2019 Teacher Questionnaire
Analysis	Both the school and teacher questionnaires collect detailed data on in-service training received by teachers.
Item	SC26: Asks about the percentage of teaching staff who attended a professional development or in-service training program during the last year. **26** During last year, approximately what percentage of teaching staff in your school attended a programme of professional development / in-service training? Please tick **one** box **only**. Less than 30% ☐ 01 Between 30 and 60% ☐ 02 More than 60% ☐ 03

	TC04: Gathers comprehensive information from teachers about their participation in teacher training on various topics, including mathematics, reading, writing, social studies, classroom management, student assessment, information and communications technology, general teaching methods/pedagogy, inclusive education, and differentiated instruction. The questionnaire specifies whether the training was received during pre-service training, in-service training, or both. **4** Have you attended any teacher training on the following topics? Please tick **one** box on **each line**. *Yes, during pre-service training only* / *Yes, during in-service training only* / *Yes, during both pre- and in-service training* / *No* a) Mathematics ☐01 ☐02 ☐03 ☐04 b) Reading in <test language> ☐01 ☐02 ☐03 ☐04 c) Writing in <test language> ☐01 ☐02 ☐03 ☐04 d) <Social studies> ☐01 ☐02 ☐03 ☐04 e) Classroom management ☐01 ☐02 ☐03 ☐04 f) Student assessment ☐01 ☐02 ☐03 ☐04 g) <Information and communications technology> ☐01 ☐02 ☐03 ☐04 h) <General teaching methods/pedagogy> ☐01 ☐02 ☐03 ☐04 i) <Inclusive education or special needs education> (including the needs of children with disabilities) ☐01 ☐02 ☐03 ☐04 j) <Differentiated instruction> ☐01 ☐02 ☐03 ☐04
Considerations	Although the questionnaires comprehensively assess teacher training, a limitation arises if there's a discrepancy between reported training participation and the actual application of learned skills in the classroom. The data doesn't capture the effectiveness or impact of the training on teaching practices. Further observation and evaluation would be required to assess the true impact of training on teaching quality.
Test name	**PILNA 2021 Teacher Questionnaire**
Analysis	The PILNA 2021 Teacher Questionnaire includes questions that can be used to assess aspects of SDG 4.c.7.
Item	Question 13 – addresses assistance to professional development programmes

13. How many times in the past 3 years did you attend a professional development programme in the following areas?
*Tick **one** box in each row.*

		Never	*Once or twice*	*Three or four times*	*More than four times*
a)	Reading	☐ 1	☐ 2	☐ 3	☐ 4
b)	Writing	☐ 1	☐ 2	☐ 3	☐ 4
c)	Numeracy	☐ 1	☐ 2	☐ 3	☐ 4
d)	Classroom-based assessment	☐ 1	☐ 2	☐ 3	☐ 4
e)	Curriculum	☐ 1	☐ 2	☐ 3	☐ 4
f)	Student welfare	☐ 1	☐ 2	☐ 3	☐ 4
g)	Classroom management	☐ 1	☐ 2	☐ 3	☐ 4
h)	Inclusive education	☐ 1	☐ 2	☐ 3	☐ 4
i)	Leadership skills	☐ 1	☐ 2	☐ 3	☐ 4
j)	Use of ICT in teaching and learning	☐ 1	☐ 2	☐ 3	☐ 4

Considerations	The key considerations it that the PILNA questionnaire asks about training received in the "past 3 years," which is broader than the 12-month timeframe specified by SDG 4.c.7. To align with the indicator, additional analysis would be needed to filter the data and include only those teachers who received training in the last 12 months. Another consideration would be that the list of professional development areas provided in the PILNA questionnaire may not fully align with the specific "types of training" categories being used to monitor SDG 4.c.7. Further analysis and categorization of the PILNA data might be necessary to ensure alignment with the indicator's requirements.

Conclusions:

The PISA 2022, ERCE 2019, PASEC 2019, SEA-PLM 2019, and PILNA 2021 Teacher Questionnaires provide relevant data for measuring the percentage of teachers who received in-service training over the last 12 months, aligning with SDG 4.c.7. The PISA 2022 questionnaire effectively tracks teacher participation in professional development but lacks detail on the type of training received, which is crucial for a comprehensive analysis. ERCE 2019 and PASEC 2019 provides more specific data on the types of training teachers engage in but covers a two-year period, (applies for PILNA 2021, that covers a three-year period) exceeding the 12-month window required by the indicator. On the other hand, SEA-PLM 2019 provides specific information about teacher training in specific topic and the type of training.

To improve measurement of SDG 4.c.7, future assessments should focus on capturing specific types of in-service training within the 12-month period to meet the indicator's requirements. Adding questions that assess the impact and effectiveness of the training

beyond subjective reporting would provide a fuller picture of how in-service training affects teaching quality. Integrating both participation data and the type of training will enhance the accuracy and depth of the information gathered for SDG 4.c.7.

Recommendation:

Based on this analysis, the SEA-PLM 2019 Teacher Questionnaire appears to be the most suitable ILSA for measuring indicator 4.c.7.

Here's why:

- Specificity: It gathers information about both participation in in-service training and the specific type of training, aligning with the indicator's requirements.
- Relevant Timeframe: Unlike ERCE, PASEC, and PILNA, the SEA-PLM focuses on the past year, matching the indicator's timeframe.

While PISA 2022 is useful for tracking overall participation, it lacks the detail about training types needed to fully measure 4.c.7. The other ILSAs (ERCE, PASEC, and PILNA) require additional data processing to align with the indicator's timeframe.

Therefore, using the SEA-PLM 2019 Teacher Questionnaire would offer the most direct and accurate measurement of indicator 4.c.7, providing valuable insights into the types of professional development teachers are engaging in and their alignment with educational goals.

Analysis of context questionnaires in International Large-Scale Assessments (ILSAs)

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