United Nations
Educational, Scientific and
Cultural Organization

UNESCO
INSTITUTE
FOR
STATISTICS

Metadata for the global and thematic indicators for the follow-up and review of SDG 4 and Education 2030

July 2017

Introduction

This document contains standardised metadata for each of the proposed global and thematic indicators for monitoring Sustainable Development Goal 4 (SDG 4) and the Education 2030 Agenda.

The proposed thematic indicators were developed by the Technical Advisory Group on Post-2015 Education Indicators (TAG) established by UNESCO in March 2014 to elaborate a proposal for a set of indicators to monitor the education goal of the 2030 Agenda for Sustainable Development: "Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all". The TAG consisted of experts from Member States representing all regions, civil society organizations and international partners (UNESCO, the EFA Global Monitoring Report, OECD, UNICEF and the World Bank). The UNESCO Institute for Statistics (UIS) chaired the group and provided its secretariat.

The TAG's final proposal on the thematic indicator framework was included in the Education 2030 Framework for Action adopted by UNESCO Member States on 4 November 2015.

The metadata included in this document have been developed by the UIS and are based on the set of thematic indicators approved by the Technical Cooperation Group on SDG 4–Education 2030 Indicators, a group set up in 2016 to provide the technical platform to support the implementation of the thematic indicator framework for the follow-up and review of SDG 4 and the Education 2030 Agenda. The Technical Cooperation Group (TCG) consists of experts from the 27 member countries of the Inter-Agency and Expert Group on Sustainable Development Indicators (IAEG-SDGs) plus the United Kingdom (as a former member of the IAEG-SDGs), civil society organizations and international partners (UNESCO, the Global Education Monitoring Report, the OECD, UNICEF and the World Bank). The TCG also includes, as Observers, experts from regional commissions, regional agencies and non-government organizations. The UIS and UNESCO's Division for Education 2030 Support and Coordination jointly chair the group and the UIS provides its secretariat.

The thematic indicator framework includes the eleven global indicators for SDG 4 which were developed by the IAEG-SDGs and were agreed by the United Nations Statistical Commission (UNSC) in March 2016 and further endorsed in March 2017.

The IAEG-SDGs was established by the UNSC in March 2015 to develop a global indicator framework for the follow-up and review of the 2030 Agenda for Sustainable Development. The IAEG-SDGs currently has 27 members drawn from countries representing all regions. Other countries, international and regional organizations, civil society and other partners are Observers to the group but participate actively in its work.

Indicators

4.1 By 2030, ensure that all girls and boys complete free, equitable and quality primary and secondary education leading to relevant and effective learning outcomes

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

Definition:

Percentage of children and young people in Grade 2 or 3 of primary education, at the end of primary education and the end of lower secondary education achieving at least a minimum proficiency level in (a) reading and (b) mathematics. The minimum proficiency level will be measured relative to new common reading and mathematics scales currently in development.

Minimum proficiency level is the benchmark of basic knowledge in a domain (mathematics, reading, etc.) measured through learning assessments. Currently, there are no common standards validated by the international community or countries. The indicator shows data published by each of the agencies and organizations specialised in cross-national learning assessments. Comparability is limited to the countries that have participated in that particular assessment. There is no comparability across the different cross-national learning assessments.

The table below shows the proficiency levels provisionally adopted by the UIS as the minimum proficiency levels for each cross-national learning assessment and stage of education. Each cross-national learning assessment defines its own proficiency levels and some define their own minimum level base within their own framework. Unless otherwise indicated, the same cut-off level is used for both reading and mathematics in a given learning assessment. The table below summarises the cut-off levels used in each assessment. The orange levels show achievement at least at the minimum level.

Proficiency levels corresponding to each international and regional student achievement test

Hamonized proficiency levels	Original name of levels by assessment														
	PISA		TIMSS		PIRLS	PASEC				TERCE				SACMEQ	
	Grade and subject														
	8		4	8	4	2	2	6	6	3	3	6	6	6	6
	Reading	Math	Math	Math	Reading	Reading	Math	Reading	Math	Reading	Math	Reading	Math	Reading	Math
Level 8 (L8)	Level 6													Level 8	Level 8
Level 7 (L7)	Level 5	Level 6												Level 7	Level 7
Level 6 (L6)	Level 4	Level 5												Level 6	Level 6
Level 5 (L5)	Level 3	Level 4	Advanced International Benchmark	Advanced International Benchmark	Advanced International Benchmark	Level 4		Level 4						Level 5	Level 5
Level 4 (L4)	Level 2	Level 3	High International Benchmark	High International Benchmark	High International Benchmark	Level 3	Level 3	Level 3	Level 3	Level IV	Level IV	Level IV	Level IV	Level 4	Level 4
Level 3 (L3)	Level 1a	Level 2	Intermediate International Benchmark	Intermediate International Benchmark	Intermediate International Benchmark	Level 2	Level 2	Level 2	Level 2	Level III	Level III	Level III	Level III	Level 3	Level 3
Level 2 (L2)	Level 1b	Level 1	Low International Benchmark	Low International Benchmark	Low International Benchmark	Level 1	Level 1	Level 1	Level 1	Level II	Level II	Level II	Level II	Level 2	Level 2
Level 1 (L1)	Below Level 1b	Below Level 1	Below Low International Benchmark	Below Low International Benchmark	Below Low International Benchmark	Below Level 1	Below Level 1	Below Level 1	Below Level 1	Level I	Level I	Level I	Level I	Level 1	Level 1

: achieve at least a minimum proficiency level

: not applicable

Purpose:

The indicator is a direct measure of the learning outcomes achieved in the subject areas being assessed at the relevant stages of education.

Calculation method:

The indicator is calculated as the percentage of children and/or young people at the relevant stage of education achieving or exceeding a pre-defined proficiency level in a given subject.

Performance above the minimum level, $PL_{tn,s,above\ minimum} = p$

where p is the percentage of students in a learning assessment at stage of education n, in subject s in any year (t-i), who has achieved the level of proficiency that is greater than a pre-defined minimum standard, S_{min}. The minimum standard will be defined by the global education community taking into consideration regional differences.

Interpretation:

The three measurement points will have their own established minimum standard. There is only one threshold that divides students into below minimum or at or above minimum proficiency levels.

(a) Below minimum is the proportion or percentage of students who do not achieve a minimum proficiency level as established by countries according to the globally-defined minimum competencies.

(b) At or above minimum is the proportion or percentage of students who have achieved at least the minimum proficiency level as defined in the assessment. Due to heterogeneity of performance levels set by national and cross-national assessments, these performance levels will be mapped to the globally-defined minimum performance levels. Once the performance levels are mapped, the global education community will be able to identify for each country the proportion or percentage of children who achieved at least minimum proficiency levels.

Type of data source:

Learning assessments.

Disaggregation:

By age or age-group of students, sex, location, socio-economic status, migrant status and ethnicity. Disability status is not currently available in most national and cross-national learning assessments.

Data required:

Performance level data from national and cross-national assessments.

Data sources:

Various cross-national learning assessments including: Programme d'analyse des systèmes éducatifs de la CONFEMEN (PASEC), Progress in International Reading Literacy Study (PIRLS), Programme for International Student Assessment (PISA), Southern and Eastern Africa Consortium for Monitoring Educational Quality (SACMEQ), Tercer Estudio Regional Comparativo y Explicativo (TERCE) and Trends in International Mathematics and Science Study (TIMSS).

Limitations and comments:

While data from many national learning assessments are available now, every country sets its own standards so the performance levels may not always be directly comparable. This is also true with cross-national learning assessments (i.e., international or regional learning assessments). Results are comparable for countries which participated in the same cross-national learning assessments but they are comparable across different cross-national learning assessments.

One option is to link existing regional assessments based on an agreed common framework which is currently under development.

A second limitation is that assessments are typically administered within school systems, which are usually referred as school-based learning assessments. The current indicators cover only those in school. The proportion of in-school target populations varies from country to country due to differences in out-of-school children and youth populations in each country. Assessing competencies of children and young people who are out-of-school would require household-based surveys. Assessing children and young people in households is under consideration but may be very costly and difficult to administer. As the main focus is on improving education systems, the UIS is taking a gradual approach in assessing the relatively easily available school-based populations in the short term.

4.1.2 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

Definition:

Whether a national or cross-national assessment of learning outcomes was conducted in the last 5 years in (a) reading, writing or language and (b) mathematics at the relevant stages of education.

An assessment of learning outcomes is a test or examination which measures the achievement in selected subjects of students at a particular age or grade.

Purpose:

The capacity of countries to assess learning via large-scale assessments is key to monitoring quality and equity of learning. The administration of national learning assessments is essential to supply information on the performance of education systems at least every five years.

Calculation method:

The indicator is expressed as a simple 'yes' or 'no' for each subject area and each stage of education.

$LA^{t}_{n,s}$ = 1, yes if there exists a national, regional or international learning assessment in any year

= 0, no otherwise

where:

$LA^{t}_{n,s}$ = existence of a national, regional or international learning assessment at stage of education n, in subject s in any year (t-i)

Interpretation:

'Yes' values indicate that the country is monitoring learning outcomes regularly at the given stage of education and in the given subject areas. This will enable the country to review and adapt as necessary its national policies on education and learning to ensure that all children and young people have the opportunity to acquire basic skills at each education level and in each subject area.

Type of data source:

Learning assessments.

Disaggregation:

By stage or level of education and subject.

Data required:

Information on the implementation of learning assessments in each subject and at each stage of education in each country.

Data sources:

Data on the administration of a large-scale assessment from a national representative sample from national learning assessment offices, ministries of education or other bodies responsible for learning assessments, including regional or international organizations running learning assessments (e.g. CONFEMEN, EQAP, IEA, OECD, SACMEQ and TERCE).

Limitations and comments:

In calculating this indicator, language or writing assessments are also considered as types of reading assessments. The indicator does not measure the skills of children but only the existence of assessments in a country.

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

Definition:

Total number of new entrants into the last grade of primary education or lower secondary general education, regardless of age, expressed as a percentage of the population at the intended entrance age to the last grade of primary education or lower secondary general education.

The intended entrance age to the last grade is the age at which pupils would enter the grade if they had started school at the official primary entrance age, had studied full-time and had progressed without repeating or skipping a grade.

Purpose:

This is a proxy measure of primary completion. It reflects how the impact of policies on access to and progression through the early grades of each level of education impact the final grade of that level. It also indicates the capacity of the education system to cater for the completion of the population of the intended entrance age to the last grade of the given level of education. It assumes that pupils entering the last grade for the first time will eventually complete the grade and hence the given level of education.

Calculation method:

The number of new entrants in the last grade of the given level of education, regardless of age, is expressed as a percentage of the population of the intended entrance age to the last grade of that level of education.

$$GIRLG_n = \frac{NE_{l,n}}{P_{n,a}}$$

where:

$GIRLG_n$ = gross intake ratio to the last grade l of level n of education

$NE_{l,n}$ = new entrants to the last grade l of level n of education

$P_{n,a}$ = population of the intended entrance age a to the last grade of level n of education

n = 1 (primary) or 2 (lower secondary)

Note: If data on new entrants are not collected directly, they can be calculated by subtracting the number of pupils repeating the last grade from total enrolment in the last grade.

Interpretation:

A high ratio indicates a high degree of primary or lower secondary education completion.

Type of data source:

Administrative data.

Disaggregation:

By sex and level of education.

Data required:

New entrants to the last grade of each level of education (or enrolment minus repeaters in the last grade); population of the intended entrance age to the last grade of each level of education and data on the structure (entrance age and duration) of each level of education.

Data sources:

Administrative data from schools on enrolment and repeaters or new entrants by grade; population censuses and surveys for population estimates by single year of age; administrative data from ministries of education on the structure of the education system.

Limitations and comments:

This is a gross measure and may therefore exceed 100% if there are large numbers of pupils who entered school either early or late and/or who have repeated earlier grades. The fact that the GIR can exceed 100% also makes it more difficult to interpret than the completion rate.

Compared to the completion rate, the gross intake ratio to the last grade does not indicate how many children complete the last grade, only how many children enter that grade. If students in the last grade leave school before graduation, the gross intake ratio to the last grade overestimates completion.

4.1.4 Completion rate (primary education, lower secondary education, upper secondary education)

Definition:

Percentage of a cohort of children or young people aged 3-5 years above the intended age for the last grade of each level of education who have completed that grade.

The intended age for the last grade of each level of education is the age at which pupils would enter the grade if they had started school at the official primary entrance age, had studied full-time and had progressed without repeating or skipping a grade.

Purpose:

The completion rate indicates how many persons in a given age group have completed the relevant level of education. By choosing an age-group which is slightly older than the theoretical age-group for completing each level of education, the indicator measures how many children and adolescents enter school moreorless on time and progress through the education system without excessive delays.

Calculation method:

The number of persons in the relevant age group who have completed the last grade of the given level of education is expressed as a percentage of the total population of the same age group.

$$CR_n = \frac{EAP_{n,AG(a+3t5)}}{PAG_{(a+3t5)}}$$

where:

CR_n = completion rate for level n of education

$EAP_{n,AG(a+3t5)}$ = population aged 3 to 5 years above the official entrance age a into the last grade of level n of education who completed level n

$PAG_{(a+3t5)}$ = population aged 3 to 5 years above the official entrance a into the last grade of level n of education

Interpretation:

A completion rate at or near 100% indicates that most or all children and adolescents have completed a level of education by the time they are 3 to 5 years older than the official age of entry into the last grade of the given level of education.

A low completion rate indicates low or delayed entry into a given level of education, high drop-out, high repetition, late completion, or a combination of these factors.

To identify the causes of low completion rates, it is necessary to examine other indicators, for example the out-of-school rate, the gross intake ratio to the last grade, and the percentage of over-age children.

When disaggregated by sex, location and other characteristics, this indicator can identify excluded population groups.

Type of data source:

Population censuses, household surveys.

Disaggregation:

By age or age-group of students, sex, location, socio-economic status, level of education, and others as available in survey or census data. Disability status is not currently available in most household surveys.

Data required:

Population in the relevant age group by the highest level of education or grade completed; data on the structure (entrance age and duration) of each level of education.

Data sources:

Population censuses and household surveys which collect data on the highest level of education or grade completed by children and young people in a household, through self- or household- declarations. In the former case, each household member above a certain age reports his or her own level of educational attainment. In the latter case, one person, usually the head of the household or another reference person, indicates the highest grade and/or level of education completed by each member of the household. Administrative data from ministries of education on the structure of the education system are also needed.

Labour force surveys can serve as a source of data for lower and upper secondary completion if they collect information for the age groups of concern. International sample surveys, such as Demographic and Health Surveys (DHS, http://dhsprogram.com) or Multiple Indicator Cluster Surveys (MICS, http://mics.unicef.org), are another source. These surveys are designed to meet commonly agreed upon international data needs while also providing data for national policy purposes. These surveys are implemented on a regular basis in selected countries, on average every 3 to 5 years. They aim to assure cross-national comparability, although they often integrate national modules to suit specific country data needs. Modules from international surveys are sometimes added to other on-going national sample surveys.

Population censuses are another important source of attainment data but they are carried out less frequently than household surveys, often only once per decade.

Data on attainment collected with surveys or censuses are usually mapped to ISCED levels post-enumeration.

Limitations and comments:

National data on educational attainment are often collected and reported in reference to national systems of education. The mapping from a national classification to ISCED, needed for calculation of the completion rate, is not always straightforward and can cause discrepancies between measures of attainment in national and international data. Data collection and mapping to ISCED are more difficult for upper secondary education than lower levels of education because of the variety of providers and programmes at the upper secondary level.

4.1.5 Out-of-school rate (primary education, lower secondary education, upper secondary education)

Definition:

Children and young people in the official age range for the given level of education who are not enrolled in primary, secondary or higher levels of education. Children and young people who are enrolled in pre-primary education are considered to be out of school.

Purpose:

To identify the size of the population in the official age range for the given level of education who are not enrolled in school in order that they can be better targeted and appropriate policies can be put in place to ensure they have access to education.

Calculation method:

The number of students of the official age for the given level of education enrolled in primary, secondary or higher levels of education is subtracted from the total population of the same age.

$$OSR_n = \frac{SAP_n - \sum_{i=1}^{8} E_{i,AGn}}{SAP_n}$$

where

OSR_n = out-of-school rate for children and young people of the official age for level n of education

SAP_n = population of the official age for level n of education

$E_{i,AGn}$ = enrolment in ISCED level i of children and young people of the official age for level n of education

Interpretation:

The higher the number of out-of-school children and adolescents, the greater the need to focus on improving access to education. Some children have never been in school or may not eventually enrol as late entrants. Other children may have initially enrolled but dropped out before reaching the intended age of completion of the given level. When disaggregated by sex, location and other characteristics, this indicator can identify excluded population groups.

Type of data source:

Administrative data, household surveys.

Disaggregation:

By age or age-group and sex (administrative data); by age or age-group and sex, location, and socio-economic status (household surveys). Disability status is not currently available from most administrative or household survey sources.

Data required:

Enrolment by single year of age in each level of education, population estimates by single year of age and data on the structure (entrance age and duration) of each level of education.

Data sources:

Administrative data from schools or household survey data on enrolment by single year of age; population censuses and surveys for population estimates by single year of age (if using administrative data on enrolment); administrative data from ministries of education on the structure (entrance age and duration) of the education system.

Limitations and comments:

Inconsistencies between enrolment and population data from different sources may result in inaccurate estimates of out-of-school children and adolescents. Data from household surveys conducted late in the school year where ages are recorded at the enumeration date may result in over-estimates.

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

Definition:

Percentage of pupils in each level of education (primary and lower secondary general education) who are at least 2 years above the intended age for their grade.

The intended age for a given grade is the age at which pupils would enter the grade if they had started school at the official primary entrance age, had studied full-time and had progressed without repeating or skipping a grade.

Purpose:

The indicator measures progress towards ensuring all girls and boys complete a full cycle of quality primary and secondary education and achieve at least minimum levels of proficiency in reading and mathematics at each level.

Children may be over-age for a grade because they started school late and/or they have repeated one or more previous grades.

Calculation method:

The sum of enrolments across all grades in the given level of education which are 2 or more years older than the intended age for the given grade is expressed as a percentage of the total enrolment in the given level of education.

$$POAG_n = \frac{\sum_{g=1}^{dn} E_{n,g,AG,2+}}{E_n}$$

where:

$POAG_n$ = percentage of children over-age for grade in level n of education

$E_{n,g,AG,2+}$ = enrolment in grade g of level n of education who are aged at least 2 years older than the intended age for that grade

E_n = total enrolment in level n of education

d_n = duration (in years) of level n of education

n = 1 (primary) or 2 (lower secondary general)

Interpretation:

A low value of this indicator will show that the majority of students start school on time and progress with minimum levels of grade repetition. Over-age progression and significant repetition should be discouraged as both are associated with lower levels of student learning achievement.

Type of data source:

Administrative data, household surveys.

Disaggregation:

By sex (administrative data); by sex, location, and socio-economic status (household surveys). Disability status is not currently available in most household surveys.

Data required:

Enrolment by single year of age in each grade, population estimates by single year of age and data on the structure (entrance age and duration) of each level of education.

Data sources:

Administrative data from schools or household survey data on enrolment by single year of age and grade; population censuses and surveys for population estimates by single year of age (if using administrative data on enrolment); administrative data from ministries of education on the structure of the education system.

Limitations and comments:

Inconsistencies between enrolment and population data from different sources may result in inaccurate estimates of this indicator. Data from household surveys conducted late in the school year where ages are recorded at the enumeration date may result in over-estimates.

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

Definition:

Number of years of primary and secondary education to which children and young people are legally entitled that are either free from tuition fees or compulsory or both.

Most countries have legislation specifying the ages and the level of education (typically pre-primary or primary education) at which children should start school. Such legislation usually also specifies either the number of years of education that are guaranteed or the age at which young people may leave education or, in some cases, both.

The number of years of primary and secondary education to which children are legally entitled should ideally be the number of grades of primary and secondary education which young people are expected to have completed before being legally eligible to leave school. Years of pre-primary education covered by the legal entitlement should be excluded from this indicator (and reported in Indicator 4.2.5 instead).

Purpose:

To measure government commitment to guaranteeing the right to education to children and young people.

Calculation method:

Record the number of grades of primary and secondary education that are guaranteed. If using ages rather than grades, subtract from the upper age, either the lower age if it is an age at which a child should be in primary school or, if not, subtract the official entrance age to primary school. If the upper age is the age at the start of the last year of free or compulsory education, it will be necessary to add 1 to the result.

YF_{123} = number of years of free primary and secondary education (ISCED levels 1, 2 and 3)

YC_{123} = number of years of compulsory primary and secondary education (ISCED levels 1, 2 and 3)

Interpretation:

The existence of national legislation guaranteeing the right to education at given ages and/or grades demonstrates the government's commitment to ensuring that children and young people attend school regularly. The greater the number of years guaranteed the more likely that children and young people will remain in school longer and have the opportunity to acquire the necessary skills and competencies at each level of education.

Type of data source:

Administrative data.

Disaggregation:

By level of education.

Data required:

Number of grades of primary and secondary education which are (a) free from tuition fees and/or (b) compulsory according to national legislation. If the number of grades is not specified, the age range in which education is (a) free and/or (b) compulsory may be used instead. Data on the structure (entrance age and duration) of each level of education are also required.

Data sources:

National legislation and formal education standards and norms on access to schooling and, in particular, the legal entitlement or obligation to attend school; and administrative data from ministries of education on the structure of the education system.

Limitations and comments:

The existence of national legislation does not guarantee that countries ensure that it is implemented effectively and that parents are indeed ensuring their children benefit from the provision available.

4.2 By 2030, ensure that all boys and girls have access to quality early childhood development, care and pre-primary education so that they are ready for primary education

4.2.1 Proportion of children under 5 years of age who are developmentally on track in health, learning and psychosocial well-being, by sex

Definition:

There is not yet a globally-accepted definition of 'developmentally on track'. The Multiple Indicator Cluster Survey's Early Childhood Development Index (ECDI) presently defines 'on track' as the percentage of children aged 36-59 months who are developmentally on-track in at least three of the following four domains: literacy-numeracy, physical, socio-emotional and learning. Other measures use different definitions, with varying empirically- and conceptually-driven perspectives on how best to define 'on track'.

ECDI defines a child as being developmentally on track in literacy-numeracy if they can identify at least 10 letters of the alphabet, read 4 simple words and recognise and name all numbers from 1 to 10. A child is developmentally on-track physically if they can pick up small objects easily and are generally well enough to play. A child is developmentally on-track in socio-emotional development if they are able to undertake simple activities independently, get along with other children and do not usually kick, bite or hit other children or adults. A child is developmentally on-track in learning if they participate in any type of organized learning including early childhood education, kindergarten or community care.

Purpose:

The indicator is a broad measure of children's development and their preparedness to begin school. Available data for global tracking are typically collected in regional or national-level assessments from individual-level data through direct assessment of children or reported by mothers/primary caregivers or teachers, which are then used to calculate an indicator that represents a composite measure across a range of agreed characteristics in the areas of health, learning and psychosocial well-being.

Calculation method:

In the MICS ECDI, the indicator is calculated as the percentage of children aged 36-59 months demonstrating age-appropriate levels of development in the areas being measured, according to the items used in the MICS. One commonly-accepted definition of 'on track' has not yet been developed using national and regionally-developed standards for children's learning and development.

$$PCDT_{3t4} = \frac{CDT_{3t4}}{P_{3t4}}$$

where:

$PCDT_{3t4}$ = percentage of children aged 3-4 years (36-59 months) who are developmentally on track in health, learning and psychosocial well-being

CDT_{3t4} = children aged 3-4 years (36-59 months) who are developmentally on track in health, learning and psychosocial well-being

P_{3t4} = population aged 3-4 years (36-59 months)

Interpretation:

A high value indicates a large number of young children are well-prepared for starting primary school in the areas of health, learning and psychosocial well-being.

Type of data source:

Household surveys or direct assessment of children, either in homes or schools depending on the measure.

Disaggregation:

By age, sex, location, income, family background and by participation in early childhood education programmes. Disability status is not currently available in most household surveys.

Data required:

The number of children aged 36-59 months demonstrating age-appropriate levels of development in the areas being measured and the total number of children in the same age group.

Data sources:

Measures to capture children's early childhood experiences have been used in multiple countries in representative samples include the MICS ECDI, the UNICEF West and Central African Regional Office (WCARO) Prototype in West Africa, Programa Regional de Indicadores de Desarrollo Infantil (PRIDI) in Latin America, the East Asia and Pacific Child Development Scales, the Early Development Index and the Early Human Capacity Index. Newly-developed scales with two to three representative samples include the Measuring Early Learning Quality and Outcomes Scale, and the International Development and Early Learning Assessment (IDELA).

Limitations and comments:

Further methodological developmental work will be needed to ensure that the proposed measure reflects a commonly-agreed upon definition of ‘on track’ that is aligned with national standards, is relevant to children in all parts of the world and accurately reflects ‘developmentally on track’ in all countries. This requires establishment of normative developmental patterns, which has not yet taken place in most countries.

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

Definition:

Percentage of children in the given age range who participate in one or more organized learning programme, including programmes which offer a combination of education and care. Participation in early childhood education and in primary education are both included. The age range will vary by country depending on the official age for entry to primary education.

An organized learning programme is one which consists of a coherent set or sequence of educational activities designed with the intention of achieving pre-determined learning outcomes or the accomplishment of a specific set of educational tasks. Early childhood and primary education programmes are examples of organized learning programmes.

Early childhood and primary education are defined in the 2011 revision of the International Standard Classification of Education (ISCED 2011). Early childhood education is typically designed with a holistic approach to support children's early cognitive, physical, social and emotional development and to introduce young children to organized instruction outside the family context. Primary education offers learning and educational activities designed to provide students with fundamental skills in reading, writing and mathematics and establish a solid foundation for learning and understanding core areas of knowledge and personal development. It focuses on learning at a basic level of complexity with little, if any, specialisation.

The official primary entry age is the age at which children are obliged to start primary education according to national legislation or policies. Where more than one age is specified, for example, in different parts of a country, the most common official entry age (i.e. the age at which most children in the country are expected to start primary) is used for the calculation of this indicator at the global level.

Purpose:

The indicator measures children's exposure to organized learning activities in the year prior to the start of primary school.

Calculation method:

The number of children in the relevant age group who participate in an organized learning programme is expressed as a percentage of the total population in the same age range.

$$PROL_{0t1,AG(a-1)} = \frac{E_{0t1,AG(a-1)}}{SAP_{AG(a-1)}}$$

where:

$PROL_{0t1,AG(a-1)}$ = participation rate in organized learning one year before the official entry age a to primary education

$E_{0t1,AG(a-1)}$ = enrolment in early childhood or primary education (ISCED levels 0 and 1) aged one year below the official entry age a to primary education

$SAP_{AG(a-1)}$ = school-age population aged one year below the official entry age a to primary education

Interpretation:

A high value of the indicator shows a high degree of participation in organized learning immediately before the official entrance age to primary education.

Type of data source:

Administrative data, household surveys

Disgaggregation:

By age and sex from administrative sources, and by age, sex, location and income from household surveys. Disability status is not currently available from most administrative or household survey sources.

Data required:

Number of children participating in organized learning activities by single year of age; population estimates by single year of age (if using administrative data); and data on the official entrance age to primary education.

Data sources:

Administrative data from schools and other centres of organized learning or from household surveys on enrolment by single year of age in early learning programmes; population censuses and surveys for population estimates by single year of age (if using administrative data on enrolment); administrative data from ministries of education on the official entrance age to primary education.

Limitations and comments:

Participation in learning programmes in the early years is not full time for many children, meaning that exposure to learning environments outside of the home will vary in intensity. The indicator measures the percentage of children who are exposed to organized learning but not the intensity or quality of the programme. More work is needed to ensure that the definition of learning programmes is consistent across various surveys and defined in a manner that is easily understood by survey respondents, ideally with complementary information collected on the amount of time children spend in learning programmes.

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

Definition:

Percentage of children aged 36-59 months who live in households where their mother, father or other adult household members engage with them in the following types of activities: reading or looking at picture books; telling stories; singing songs; taking children outside the home; playing; and naming, counting and/or drawing.

Purpose:

Within the home, caregivers are tasked with establishing a safe, stimulating and nurturing environment and providing direction and guidance in daily life. Interactions with responsible caregivers who are sensitive and responsive to children's emerging abilities are central to social, emotional and cognitive development. This type of positive caregiving can help children feel valued and accepted, promote healthy reactions, provide a model for acceptable social relationships, and contribute to later academic and employment success.

This indicator provides a broad measure of the ways in which adults in the household interact with children in meaningful and stimulating ways to promote learning and school readiness.

Calculation method:

The indicator is calculated as the percentage of children aged 36-59 months participating in activities in the areas being measured.

$$PCPSH_{3t4} = \frac{CPSH_{3t4}}{P_{3t4}}$$

where:

$PCPSH_{3t4}$ = percentage of children aged 3-4 years experiencing positive and stimulating home learning environments

$CPSH_{3t4}$ = children aged 3-4 years experiencing positive and stimulating home learning environments

P_{3t4} = population aged 3-4 years

Interpretation:

A high value indicates a large number of young children live in households which are supportive and provide stimulating learning environments.

Type of data source:

Household surveys

Disaggregation:

By age, sex, location, and income. Disability status is not currently available in most household surveys.

Data required:

The number of children aged 36-59 months participating in activities in the areas being measured and the total number of children in the same age group.

Data sources:

Measures of positive and stimulating home learning environments for young children which have been used in multiple countries are available from surveys and assessments, including the Multiple Indicator Cluster Surveys, Programa Regional de Indicadores de Desarrollo Infantil (PRIDI) in Latin America, Young Lives and others.

Limitations and comments:

Further methodological developmental work will be needed to ensure that the proposed measure is relevant to children in all parts of the world.

4.2.4 Gross early childhood education enrolment ratio in (a) pre-primary education and (b) early childhood educational development

Definition:

Total enrolment in (a) pre-primary education and (b) early childhood educational development regardless of age expressed as a percentage of the population of the official age for early childhood education.

Purpose:

To show separately the general level of participation in the two categories of early childhood education: pre-primary education and early childhood educational development. The values indicate the capacity of the education system to enrol children of early childhood education age.

Calculation method:

The number of students enrolled in the given category of early childhood education is expressed as a percentage of the population of the official age for early childhood education.

$$GER_{0,c} = \frac{E_c}{SAP_{0,a}}$$

where:

$GER_{0,c}$ = gross early childhood education enrolment ratio in category c

E_c = enrolment in early childhood education category c

$SAP_{0,a}$ = population of the official age a for early childhood education (ISCED level 0)

c = pre-primary education (ISCED level 02) or early childhood educational development (ISCED level 01)

Note: If the official entrance age to early childhood education is 2 years and the duration is 4 years, then a is the age group 2-5 years.

Interpretation:

A high value generally indicates a high degree of participation, whether the pupils belong to the official age group or not. A value approaching or exceeding 100% indicates that a country is, in principle, able to accommodate all of its early childhood education-age population, but it does not indicate the proportion already enrolled. The achievement of a gross enrolment ratio of 100% is therefore a necessary but not sufficient condition for enrolling all eligible children in early childhood education.

Type of data source:

Administrative data, household surveys

Disaggregation:

By sex from administrative sources, and by sex, location and income from household surveys. Disability status is not currently available from most administrative or household survey sources.

Data required:

Enrolment in pre-primary education and early childhood educational development; population estimates by single year of age (if using administrative data) and data on the structure (entrance age and duration) of early childhood education.

Data sources:

Administrative data from schools or household survey data on enrolment; population censuses and surveys for population estimates by single year of age (if using administrative data on enrolment); administrative data from ministries of education on the structure (entrance age and duration) of early childhood education.

Limitations and comments:

The gross enrolment ratio can exceed 100% due to the inclusion of over-aged or under-aged pupils because of early or late entrance.

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

Definition:

Number of years of pre-primary education to which children are legally entitled that are either free from tuition fees or compulsory or both.

Most countries have legislation specifying the ages and the level of education (typically pre-primary or primary education) at which children should start school. Such legislation usually also specifies either the number of years of education that are guaranteed or the age at which young people may leave education or, in some cases, both.

The number of years of pre-primary education to which children are legally entitled should ideally be the number of grades of pre-primary education which children are expected to have completed before entering primary education.

Purpose:

To measure government commitment to guaranteeing the right to education to children and young people.

Calculation method:

Record the number of grades of pre-primary education that are guaranteed. If using ages rather than grades, subtract the lower age from the official entrance age to primary school. If the result is 0 or negative, there are no years of pre-primary education which are guaranteed.

YF_{02} = number of years of free pre-primary education (ISCED level 02)

YC_{02} = number of years of compulsory pre-primary education (ISCED level 02)

Interpretation:

The existence of national legislation guaranteeing the right to education at given ages and/or grades demonstrates the government's commitment to ensuring that children and young people attend school regularly. The greater the number of years of pre-primary education that are guaranteed, the more likely children will be well-prepared for entry to primary education at the appropriate time.

Type of data source:

Administrative data

Disaggregation:

None.

Data required:

Number of grades of pre-primary education which are (a) free from tuition fees and/or (b) compulsory according to national legislation. If the number of grades is not specified, the age range in which education is (a) free and/or (b) compulsory may be used instead. Data on the structure (entrance age and duration) of each level of education are also required.

Data sources:

National legislation and formal education standards and norms on access to schooling and, in particular, the legal entitlement or obligation to attend school; and administrative data from ministries of education on the structure of the education system.

Limitations and comments:

The existence of national legislation does not guarantee that countries ensure that it is implemented effectively and that parents are indeed ensuring their children benefit from the provision available.

4.3 By 2030, ensure equal access for all women and men to affordable and quality technical, vocational and tertiary education, including university

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

Definition:

Percentage of youth and adults in a given age range (e.g. 15-24 years, 25-64 years, etc.) participating in formal or non-formal education or training in a given time period (e.g. last 12 months).

Ideally, the indicator should be disaggregated by types of programme such as TVET, tertiary education, adult education and other relevant types and cover both formal and non-formal programmes.

Formal education and training is defined as education provided by the system of schools, colleges, universities and other formal educational institutions that normally constitutes a continuous 'ladder' of full-time education for children and young people, generally beginning at the age of 5 to 7 and continuing to up to 20 or 25 years old. In some countries, the upper parts of this 'ladder' are organized programmes of joint part-time employment and part-time participation in the regular school and university system.

Non-formal education and training is defined as any organized and sustained learning activities that do not correspond exactly to the above definition of formal education. Non-formal education may therefore take place both within and outside educational institutions and cater to people of all ages. Depending on national contexts, it may cover educational programmes to impart adult literacy, life-skills, work-skills, and general culture.

Purpose:

To show the level of participation of youth and adults in education and training of all types.

Calculation method:

The number of people in selected age groups participating in formal or non-formal education or training is expressed as a percentage of the population of the same age.

$$PR_{AGi} = \frac{E_{AGi}}{P_{AGi}}$$

where:

PR_{AGi} = participation rate of the population in age group i in formal and non-formal education and training

E_{AGi} = enrolment of the population in age group i in formal and non-formal education and training

P_{AGi} = population in age group i

i = 15-24 years, 15 years and above, 25-64 years etc.

Interpretation:

A high value indicates a large share of the population in the relevant age group is participating in formal and non-formal education and training.

Type of data source:

Administrative data, household surveys.

Disaggregation:

By age and sex from administrative sources, and by age, sex, location and income from household surveys. Disability status is not currently available from most administrative or household survey sources.

Data required:

Numbers of participants by single year of age in formal and non-formal education and training; population estimates by single year of age.

Data sources:

Administrative data from schools and other places of education and training or household survey data on participants in formal and non-formal education and training by single year of age; population censuses and surveys for population estimates by single year of age (if using administrative data on enrolment).

Data should also, ideally, be disaggregated by type of education or training.

Limitations and comments:

Formal and non-formal education and training can be offered in a variety of settings including schools and universities, workplace environments and others and can have a variety of durations. Administrative data often capture only provision in formal settings such as schools and universities. Participation rates do not capture the intensity or quality of the provision nor the outcomes of the education and training on offer.

4.3.2 Gross enrolment ratio for tertiary education, by sex

Definition:

Total enrolment in tertiary education regardless of age expressed as a percentage of the population in the 5-year age group immediately following upper secondary education.

Purpose:

To show the general level of participation in a given level of education. It indicates the capacity of the education system to enrol students of a particular age group.

Calculation method:

The number of students enrolled in tertiary education is expressed as a percentage of the 5-year age group immediately following upper secondary education.

$$GER_{5t8} = \frac{E_{5t8}}{SAP_{5t8,a}}$$

where:

GER_{5t8} = gross enrolment ratio in tertiary education (ISCED levels 5, 6, 7 and 8)

E_{5t8} = enrolment in tertiary education (ISCED levels 5, 6, 7 and 8)

$SAP_{5t8,a}$ = population of the official age a for tertiary education (ISCED levels 5, 6, 7 and 8)

Note: The population of the official age for tertiary education is estimated to be the 5-year age group immediately following upper secondary education. If the official entrance age to upper secondary is 15 years and the duration is 3 years, then a is the age group 18-22 years.

Interpretation:

A high value of the indicator shows a high degree of participation in tertiary education by students of all ages.

Type of data source:

Administrative data, household surveys

Disaggregation:

By sex from administrative sources, and by sex, location and income from household surveys. Disability status is not currently available from most administrative or household survey sources.

Data required:

Enrolment in tertiary education; population estimates by single year of age (if using administrative data) and data on the structure (entrance age and duration) of upper secondary education.

Data sources:

Administrative data from schools and universities or household survey data on enrolment; population censuses and surveys for population estimates by single year of age (if using administrative data on enrolment); administrative data from ministries of education on the structure of upper secondary education.

Limitations and comments:

The gross enrolment ratio is a broad measure of participation in tertiary education and does not take account of differences in duration of programmes between countries or between different levels of education and fields of study. It is standardised to some extent by measuring it relative to a 5-year age group for all countries but may underestimate participation especially in countries with poorly developed tertiary education systems or those where provision is limited to first tertiary programmes (which are generally shorter than 5 years in duration).

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

Definition:

Percentage of young people aged 15-24 years participating in technical or vocational education either in formal education, work-based or other settings, on a given date or during a specified period.

Purpose:

To show the level of participation of youth in technical and vocational education and training.

Calculation method:

The number of young people aged 15-24 years participating in technical and vocational education at secondary, post-secondary or tertiary levels of education is expressed as a percentage of the population of the same age group.

$$PR_{V,15t24} = \frac{E_{V,15t24}}{P_{15t24}}$$

where:

$PR_{V,15t24}$ = participation rate of young people aged 15-24 years in technical and vocational education and training

$E_{V,15t24}$ = enrolment in technical and vocational education and training of young people aged 15-24 years

P_{15t24} = population aged 15-24 years

Interpretation:

A high value indicates a large share of the 15 to 24-year-old population are participating in education and training designed specifically to lead to a job.

Type of data source:

Administrative data, household surveys.

Disaggregation:

By age and sex from administrative sources; by age, sex, location and income from household surveys. Disability status is not currently available from most administrative or household survey sources.

Data required:

Numbers of participants aged 15-24 years in technical and vocational education and training; population estimates for the age group 15-24 years.

Data sources:

Administrative data from schools and other places of education and training or household survey data on enrolment in technical and vocational programmes by single year of age; population censuses and surveys for population estimates for the age group 15-24 years (if using administrative data on enrolment).

Limitations and comments:

Technical and vocational education and training can be offered in a variety of settings including schools and universities, workplace environments and others. Administrative data often capture only provision in formal settings such as schools and universities. Participation rates do not capture the intensity or quality of the provision nor the outcomes of the education and training on offer.

4.4 By 2030, substantially increase the number of youth and adults who have relevant skills, including technical and vocational skills, for employment, decent work and entrepreneurship

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

Definition:

Percentage of youth (aged 15-24 years) and adults (aged 15 years and above) that have undertaken certain computer-related activities in a given time period (e.g. last three months).

Computer-related activities to measure ICT skills include:

- Copying or moving a file or folder
- Using copy and paste tools to duplicate or move information within a document
- Sending e-mails with attached files (e.g. document, picture, video)
- Using basic arithmetic formulae in a spreadsheet
- Connecting and installing new devices (e.g. modem, camera, printer)
- Finding, downloading, installing and configuring software
- Creating electronic presentations with presentation software (including text, images, sound, video or charts)
- Transferring files between a computer and other devices
- Writing a computer program using a specialised programming language

A computer refers to a desktop computer, a laptop (portable) computer or a tablet (or similar handheld computer). It does not include equipment with some embedded computing abilities, such as smart TV sets or cellphones.

Purpose:

ICT skills determine the effective use of information and communication technology. The lack of such skills continues to be one of the key barriers keeping people, and in particular women, from fully benefitting from the potential of information and communication technologies.

Calculation method:

The indicator is calculated as the percentage of people in a given population who have responded 'yes' to a selected number of variables e.g. the use of ICT skills in various subject areas or learning domains, the use of ICT skills inside or outside of school and/or workplace, the minimum amount of time spent using ICT skills inside and outside of school and/or workplace, availability of internet access inside or outside of school and/or workplace, etc.

$$PICT_{a,s} = \frac{ICT_{a,s}}{P_a}$$

where:

$PICT_{a,s}$ = percentage of people in age group a who have ICT skill s

$ICT_{a,s}$ = number of people in age group a who have ICT skill s

P_a = population in age group a

Interpretation:

This indicator makes the link between ICT usage and impact and helps measure and track the level of proficiency of users. A high value indicates that a large share of the reference population has the ICT skill being measured.

Type of data source:

School or household surveys.

Disgaggregation:

By age or age-group, sex, location and socio-economic status if collected in the relevant survey. Disability status is not currently available in most household surveys.

Data required:

Information on the use of ICT skills from school or household surveys.

Data sources:

School or household surveys which collect data on the use of selected ICT skills.

Limitations and comments:

This indicator is relatively new but based on an internationally-agreed definition and methodology, which have been developed under the coordination of the International Telecommunications Union (ITU), through its Expert Groups and following an extensive consultation process with countries. It is also one of the Partnership on Measuring ICT for Development's Core List of Indicators, which was endorsed by the UN Statistical Commission in 2014.

The indicator is based on the responses provided by interviewees regarding certain computer-related activities that they have carried out in a reference period of time. However, it is not a direct assessment of skills nor do we know if those activities were undertaken effectively.

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

Definition:

Percentage of youth/adults achieving at least a minimum proficiency level in digital literacy skills. The minimum proficiency level will be measured with respect to a common framework with a common metric to be developed.

Purpose:

Accessing, analysing and communicating information takes place through the use of digital devices and applications (computers, smart phones and the Internet). The capacity to use these devices intelligently to manage information is important in many aspects of life. Proficiency in literacy and numeracy is important for using ICT applications effectively to manage information. This indicator is a direct measure of the digital literacy skills of youth/adults.

Calculation method:

The indicator is calculated as the percentage of students or youth at the relevant stage of education who have achieved or exceeded the minimum proficiency level in the given subject area.

Percentage of students or youth who have achieved at least the minimum threshold of proficiency defined for large-scale (representative sample) ICT skills assessment:

Performance at or above minimum level, $PL^{t}_{n,s,above\ minimum} = p$.

where p is the percentage of students or youth in a national or cross-national learning assessment at stage of education n (building on the International Computer and Information Literacy Study (ICILS) the education level is end of lower secondary, however some countries might conduct the assessment in upper secondary education), in subject s in any year (t-i), who has achieved at least the minimum level of proficiency.

Interpretation:

There is only one threshold that divides students or youth into below minimum or at or above minimum proficiency levels.

(a) Below minimum is the proportion or percentage of students who do not achieve a minimum standard as established by countries according to the globally-defined minimum competencies.
(b) At or above minimum is the proportion or percentage of students or youth who have achieved at least the minimum standard. Due to heterogeneity of performance levels set by national and cross-national assessments, these performance levels will be mapped to the globally-defined

minimum performance levels. Once the performance levels are mapped, the global education community will be able to identify for each country the proportion or percentage of students or youth who achieved at least minimum standards.

Type of data source:

Learning assessments, household surveys.

Disaggregation:

By age or age-group, sex, location and socio-economic status if collected in the relevant survey. Disability status is not currently available in most learning assessments or household surveys.

Data required:

Performance level data and how these performance levels are set up from the national and cross-national assessments (e.g. IEA's ICILS, OECD's PIAAC)

Data sources:

Data from national learning assessment offices, ministries of education or international organizations engaged in learning assessments. IEA's ICILS (at Grade 8) and OECD's PIAAC (at ages 15-65) have collected data on 8th graders, youth and adults.

Limitations and comments:

A common framework, including the target population and content coverage, and further methodological work, including a common reporting metric, are required to develop surveys to assess digital literacy skills for youth and adult age groups. In the medium term a possibility is to use existing cross-national assessments (either school-based or household-based) and in the longer term national level assessments could be included. IEA's ICILS is a school-based assessment but PIAAC is a household-based assessment. There is a need to harmonise the two assessments to ensure they are measuring the same skills. They can then be statistically linked, to enable the use of both school-based and household-based data sources.

4.4.3 Youth/adult educational attainment rates by age group, economic activity status and programme orientation

Definition:

Cumulative distribution of the population of a given age group according to the minimum level of education completed. This indicator is usually presented for age groups of at least 25 years and older in order to ensure that the majority of the population has completed their education. Younger age groups are often still enrolled in the education system. The indicator can be calculated for youth (15-24 years) if desired.

The indicator measures for each level of education the percentage of the population who completed at least that level of education.

Purpose:

Educational attainment is a measure of the human capital of individuals and entire nations.

Calculation method:

For the cumulative distribution of the population by level of education, the number of persons in the relevant age group who completed at least a given level of education is expressed as a percentage of the total population of the same age, excluding persons with unknown educational attainment.

$$EA_{nt8,AGi} = \frac{EAP_{nt8,AGi}}{P_{AGi}}$$

where:

$EA_{nt8,AGi}$ = percentage of population in age group i who completed at least level n of education, up to and including ISCED level 8 (doctoral level)

$EAP_{nt8,AGi}$ = population in age group i who completed at least level n of education, up to and including ISCED level 8 (doctoral level)

P_{AGi} = population in age group i, excluding persons with unknown educational attainment

Interpretation:

Higher levels of attainment in a population are associated with greater personal, household or national wealth and economic growth. The greater the level of attainment of a person, the greater is his or her earnings potential. Persons with higher attainment are also assumed to be better equipped to make well-informed decisions, for example about their personal health or the environment. High levels of attainment in a population are thus assumed to be correlated with sustainable development.

Type of data source:

Population censuses, household surveys.

Disaggregation:

By age, sex, location and socio-economic status, level of education, and others as available in survey or census data. Disability status is not currently available in most household surveys and censuses.

The options for disaggregation may be limited by the sample size in a survey.

Data required:

Populations in the relevant age groups (25 years and older, 15-24 years, other age groups if required) by the highest level of education completed.

Data sources:

Population censuses and household surveys which collect data on the highest levels of education completed by members of a household, through self- or household declaration. In the former case, each household member above a certain age reports his or her own level of educational attainment. In the latter case, one person, usually the head of the household or another reference person, indicates the highest qualification held or level of education completed of each member of the household.

Labour force surveys are the most common source of data on educational attainment. International sample surveys, such as Demographic and Health Surveys (DHS, http://dhsprogram.com) or Multiple Indicator Cluster Surveys (MICS, http://mics.unicef.org), are another source. These surveys are designed to meet commonly agreed upon international data needs while also providing data for national policy purposes. These surveys are implemented on a regular basis in selected countries, on average every 3 to 5 years. They aim to assure cross-national comparability, although they often integrate national modules to suit specific country data needs. Modules from international surveys are sometimes added to other on-going national sample surveys.

Population censuses are another important source of attainment data but they are carried out less frequently than labour force surveys or other sample surveys, often only once per decade.

Data on attainment collected with surveys or censuses are usually mapped to ISCED levels post-enumeration.

Limitations and comments:

National data on educational attainment are often collected and reported in reference to national systems of education. The mapping from a national classification to ISCED is not always straightforward and can cause discrepancies between attainment levels in national and international data.

Aggregate data often combine data for different levels of attainment, for example by combining the percentage of the population with incomplete or complete primary education in a single figure instead of reporting the data for each level of attainment separately. If data for levels n and n+1 are combined, it is only possible to calculate the percentage of the population who completed at least level n, but not the percentage of the population who completed level n+1.

Data on the highest qualification obtained are not very common, partly because the multitude of qualifications that may be obtained in a country and abroad makes data collection difficult.

4.5 By 2030, eliminate gender disparities in education and ensure access to all levels of education and vocational training for the vulnerable, including persons with disabilities, indigenous peoples and children in vulnerable situations

4.5.1 Parity indices (female/male, rural/urban, bottom/top wealth quintiles and others such as disability status, indigenous peoples and conflict-affected, as data become available) for all education indicators on this list that can be disaggregated

Definition:

Parity indices require data for the specific groups of interest. They represent the ratio of the indicator value for one group to that of the other. Typically, the likely more disadvantaged group is the numerator. A value of exactly 1 indicates parity between the two groups.

Purpose:

To measure the general level of disparity between two sub-populations of interest with regard to a given indicator.

Calculation method:

The indicator value of the likely more disadvantaged group is divided by the indicator value of the other sub-population of interest.

$$DPI = \frac{[Ind_i]_d}{[Ind_i]_a}$$

where:

DPI = the Dimension (Sex, Wealth, Location, etc.) Parity Index

Ind_i = the Education 2030 Indicator i for which an equity measure is needed.

d = the likely disadvantaged group (e.g. female, poorest, etc.)

a = the likely advantaged group (e.g. male, richest, etc.)

Interpretation:

The further from 1 the parity index lies, the greater the disparity between the two groups of interest.

Type of data source:

Various depending on underlying indicator.

Disaggregation:

None because the parity indices directly compare two sub-populations of interest.

Data required:

The indicator vales for the sub-populations of interest.

Data sources:

The sources are the same as for the underlying indicators for this goal.

Limitations and comments:

The indicator is not symmetrical about 1 but a simple transformation can make it so (by inverting ratios that exceed 1 and subtracting them from 2). This will make interpretation easier.

4.5.2 Percentage of students in primary education whose first or home language is the language of instruction

Definition:

Percentage of primary students whose first or home language is the language of instruction.

First or home language is defined as the student's main language of communication outside the school environment. It is usually either the first language students learned or the language of their family or local community.

Purpose:

To measure the extent to which children in primary education are learning in a language with which they are familiar and in which they are likely to be proficient.

Calculation method:

The number of pupils in primary education whose first or home language is the language of instruction is expressed as a percentage of all primary pupils.

$$PELA_1 = \frac{EF_1}{E_1}$$

where:

$PELA_1$ = percentage of pupils in primary education (ISCED level 1) whose first or home language is the language of instruction

EF_1 = pupils in primary education (ISCED level 1) whose first or home language is the language of instruction

E_1 = total pupils in primary education (ISCED level 1)

Interpretation:

A high value indicates a large number of primary pupils are being taught in a language in which they are proficient thus making it easier for them to adapt to the school learning environment.

Type of data source:

Administrative data, household surveys.

Disaggregation:

By sex from administrative sources; by sex, location and income from household surveys. Disability status is not currently available from most administrative or household survey sources.

Data required:

Number of primary pupils by first or home language and information on the language of instruction.

Data sources:

Administrative data from schools on the language of instruction and the first or home languages of pupils.

Limitations and comments:

Determining each pupil's first or home language may not always be straightforward and schools may not always record this information. Even if pupils are taught in their first or home language the quality of the teaching may not always be sufficient to ensure that good progress in learning takes place.

4.5.3 Extent to which explicit formula-based policies reallocate education resources to disadvantaged populations

Definition:

The indicator includes both (a) a medium-term perspective approach; and (b) a longer-term one:

(a) Degree of national financing policy's commitment to equalise education opportunity to primary and secondary education could be rated by four levels: (i) very low; (ii) low (e.g. there are policies to provide more resources to disadvantaged schools/students); (iii) medium (e.g. which reallocate at least x% of the education budget); (iv) high (e.g. are well-targeted and effectively monitored).
(b) Percentage of public expenditure on education that is explicitly allocated to disadvantaged populations. Depending on the national context, disadvantaged populations may include members of ethnic, linguistic and religious minorities, indigenous peoples or other groups.

Purpose:

The general aim of the indicator is to capture the effort countries make to equalise education opportunities through their financing system. The specific formulation reduces the scope of the indicator in two ways. First, it refers to 'education' resources, while other resources (e.g. cash transfers under the social protection budget) can also help equalise education opportunities. Second, it refers to 'formula-based' resource reallocation, while other approaches can also be used for this purpose.

Calculation method:

(a) Indicator is a qualitative indicator derived from policy documents and/or qualitative exercises such as the World Bank's System's Approach for Better Education Results (SABER) school finance module.

(b) Indicator uses detailed budget lines to identify public spending directed towards vulnerable populations. This will require a detailed reference classification of education expenditures and an agreed list of vulnerable groups.

Formulae are still to be defined.

Interpretation:

(a) Self-explanatory categories

(b) The higher the proportion of public spending directed towards the vulnerable, the more governments make efforts to redirect resources towards the most vulnerable.

Type of data source:

Administrative data.

Disaggregation:

The indicator may be disaggregated by populations which are targeted in the funding formulae (e.g. poor, disabled, urban/rural etc.).

Data required:

Policy documents and detailed education budget.

Data sources:

National policy documents or existing qualitative data collections and detailed budget documents.

Two examples could inform the definition of such an indicator:

- The World Bank's Systems Approach for Better Education Results (SABER) comes closest to a potential source. Under the domain 'School finance' and policy goal 5 'Providing more resources to students who need them', questions such as: 'Are public resources available to students from disadvantaged backgrounds?' and 'Are there policies to provide more resources to schools or households with other disadvantaged students (ethnicity, gender, native language, urban/rural)?' are asked. Data are collected in-country by local experts who ensure cross-country comparability. Policies are evaluated and scored at four levels, and results are verified with governments before publication.
- The United Nations Economic Commission for Latin America and the Caribbean (ECLAC/CEPAL) has carried out country reviews of social protection systems that collect similar data that are used for regional comparisons.

Limitations and comments:

A need for qualitative data on education systems calls for a new mechanism which will require (i) coordination by a UN organization; (ii) government endorsement of the assessment framework; and (iii) a role for experts to support governments in reporting.

4.5.4 Education expenditure per student by level of education and source of funding

Definition:

Total initial funding from government (central, regional, local), private (households and other private) and international sources for a given level of education (pre-primary, primary, lower secondary, upper secondary, post-secondary non-tertiary and tertiary education) per student enrolled at that level in a given year. The results should be expressed (i) as a percentage of GDP per capita; and (ii) in PPP$ (constant). Unless an additional disaggregation is proposed, this indicator considers funding for in public and private institutions together.

Purpose:

This indicator reflects the amount of resources invested on average in a single student, going beyond government sources so that an actual unit cost can be calculated. Using a per student basis is useful for comparison, whether between levels of education, over time, or between countries. Expressing the indicator either as percentage of GDP per capita, or in PPP$, also allows for comparisons between countries, and using constant values when looking at time-series is necessary to evaluate how real (eliminating the effects of inflation) resources are evolving over time.

Calculation method:

The indicator is calculated by dividing total initial funding (i.e. including transfers paid but excluding transfers received) from government (central, regional, local), private (households and other private) or international sources for a given level of education (pre-primary, primary, lower secondary, upper secondary, post-secondary non-tertiary and tertiary education) by the number of students enrolled at that level in a given year, and again dividing (i) by GDP per capita; and (ii) by the PPP$ conversion factor.

$$XEPGDPpc_{n,s} = \frac{XE_{n,s}}{E_n * GDPpc}$$

$$XEPPPPconst_{n,s} = \frac{XE_{n,s}}{E_n * PPPconst}$$

where:

$XEPGDPpc_{n,s}$ = expenditure per student in level n of education from source s of funding as a percentage of GDP per capita

$XEPPPPconst_{n,s}$ = expenditure per student in level n of education from source s of funding in constant PPP $

$XE_{n,s}$ = expenditure on level n of education from source s of funding

E_n = enrolment in level n of education

GDPpc = GDP per capita

PPPconst = PPP constant $ conversion factor

Interpretation:

Government funding: When considered as a percentage of GDP per capita, a higher value would indicate a greater priority to the specific level of education given by public authorities. When considered in PPP$, the indicator can show the 'real' amount of resources invested in one student.

Private/household funding: a higher value would signify a greater burden on households, and potential implications for equity and access to education.

For international sources: a higher value would signify a greater commitment from donors to a level of education in a given country, but also potentially a greater degree of aid dependency for governments in terms of education funding.

For all sources combined: the indicator would show the real, total value of resources invested in one student, and therefore the real unit cost. Since the indicator is constructed on a comparable scale (i.e. for one student, and relative to GDP per capita or using a common currency), all its sub-components can be compared to other levels of education, over time, or between countries.

Type of data source:

Financial data from ministries of finance and/or education (government); household expenditure surveys (households); national aid management systems and/or IATI (international); other surveys (other private); administrative data (number of students by level)

Disaggregation:

By level of education, source of funding (government, private, international), type of institution (public/private) but with expected lower coverage for private institutions. For household expenditure, eventually disaggregation by wealth, location and sex could also be calculated, but not for government and international sources.

Data required:

Central, regional and local government expenditure data on education by level of education and type of institution; household and (ideally) other private expenditure on education by level of education and type of institution; international expenditure on education by level of education and type of institution; number of students enrolled by level of education and type of institution.

Data sources:

At the national level, ministries of finance and/or ministries of education financial management systems are the source of government expenditure on education, although disaggregation by level often implies estimations using data on students and/or teachers by level. Data on expenditure by lower levels of government can be centralized or collected directly from local authorities.

Household expenditure on education is collected through consumption/expenditure surveys, although few surveys disaggregate spending by level of education, type of school and/or nature of expenditure. School censuses in some countries also collect data on financial/in-kind contributions by households/students.

Data on other private sources of funding for education (e.g. corporations, local NGOs) are rarely collected systematically and would often require additional surveys proceeded by significant analytical, preparatory and advocacy work.

International sources may be available through governmental financial systems when they are recorded on-budget, and off-budget international funding may sometimes be available through governmental aid management systems, although rarely with the disaggregation needed (ex. by level of education). Data sources for international funding, such as the OECD-DAC database or the International Aid Transparency Initiative (IATI) may be used as a complement, but often present problems of compatibility with other sources, such as government records.

Limitations and comments:

The difference between ‘initial funding’ (where the funds originally came from) and ‘final expenditure’ (which entity carries out the expenditure and sends the funds to the school) is important to clarify in this type of indicator. For example, where international donors transfer funds the ministry of education budget without earmarking for specific activities (such as through sector budget support), the expenditure is done by the government, but the funding comes from international sources. Same thing with a scholarship: the initial funder is the government, and the final spender is the household. Either two sets of indicators should eventually be produced (potentially confusing to users), or a choice be made on which perspective will be presented. The option presented here (and to be discussed and validated) is to calculate the indicator on the basis of initial funding because a) This is arguably more intuitive--if we are saying ’by source of funds’, people expect to see who paid and b) This would be better aligned with the National Education Accounts methodology. Note that if we go with that option, we may want to change the indicator name to something like “Education funding per student by level of education and source”.

The part of this indicator focusing on government expenditure is already available for a large number of countries, although not always with regularity. The formula would also need to be slightly modified if we are to use initial funding.

For private and international sources, data availability is significantly lower, so that it will take several years and significant investment to increase coverage to an acceptable level. In the medium-term, 'private' expenditure may have to be limited to households only (and only for a few countries), and international sources to those recorded in government budgets.

The lack of data on household sources is especially important to consider when looking at expenditure in private institutions, where fees tend to be much higher.

4.5.5 Percentage of total aid to education allocated to least developed countries

Definition:

Total net official development assistance (ODA) for education in low-income countries (including early childhood, primary, secondary and tertiary education) as well as scholarships and student costs in donor countries expressed as a percentage of total net official development assistance to education. Least developed countries are those defined by the UN Office of the High Representative for Least Developed Countries, Landlocked States and Small Island Developing States (UN-OHRLLS) (http://www.un.org/en/development/desa/policy/cdp/ldc/ldc_list.pdf). Only donor countries will be required to report this indicator.

Purpose:

ODA is the accepted measure of international development co-operation. The data thus cover official international assistance to education, including to provide education places for developing country nationals in donor country educational institutions.

Calculation method:

Total aid for education allocated to least developed countries is expressed as a percentage of all aid for education.

$$PODAE_{LI} = \frac{ODAE_{LI}}{ODAE}$$

where:

$PODAE_{LI}$ = percentage of ODA for education allocated to least developed countries

$ODAE_{LI}$ = total ODA for education allocated to least developed countries

ODAE = total ODA for education

Interpretation:

A high value indicates that least developed countries are being prioritised to receive aid for education.

Type of data source:

Administrative data.

Disaggregation:

The data can be disaggregated by provider and recipient country.

Data required:

Total aid to education and aid to education allocated to least developed countries.

Data sources:

Administrative data from donor countries and other aid providers on net official development assistance to education. Data are compiled by the Development Assistance Committee (DAC) of the Organisation for Economic Co-operation and Development (OECD) from returns submitted by its member countries and other aid providers.

Limitations and comments:

The data only address international concessional flows provided by governments.

4.6 By 2030, ensure that all youth and a substantial proportion of adults, both men and women, achieve literacy and numeracy

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

Definition:

Percentage of youth (aged 15-24 years) and of adults (aged 15 years and above) who have achieved or exceeded a given level of proficiency in (a) literacy and (b) numeracy. The minimum proficiency level will be measured relative to new common literacy and numeracy scales currently in development.

The fixed level of proficiency is the benchmark of basic knowledge in a domain (literacy or numeracy) measured through learning assessments. Currently, there are no common standards validated by the international community or countries. The indicator shows data published by each of the agencies and organizations specialised in cross-national household-based assessment surveys of youth and adult populations.

Purpose:

The indicator is a direct measure of the skill levels of youth and adults in the two areas: literacy and numeracy.

Calculation method:

Percentage of youth and adults who have achieved at least the minimum threshold of proficiency as defined for large-scale (representative sample) adult literacy and numeracy assessment:

Performance achieved at or above minimum level, $PL^{t}_{a,s}$,above minimum = p.

where p is the percentage of youth and adults at a national or cross-national adult literacy and numeracy assessment at age group a, in learning domain s in any year (t-i), who have achieved at least the minimum level of proficiency.

Interpretation:

There is only one threshold that divides youth and adults into below minimum or at or above minimum proficiency levels.

(a) Below minimum level is the proportion or percentage of youth and adults who have not achieved the minimum proficiency level as established by countries according to the globally-defined minimum competencies.

(b) At or above minimum level is the proportion or percentage of youth and adults who have achieved at least the minimum proficiency level. Due to heterogeneity of performance levels set by national and cross-national assessments, these performance levels will have to be mapped to the globally-defined minimum proficiency levels. Once the performance levels are mapped, the global education community will be able to identify for each country the proportion or percentage of youth and adults who achieved at least minimum proficiency level.

Type of data source:

Learning assessments in household surveys.

Disaggregation:

By age-group, sex, location, income and type of skill. Disability status is not currently available in most national and cross-national learning assessments.

Data required:

Performance level data from the national and cross-national adult literacy and numeracy assessments.

Data sources:

This indicator is collected via skills' assessment surveys of the adult population (e.g., the Programme for the International Assessment of Adult Competencies (PIAAC), the Skills Towards Employment and Productivity (STEP) Measurement programme, the Literacy Assessment Measurement Programme (LAMP)) and national adult literacy and numeracy surveys. Only PIAAC measures both skills. STEP and possibly the Short Literacy Survey (SLS) only measure literacy. Both PIAAC and STEP surveys can be put on a common scale as they are linked psychometrically by design.

Limitations and comments:

The measurement of youth and adult skills requires some form of direct assessment. Using household-based assessment surveys to measure literacy and numeracy can be costly and difficult to administer and may underestimate functional skills in areas that are critical to daily life but are harder to assess in standardised approaches. The result may be inaccurate representations of what youth and adults know and can do, especially in relation to foundational skills that may vary widely across cultural contexts and orthography.

4.6.2 Youth/adult literacy rate

Definition:

Percentage of youth (aged 15-24 years) and adults (aged 15 years and older) who have the ability to both read and write, with understanding, a short, simple statement about everyday life.

Purpose:

The literacy rate indicates the proportion of a given population that has a minimum level of reading and writing skills. The interpretation of the indicator is strongly linked to the method of data collection.

Calculation method:

The literacy rate is calculated by dividing the number of literate persons by the total number of persons in the same age group, excluding persons with unknown literacy status.

$$LR_{AGi} = \frac{LP_{AGi}}{P_{AGi}}$$

where:

LR_{AGi} = literacy rate of population in age group i

LP_{AGi} = literate population in age group i

P_{AGi} = population in age group i, excluding persons with unknown literacy status

Interpretation:

The literacy rate measures the ability to read and write a 'simple statement about everyday life' and is therefore an indicator of the presence or lack of minimum literacy skills in a population. Literacy rates at or near 100% indicate that (nearly) every adult or youth is able to read and write, at least at a basic level.

Type of data source:

Population censuses, household surveys.

Disaggregation:

By age-group, sex, location, and others as available in survey or census data, for example by household wealth or a variety of other demographic and socio-economic characteristics. Disability status is not currently available in most household surveys or censuses.

The options for disaggregation may be limited by the sample size in a survey.

Data required:

Population in the relevant age group by literacy status (literate/illiterate).

Data sources:

National data on literacy are typically collected through self- or household-declaration in household surveys or population censuses that rely on the 'able to read and write a simple statement' definition of literacy, although the questions asked in surveys vary between countries. Household surveys like the Demographic and Health Surveys (DHS, http://dhsprogram.com) and Multiple Indicator Cluster Surveys (MICS, http://mics.unicef.org) have moved from self- or household-declaration to simple assessments in the form of a reading test, in which respondents are asked to read a simple sentence written in their language.

Limitations and comments:

The literacy rate as defined here is a binary indicator: persons are either literate (meaning they have at least a minimum of reading and writing skills) or illiterate. In fact, there is a continuum of literacy skills that is not captured by literacy rates based on a division of the population into literate and illiterate persons. The binary literacy rate also conveys no information on functional literacy skills, i.e. the application of reading and writing in daily life.

In most high-income economies, but also many other countries, the adult and youth literacy rates are near 100% because most persons are able to read and write, but a certain proportion of the population may be at the lower end of the continuum of literacy skills.

Some countries derive literacy rates from data on educational attainment. This approach is not recommended because literacy skills can be obtained without participation in formal education. Moreover, reading and writing skills obtained in school can be lost later in life if they are not regularly applied.

Data from more sophisticated assessments of literacy, for example the Survey of Adult Skills that is carried out as part of the Programme for the International Assessment of Adult Competencies (PIAAC) by the OECD, are not directly comparable with the results of simple self- or household-declaration of the ability to read and write in a household survey or census. The data from PIAAC and similar assessments are therefore not suitable to divide the population into literate and illiterate parts.

4.6.3 Participation rate of youth/adults in literacy programmes

Definition:

Number of youth (aged 15-24 years) and adults (aged 15 years and older) participating in literacy programmes expressed as a percentage of the illiterate population of the same age.

Purpose:

To show the level of participation of illiterate youth and adults in literacy programmes.

Calculation method:

The indicator is calculated as the number of illiterate persons in the relevant age group participating in literacy programmes expressed as a percentage of the illiterate population of the same age.

$$PRLP^{t}_{a} = \frac{PartLit^{t}_{a}}{IllitP^{t}_{a}}$$

where:

$PRLP^{t}_{a}$ = participation rate of the population of age group a in literacy programmes in year t

$PartLit^{t}_{a}$ = participants in literacy programmes of age group a in year t

$IllitPop^{t}_{a}$ = Illiterate population of age group a in year t

a =15-24 years (youth) or 15 years and older (adults)

Interpretation:

A high rate denotes a high degree of coverage of the illiterate population by the programmes designed to reach that specific group. The theoretical maximum value is 100%.

Increasing trends can be considered as reflecting improved coverage by the literate programmes of their target population.

Type of data source:

Administrative data, household surveys, and population censuses.

Disaggregation:

By age, sex, location, and income (depending on the data source). Disability status is not currently available from most data sources.

Data required:

Number of participants in the relevant age group in literacy programmes; illiterate population estimates for the same age groups.

Data sources:

Administrative or household data on participation in literacy programmes for the age groups defined, combined with illiterate population estimates for the same age groups.

Limitations and comments:

The indicator values must be analysed with caution and together with other indicators reflecting the literacy situation of the population because of its limitations.

The theoretical maximum value of 100% is under the assumption that literate population will not enrol or attend literacy programmes.

The degree of coverage of the illiterate population measured by this indicator might be underestimated because of the exclusion of illiterate population that have decided to attend primary education programmes instead of specifically-designed literacy programmes.

When numerator and denominator are taken from household surveys, special attention should be given to the estimations' standard errors mainly in countries with very high levels of literacy where the sample sizes and design might not be appropriate for producing the indicator. When numerator and denominator are taken from different data sources (e.g. administrative data and household survey or population estimates), there will be possibilities of inconsistencies.

4.7 By 2030, ensure that all learners acquire the knowledge and skills needed to promote sustainable development, including, among others, through education for sustainable development and sustainable lifestyles, human rights, gender equality, promotion of a culture of peace and non-violence, global citizenship and appreciation of cultural diversity and of culture's contribution to sustainable development

4.7.1 Extent to which (i) global citizenship education and (ii) education for sustainable development, including gender equality and human rights, are mainstreamed at all levels in: (a) national education policies (b) curricula (c) teacher education and (d) student assessments

Definition:

Extent to which countries mainstream global citizenship education (GCED) and education for sustainable development (ESD), including climate change education, human rights and gender equality, in their education systems, specifically in policies, curricula, teacher education and student assessment.

It seeks to measure the quantity and quality of country inputs as well as whether the quality of GCED and ESD provision is adequate to fulfil their transformational potential.

The indicator should go beyond the level of 'existence' or 'mentioning' of GCED and ESD in policy, curricula, teacher education and student assessment. The share accorded to GCED and/or ESD in the curricula/timetables at different education levels could be used. Further, a comparative measure of the priority of GCED/ESD – as part of one or more subjects – relative to certain key learning domains, such as reading and mathematics - could be assessed. The extent of mainstreaming could be described on a multi-level scale, noting that this should cover intended and actual implementation.

Education for Sustainable Development (ESD): empowers learners to take informed decisions and responsible actions for environmental integrity, economic viability and a just society, for present and future generations, while respecting cultural diversity. It is about lifelong learning, and is an integral part of quality education.

Global Citizenship Education (GCED): nurtures respect for all, building a sense of belonging to a common humanity and helping learners become responsible and active global citizens. GCED aims to empower learners to assume active roles to face and resolve global challenges and to become proactive contributors to a more peaceful, tolerant, inclusive and secure world.

Purpose:

The indicator provides important information on the level of national commitment towards the attainment of this target (for example whether political will/decisions and resources available have been translated into concrete policies, curricula, assessment) as well as the quality of the programmes provided, can predict the likelihood that desired student outcomes will be achieved. This indicator can be complemented by other thematic indicators on GCED and ESD that UNESCO proposes, which seek to assess learning outcomes more directly in the cognitive, socio-emotional and behavioural domains. The indicator could be used to assess inputs to formal as well as non-formal education systems.

Calculation method:

The method of reporting this indicator has still to be defined. It will be based on an evaluation of reports submitted by countries describing how they are mainstreaming global citizenship education and education for sustainable development in their education policies and systems.

Interpretation:

Acknowledging that evidence on how the policy guidance and implementation in policy, curricula, teacher training and student assessment actually work and what impact they may have, progress might be interpreted in relation to the comparative/ipsative priority and emphasis assigned to these areas over time, i.e. if and how existence, frequency, priority and scope of implementation change from one collection to the next.

Type of data source:

Country narrative reports.

Disaggregation:

None.

Data required:

Information on the extent to which a given country is mainstreaming global citizenship education and education for sustainable development in their education polices and systems.

Data sources:

In reference to UNESCO's mandate to monitor the implementation of the 1974 Recommendation concerning Education for International Understanding, Cooperation and Peace and Education relating to Human Rights and Fundamental Freedoms, every four years a survey questionnaire is sent to 195 UNESCO Member States. This is an established mechanism, on the basis of which countries systematically report to UNESCO on the status of implementation of the 1974 Recommendation; the survey questionnaire covers almost all aspects of the proposed indicator, as per the specific recommendations. UNESCO has been analysing the survey results and reports to its General Conference on country status. In 2016 UNESCO revised the terminologies and the format of the survey tool to make it more relevant to the present time and easy to use, which will increase the response rate.

Salient guiding principles on sources and collection approaches as well as experiences on this topic can be derived from the global monitoring and evaluation work conducted as part of the decade for education for sustainable development (DESD, 2005-2014). Other human rights monitoring frameworks, education sector reviews or other thematic studies can also serve as additional sources for this indicator.

Limitations and comments:

The indicator does not verify whether the national measures taken lead to desired changes in learning outcomes and does not assess learning outcomes directly. However, education policies, curricula, teacher education and student assessment, demonstrated in the indicator, are key intermediate outcomes of national commitment and effort to effectively implement GCED and ESD and to provide a conducive learning environment.

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

Definition:

Percentage of schools providing life skills-based HIV and sexuality education within the formal curriculum or as part of extra-curricular activities.

Purpose:

To assess progress towards implementation of life skills-based HIV and sexuality education in all schools. This indicator tracks the proportion of schools that provide life skills-based HIV and sexuality education within the formal curriculum or as part of extra-curricular activities. This indicator reflects curriculum delivery in support of national HIV prevention programmes.

Calculation method:

The number of schools at each level of education providing life skills-based HIV and sexuality education is expressed as a percentage of all schools at the given level of education.

$$PSHIV_n = \frac{SHIV_n}{S_n}$$

where:

$PSHIV_n$ = percentage of schools at level n of education providing life skills-based HIV and sexuality education

$SHIV_n$ = schools at level n of education providing life skills-based HIV and sexuality education

S_n = total number of schools at level n of education

Interpretation:

A high value indicates that a large number of schools at the given level of education provide life skills-based HIV and sexuality education to students.

Type of data source:

Administrative data.

Disaggregation:

By level of education.

Data required:

Number of schools at each level of education providing life skills-based HIV and sexuality education and total number of schools at the same level.

Data sources:

Administrative data from schools and other providers of education and training.

Limitations and comments:

While the indicator potentially provides a good measure of coverage, considering which schools have provided life skills-based HIV and sexuality education, at the minimum required levels, due to the range of topics and the set minimum package of topics, this indicator is quite complex to calculate using the method of measurement suitable for school-based surveys. It does not capture how much time is actually spent on each of the topics. If only school head teachers report on this indicator, many may not know which topics are taught if life skills-based HIV and sexuality education is not a standalone and assessed subject.

4.7.3 Extent to which the framework on the World Programme on Human Rights Education is implemented nationally (as per the UNGA Resolution 59/113)

Definition:

The extent to which countries have implemented the World Programme on Human Rights Education and, specifically, the 5-year action plans for each phase of its implementation. The action plan for the period 2015-2019 focuses on:

(i) consolidating actions in the previous two stages: human rights education in primary and secondary schools (2005-2009); and human rights education for higher education and human rights training programmes for teachers and educators, civil servants, law enforcement officials and military personnel (2010-2014); and

(ii) promoting human rights training for media professionals and journalists.

It seeks to measure the quantity and quality of country actions and commitment to mainstreaming human rights education.

Purpose:

The indicator is a measure of government commitment to ensuring that learners at all levels of education have the opportunity to gain the required knowledge and skills in the area of human rights in order to promote sustainable development.

Calculation method:

The method of reporting this indicator has still to be defined. It will be based on an evaluation of reports submitted by countries describing how they are implementing the World Programme on Human Rights Education.

Interpretation:

To be determined.

Type of data source:

Administrative data.

Disaggregation:

None.

Data required:

Information on the extent to which a given country is implementing the World Programme on Human Rights Education. The exact format of reporting has still to be defined.

Data sources:

National evaluation reports and other evaluations of the implementation of the action plan for each stage of the World Programme on Human Rights Education submitted periodically to the Office of the High Commissioner for Human Rights (OHCHR).

Limitations and comments:

To be determined.

4.7.4 Percentage of students by age group (or education level) showing adequate understanding of issues relating to global citizenship and sustainability

Definition:

Percentage of students of a specific age group or level of education (to be determined) showing adequate understanding of issues relating to global citizenship and sustainability.

Purpose:

The indicator is a direct measure of the learning outcomes achieved in global citizenship education (GCED) and education for sustainable development (ESD), critical for the promotion of sustainable development. Furthermore, GCED and ESD encompasses all the other subjects, including climate change education, human rights and gender equality, covered by the target so it can be argued that the indicator will measure these items as well.

Calculation method:

The indicator is calculated as the number of students of a given age/education level achieving or exceeding the minimum level of understanding of issues relating to global citizenship and sustainability, expressed as a percentage of all students of that age/education level.

$$PEGCS_{AGi} = \frac{E_{AGi,GCS}}{P_{AGi}}$$

where:

$PEGCS_{AGi}$ = percentage of students in age group i with knowledge of global citizenship and sustainability

$E_{AGi,GCS}$ = students in age group i with knowledge of global citizenship and sustainability

P_{AGi} = population in age group i

Interpretation:

A high value indicates a large number of students in the relevant age group have at least a given level of understanding of issues relating to global citizenship and sustainability

Type of data source:

Learning assessments.

Disaggregation:

By age and sex. Disability status is not currently available in most national and cross-national learning assessments.

Data required:

Number of students by single year of age (or education level) and their level of knowledge in the areas being measured.

Data sources:

This indicator is collected via skills assessment surveys. The main existing source of data for this indicator is the IEA's International Civic and Citizenship Education Study (ICCS). In 2015, the IEA General Assembly endorsed and encouraged efforts to work towards the inclusion of the global dimension of citizenship and sustainable development in future cycles. The ICCS questionnaire is currently being revised to meet this objective. IEA may advance the next round or add an interim round of the ICCS in 2018.

Other sources of data could be explored such as the World Values Survey, with the long-term goal of collecting comparable information about students' knowledge, skills, values and attitudes in multiple assessment formats.

Limitations and comments:

The subjects assessed are considered key for the promotion of sustainable development. Further developmental work will also be needed to ensure that the knowledge being assessed and the proficiency levels are relevant in all parts of the world. Currently the indicator is only calculated for those in formal education and school settings.

4.7.5 Percentage of 15-year old students showing proficiency in knowledge of environmental science and geoscience

Definition:

Percentage of 15-year-old students achieving at least a minimum proficiency level in environmental science and geoscience.

Purpose:

The indicator is a direct measure of the learning outcomes achieved in two key subjects relevant to the promotion of sustainable development.

Calculation method:

The indicator is calculated as the number of 15-year-old students achieving or exceeding the minimum proficiency level in environmental science and geoscience expressed as a percentage of all 15-year old students.

$$PEESG_{15} = \frac{E_{15,ESG}}{P_{15}}$$

where:

$PEESG_{15}$ = percentage of students aged 15 years with knowledge of environmental science and geoscience

$E_{15,ESG}$ = students aged 15 years with knowledge of environmental science and geoscience

P_{15} = population aged 15 years

Interpretation:

A high value indicates a large number of students aged 15 years have at least a given level of proficiency and knowledge of environmental science and geoscience.

Type of data source:

Learning assessments.

Disaggregation:

By age and sex. Disability status is not currently available in most national and cross-national learning assessments.

Data required:

Number of students aged 15 years and their level of knowledge in the areas being measured.

Data sources:

This indicator is collected via skills assessment surveys. One possible source is OECD's Programme for International Student Assessment (PISA) but other sources should be explored, with the long-term goal of collecting comparable information about students' knowledge in multiple assessment formats.

Limitations and comments:

The subjects assessed are considered key for the promotion of sustainable development. However there are several other subjects covered by the target that are not addressed by this indicator. Further developmental work will also be needed to ensure that the knowledge being assessed and the proficiency levels are relevant in all parts of the world.

Currently the indicator is only calculated for those in school. Extending the assessment of competencies to children and young people who are out of school would require new types of surveys which could be very costly and difficult to administer.

4.a Build and upgrade education facilities that are child, disability and gender sensitive and provide safe, non-violent, inclusive and effective learning environments for all

4.a.1 Proportion of schools with access to: (a) electricity; (b) the Internet for pedagogical purposes; (c) computers for pedagogical purposes; (d) adapted infrastructure and materials for students with disabilities; (e) basic drinking water; (f) single-sex basic sanitation facilities; and (g) basic handwashing facilities (as per the WASH indicator definitions)

Definition:

Percentage of schools by level of education (primary, lower secondary and upper secondary education) with access to the given facility or service.

Electricity: Regularly and readily available sources of power (e.g. grid/mains connection, wind, water, solar and fuel-powered generator, etc.) that enable the adequate and sustainable use of ICT infrastructure for educational purposes.

Internet for pedagogical purposes: Internet that is available for enhancing teaching and learning and is accessible by pupils. Internet is defined as a worldwide interconnected computer network, which provides pupils access to a number of communication services including the World Wide Web and carries e-mail, news, entertainment and data files, irrespective of the device used (i.e. not assumed to be only via a computer and thus can also be accessed by mobile telephone, tablet, PDA, games machine, digital TV etc.). Access can be via a fixed narrowband, fixed broadband, or via mobile network.

Computers for pedagogical use: Use of computers to support course delivery or independent teaching and learning needs. This may include activities using computers or the Internet to meet information needs for research purposes; develop presentations; perform hands-on exercises and experiments; share information; and participate in online discussion forums for educational purposes. A computer is a programmable electronic device that can store, retrieve and process data, as well as share information in a highly-structured manner. It performs high-speed mathematical or logical operations according to a set of instructions or algorithms. Computers include the following types:

- A desktop computer usually remains fixed in one place; normally the user is placed in front of it, behind the keyboard;
- A laptop computer is small enough to carry and usually enables the same tasks as a desktop computer; it includes notebooks and netbooks but does not include tablets and similar handheld devices; and
- A tablet (or similar handheld computer) is a computer that is integrated into a flat touch screen, operated by touching the screen rather than using a physical keyboard.

Adapted infrastructure is defined as any built environment related to education facilities that are accessible to all users, including those with different types of disability, to be able to gain access to use and exit from them. Accessibility includes ease of independent approach, entry, evacuation and/or use of a building and its services and facilities (such as water and sanitation), by all of the building's potential users with an assurance of individual health, safety and welfare during the course of those activities.

Adapted materials include learning materials and assistive products that enable students and teachers with disabilities/functioning limitations to access learning and to participate fully in the school environment. Accessible learning materials include textbooks, instructional materials, assessments and other materials that are available and provided in appropriate formats such as audio, braille, sign language and simplified formats that can be used by students and teachers with disabilities/functioning limitations.

Basic drinking water is defined as a functional drinking water source on or near the premises and water points accessible to all users during school hours.

Basic sanitation facilities are defined as functional sanitation facilities separated for males and females on or near the premises.

Basic handwashing facilities are defined as functional handwashing facilities, with soap and water available to all girls and boys.

Purpose:

The indicator measures access in schools to key basic services and facilities necessary to ensure a safe and effective learning environment for all students.

Calculation method:

The number of schools in a given level of education with access to the relevant facilities is expressed as a percentage of all schools at that level of education.

$$PS_{n,f} = \frac{S_{n,f}}{S_n}$$

where:

$PS_{n,f}$ = percentage of schools at level n of education with access to facility f

S_n,f = schools at level n of education with access to facility f

S_n = total number of schools at level n of education

Interpretation:

A high value indicates that schools have good access to the relevant services and facilities. Ideally each school should have access to all these services and facilities.

Type of data source:

Administrative data.

Disaggregation:

By level of education.

Data required:

Number of schools at each level of education with and without access to the given facilities.

Data sources:

Administrative data from schools and other providers of education or training.

Limitations and comments:

The indicator measures the existence in schools of the given service or facility but not its quality or operational state.

4.a.2 Percentage of students experiencing bullying, corporal punishment, harassment, violence, sexual discrimination and abuse

Definition:

Percentage of students who, during a school year, were physically attacked, participated in a physical fight, experienced bullying, corporal punishment, harassment, sexual discrimination or abuse.

Purpose:

This indicator provides information on the extent of self-reported violence and bullying in schools.

Calculation method:

The number of students in a given level of education reporting that they have experienced any of the different types of violence or abuse is expressed as a percentage of all students at the same level of education.

$$PEB_n = \frac{EB_n}{E_n}$$

where:

PEB_n = percentage of students in level n of education experiencing bullying, corporal punishment, harassment, violence, sexual discrimination or abuse

EB_n = students in level n of education experiencing bullying, corporal punishment, harassment, violence, sexual discrimination or abuse

E_n = total enrolment in level n of education

Interpretation:

A high value indicates a large number of students at the given level of education are experiencing violence and abuse in school and thus that the school is not a safe environment in which to promote learning.

Type of data source:

School-based surveys.

Disaggregation:

By sex and level of education. Disaggregation by age and disability to be defined.

Data required:

The number of students in each level of education reporting that they have experienced any of the different types of violence or abuse and the total number of students in the same level.

Data sources:

One possible source for this indicator is the Global School-based Student Health Survey (GSHS) developed by the World Health Organization (WHO) and the US Center for Disease Control and Prevention (CDC) in collaboration with UNICEF, UNESCO, and UNAIDS. GSHS is a school-based survey conducted primarily among students aged 13-17 years.

Limitations and comments:

The indicator is based on the self-reporting by students of their experiences of violence and abuse in school. There may be instances when some students feel sufficiently intimated that they do not report incidents that have taken place thus resulting in an over-estimate of the safety of the school environment.

4.a.3 Number of attacks on students, personnel and institutions

Definition:

Number of violent attacks, threats or deliberate use of force in a given time period (e.g. the last 12 months, a school year or a calendar year) directed against students, teachers and other personnel or against education buildings, materials and facilities, including transport. These attacks may have been carried out for political, military, ideological, sectarian, ethnic or religious reasons.

Purpose:

The indicator is a broad measure of the safety of learning environments.

Available data for global tracking are presently collected from country-level reporting by a wide variety of stakeholders, which are used to calculate types of safety/security risks and track trends.

Calculation method:

The method of reporting this indicator has still to be defined. It will be based on the evaluation of a wide range of reports from countries on attacks of various types on schools and other centres of learning.

Interpretation:

A high value indicates a large number of attacks on schools and other centres of learning and thus that the school is not a safe environment in which to promote learning.

Type of data source:

Still to be defined.

Disaggregation:

Disaggregation by type of attack and by location to be determined.

Data required:

Information on the numbers and types of attacks on schools and other centres of learning.

Data sources:

In-depth review and assessment of information on attacks on education from multiple sources including government bodies, human rights and development organizations, NGOs, scholar rescue organizations, trade unions, UN agencies and media reports.

Examples of such reports include:

- UN Secretary-General's reports on Children and Armed Conflict (annual)
- Global Coalition to Protect Education from Attack: Education Under Attack (periodic)
- Scholars at Risk Academic Freedom Monitoring Project (ongoing)
- Free to Think reports (periodic)

Limitations and comments:

The reporting of attacks on schools, their reasons and types is very difficult and there are dangers both of over-reporting by different sources or of under-reporting. In order to get as close as possible to an accurate number it is necessary to evaluate information from multiple sources and to take steps to try to minimise double-counting of incidents.

4.b By 2020, substantially expand globally the number of scholarships available to developing countries, in particular least developed countries, small island developing States and African countries, for enrolment in higher education, including vocational training, information and communications technology, technical, engineering and scientific programmes in developed countries and other developing countries

4.b.1 Volume of official development assistance flows for scholarships by sector and type of study

Definition:

Total net official development assistance (ODA) for scholarships in donor countries (types of aid E01) expressed in US dollars at the average annual exchange rate.

Purpose:

ODA is the accepted measure of international development co-operation. The data thus cover official international assistance to provide education places for developing country nationals in donor country educational institutions.

Calculation method:

The sum of total official development assistance for scholarships for study abroad by sector and type of study awarded to students from the beneficiary country expressed in US dollars.

Interpretation:

A high value indicates that there is greater expenditure on students from the given beneficiary country to study abroad. It does not indicate the number of students being supported.

Type of data source:

Administrative data.

Disaggregation:

By aid provider.

Data required:

Total official development assistance for scholarships for study abroad by sector and type of study awarded to students from the beneficiary country.

Data sources:

Administrative data from donor countries and other aid providers on net official development assistance to education. Data are compiled by the Development Assistance Committee (DAC) of the Organization for Economic Co-operation and Development from returns submitted by its member countries and other aid providers.

Limitations and comments:

The data only address international concessional flows provided by governments. Detailed, internationally-comparable data on scholarships for developing country nationals provided by universities, colleges, foundations, NGOs and other sources are generally lacking.

4.b.2 Number of higher education scholarships awarded by beneficiary country

Definition:

Number of higher education scholarships for study abroad awarded to students from the reporting (i.e. beneficiary) country in a given period (e.g. the last 12 months).

Purpose:

The indicator is a direct measure of scholarships for study abroad as defined in the target.

Calculation method:

The sum of all scholarships awarded in a given academic year by donor or host countries to students from the given beneficiary country for study abroad.

Interpretation:

A high value indicates that a large number of students from the given beneficiary country are being supported financially to study abroad. It does not indicate the amount of financial support nor whether this is sufficient to cover all the students' costs related to their study.

Type of data source:

Administrative data.

Disaggregation:

Disaggregation by sex to be determined.

Data required:

Number of higher education scholarships awarded by donor or host countries to students from beneficiary countries for study abroad.

Data sources:

Administrative data from providers of higher education scholarships and recipient higher education institutions.

Limitations and comments:

Beneficiary countries typically will not have access to all the data on scholarships for study abroad awarded to their inhabitants. Similarly in most countries in which such students study there is no central source of data on scholarships awarded to students from abroad as they may be offered by many different sources including universities, foundations, private donors and others. There may also be problems with identifying the countries of origin of students.

4.c By 2030, substantially increase the supply of qualified teachers, including through international cooperation for teacher training in developing countries, especially least-developed countries and small island developing States

4.c.1 Proportion of teachers in: (a) pre-primary education; (b) primary education; (c) lower secondary education; and (d) upper secondary education who have received at least the minimum organized teacher training (e.g. pedagogical training) pre-service or in-service required for teaching at the relevant level in a given country, by sex

Definition:

Percentage of teachers by level of education taught (pre-primary, primary, lower secondary and upper secondary education) who have received at least the minimum organized pedagogical teacher training pre-service and in-service required for teaching at the relevant level in a given country. Ideally the indicator should be calculated separately for public and private institutions.

Purpose:

Teachers play a key role in ensuring the quality of education provided. Ideally all teachers should receive adequate, appropriate and relevant pedagogical training to teach at the chosen level of education and be academically well-qualified in the subject(s) they are expected to teach. This indicator measures the share of the teaching work force which is pedagogically well-trained.

Calculation method:

The number of teachers in a given level of education who are trained is expressed as a percentage of all teachers in that level of education.

$$PTT_n = \frac{TT_n}{T_n}$$

where:

PTT_n = percentage of trained teachers at level n of education

TT_n = trained teachers at level n of education

T_n = total teachers at level n of education

n = 02 (pre-primary), 1 (primary), 2 (lower secondary), 3 (upper secondary) and 23 (secondary)

Interpretation:

A high value indicates that students are being taught by teachers who are pedagogically well-trained to teach.

Type of data source:

Administrative data.

Disgaggregation:

By sex, level of education and type of institution (public/private). Location is not currently collected at the global level but this could be considered in the future.

Data required:

Number of teachers at each level of education who are trained and total number of teachers at each level.

Data sources:

Administrative data from schools and other organized learning centres.

Limitations and comments:

It is important to note that national minimum training requirements can vary widely from one country to the next. This variability between countries lessens the usefulness of global tracking because the indicator would only show the percent reaching national standards, not whether teachers in different countries have similar levels of training. Further work would be required if a common standard for teacher training is to be applied across countries.

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

Definition:

Average number of pupils per trained teacher at each level of education (pre-primary, primary, lower and upper secondary education).

A trained teacher is one who has received at least the minimum organized pedagogical teacher training pre-service and in-service required for teaching at the relevant level in a given country.

Purpose:

To measure trained teacher workloads and human resource allocations in educational institutions, and to give a general indication of the average amount of time and individual attention a pupil is likely to receive from trained teachers.

Since well-trained teachers play a key role in ensuring the quality of education provided, the pupil/trained teacher ratio is considered an important determinant of learning outcomes and an indicator of the overall quality of an education system.

Calculation method:

The total number of pupils and students in the relevant level is divided by the number of trained teachers in the same level.

$$PTTR_n = \frac{E_n}{TT_n}$$

where:

$PTTR_n$ = pupil-trained teacher ratio at level n of education

E_n = pupils enrolled in level n of education

TT_n = trained teachers at level n of education

n = 02 (pre-primary), 1 (primary), 2 (lower secondary), 3 (upper secondary) and 23 (secondary)

Interpretation:

The higher the pupil/ trained teacher ratio, the lower the relative access of pupils to trained teachers. Results can be compared with established national norms on the number of pupils per trained teacher for each level of education.

Type of data source:

Administrative data.

Disaggregation:

By level of education and type of institution (public/private).

Data required:

Number of pupils and trained teachers at each level of education.

Data sources:

Administrative data from schools and other organized learning centres.

Limitations and comments:

The 'ideal' pupil/trained teacher ratios may depend on a wide variety of complex factors, including the age and academic needs of the pupils represented in the ratio (younger children or those with special educational needs typically require more time, attention, and instructional support from teachers) or the experience, skill, and effectiveness of the teachers (highly skilled teachers may be able to achieve better academic results with larger classes than less skilled teachers with smaller classes).

In calculating and interpreting this indicator, one should take into account the existence of part-time teaching, school-shifts, multi-grade classes and other practices that may affect the precision and meaningfulness of pupil/teacher ratios. When feasible, the number of part-time teachers should be converted to 'full-time equivalent' numbers of teachers; a double-shift teacher should be counted twice, etc. Ideally, all staff involved in direct classroom-teaching roles should be included in the calculations.

Pupil/teacher ratios are not equivalent to the average class size. It is important to note that national teacher training requirements can vary from one country to the next. Further work would be required if a common standard for professional training is to be applied across countries.

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

Definition:

Percentage of teachers by level of education taught (pre-primary, primary, lower secondary and upper secondary education) who have at least the minimum academic qualifications required for teaching their subjects at the relevant level in a given country. Ideally the indicator should be calculated separately for public and private institutions.

Purpose:

Teachers play a key role in ensuring the quality of education provided. Ideally all teachers should receive adequate, appropriate and relevant pedagogical training to teach at the chosen level of education and be academically well-qualified in the subject(s) they are expected to teach. This indicator measures the share of the teaching work force which is academically well-qualified.

Calculation method:

The number of teachers in a given level of education who are qualified is expressed as a percentage of all teachers in that level of education.

$$PQT_n = \frac{QT_n}{T_n}$$

where:

PQT_n = percentage of qualified teachers at level n of education

QT_n = qualified teachers at level n of education

T_n = total teachers at level n of education

n = 02 (pre-primary), 1 (primary), 2 (lower secondary), 3 (upper secondary) and 23 (secondary)

Interpretation:

A high value indicates that students are being taught by teachers who are academically well qualified in the subjects they teach.

Type of data source:

Administrative data.

Disaggregation:

By sex, level of education and type of institution (public/private). Disaggregation by location is to be defined.

Data required:

Number of teachers at each level of education who are qualified and total number of teachers at each level.

Data sources:

Administrative data from schools and other organized learning centres.

Limitations and comments:

It is important to note that national academic qualification requirements can vary from one country to the next. This variability between countries lessens the usefulness of global tracking because the indicator would only show the percent reaching national standards, not whether teachers in different countries have similar levels of academic qualifications. Further work would be required if a common standard for academic qualifications is to be applied across countries.

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

Definition:

Average number of pupils per qualified teacher at each level of education (pre-primary, primary, lower and upper secondary education).

A qualified teacher is one who has at least the minimum academic qualifications required for teaching their subjects at the relevant level in a given country.

Purpose:

To measure qualified teacher workloads and human resource allocations in educational institutions, and to give a general indication of the average amount of time and individual attention a pupil is likely to receive from qualified teachers.

Since qualified teachers play a key role in ensuring the quality of education provided the pupil/qualified teacher ratio is considered an important determinant of learning outcomes and an indicator of the overall quality of an education system.

Calculation method:

The total number of pupils and students in the relevant level is divided by the number of qualified teachers in the same level.

$$PQTR_n = \frac{E_n}{QT_n}$$

where:

$PQTR_n$ = pupil-qualified teacher ratio at level n of education

E_n = pupils enrolled in level n of education

QT_n = qualified teachers at level n of education

n = 02 (pre-primary), 1 (primary), 2 (lower secondary), 3 (upper secondary) and 23 (secondary)

Interpretation:

The higher the pupil/qualified teacher ratio, the lower the relative access of pupils to qualified teachers. Results can be compared with established national norms on the number of pupils per qualified teacher for each level of education.

Type of data source:

Administrative data.

Disaggregation:

By level of education and type of institution (public/private).

Data required:

Number of pupils and qualified teachers at each level of education.

Data sources:

Administrative data from schools and other organized learning centres.

Limitations and comments:

The 'ideal' pupil/qualified teacher ratios may depend on a wide variety of complex factors, including the age and academic needs of the pupils represented in the ratio (younger children or those with special educational needs typically require more time, attention, and instructional support from teachers) or the experience, skill, and effectiveness of the teachers (highly skilled teachers may be able to achieve better academic results with larger classes than less skilled teachers with smaller classes).

In calculating and interpreting this indicator, one should take into account the existence of part-time teaching, school-shifts, multi-grade classes and other practices that may affect the precision and meaningfulness of pupil/teacher ratios. When feasible, the number of part-time teachers should be converted to 'full-time equivalent' numbers of teachers; a double-shift teacher should be counted twice, etc. Ideally, all staff involved in direct classroom-teaching roles should be included in the calculations.

Pupil/teacher ratios are not equivalent to the average class size. It is also important to note that national academic qualification requirements can vary from one country to the next. Further work would be required if a common standard for academic qualifications is to be applied across countries.

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

Definition:

Annual gross statutory starting salary for a qualified primary or secondary teacher in public institutions relative to the average annual gross statutory starting salary for a basket of professions requiring a similar level of qualifications to qualified teachers. This indicator could be presented as a ratio.

Purpose:

To give an idea of the relative attractiveness of the teaching profession compared to other professions requiring a similar level of qualification. The rationale is that if salaries in the teaching profession are attractive, it is more likely to attract quality candidates.

Calculation method:

Annual gross statutory starting salary for a qualified primary or secondary teacher in public institutions, divided by annual gross statutory starting salary for a basket of professions which require a comparable level of education.

$$RTS_n = \frac{TS_n}{OS_n}$$

where:

RTS_n = average teacher statutory starting salary at level n of education relative to other professions

TS_n = annual gross statutory starting salary for a qualified teacher for level n of education

OS_n = average annual gross statutory starting salary for basket of professions requiring similar level of qualifications

n = 1 (primary) or 23 (secondary)

Interpretation:

If this indicator is presented as a ratio, a value above 1 would indicate that, from a starting salary perspective, the teaching profession is relatively attractive. A value below 1 would suggest that, relative to other professions requiring a similar level of qualifications, the teaching profession is less attractive. Assuming that relative salary is an important motivating factor to recruit quality teachers (and that is a fair assumption), an indicator with a higher value (above 1) could be considered a positive sign for the recruitment of candidates of quality.

Type of data source:

Administrative data.

Disaggregation:

By level of education.

Data required:

Salary scale for qualified teachers in public schools at the primary and secondary levels of education; salary scales of professions requiring similar level of qualifications.

Data sources:

At the national level, salary scales are usually available in ministries of education, and if the basket of comparable professions is for other government employees, salary scales would also be available in their respective ministries (e.g. ministry of health for nurses' salary scale, ministry of interior for police salary scale).

Labour force and/or socio-economic surveys carried out by statistical offices may collect some information about occupation and wages, but maybe not in a way appropriate for the calculation of this indicator.

Limitations and comments:

The exact wording, definition and computation method for this indicator will need to be carefully considered and offer a compromise between ease of data collection, comparability and logical link with the target. For example, a choice must be made between statutory salary, remuneration (salaries and bonuses), or total compensation (salary, bonuses and employer pension contribution). Salaries are probably the simplest to collect, since bonuses are difficult to average as they vary depending on hours worked, location, etc. Pensions are sometimes provided by a central government agency and not by the Ministry of Education. However salaries in themselves may not offer a good representation of what benefits a teacher will get, which includes bonuses and potential pension and/or other social security benefits. Whether starting salaries or salary after a certain number of years will be used must also be clarified.

Statutory starting salary (not including bonuses, allowances and pension contributions) is recommended as a better choice than the more vague 'average' salary both from a data collection and logical point of view (since the target is about attracting good candidates, starting salary makes sense).

Another important element to clarify is to which other occupations teachers will be compared. Ideally, the list would vary from country to country to reflect the reality of each labour market, but for a global data collection point of view this would be unrealistic. More suitable may be to decide on a few occupations

(4-5) which, in general, require a similar level of qualification to a teacher, and collect salary data on these on a country-to-country basis. Whether the comparison will be made to each other occupation, or to an average for the chosen ‘basket’, also remains to be decided (an average for a basket of 4-5 professions is recommended).

4.c.6 Teacher attrition rate by education level

Definition:

Percentage of teachers at a given level of education leaving the profession in a given school year.

Purpose:

Teacher shortage is a significant contributing factor that widens equity gaps in education access and learning. Assessing and monitoring teacher attrition is essential to ensuring a sufficient supply of qualified and well-trained teachers as well as to their effective deployment, support and management.

Calculation method:

The number of leavers is estimated by subtracting the number of teachers in year t from those in year t-1 and adding the number of new entrants to the teaching workforce in year t. The attrition rate is the number of leavers expressed as a percentage of the total number of teachers in year t-1.

$$TAR_{n,t} = \frac{(T_{n,t} - T_{n,t-1}) + NET_{n,t}}{T_{n,t-1}}$$

where:

$TAR_{n,t}$ = teacher attrition rate from level n of education in year t

$T_{n,t}$ = teachers in level n of education in year t

$T_{n,t-1}$ = teachers in level n of education in year t-1

$NET_{n,t}$ = new entrant teachers to level n of education in year t

n = 02 (pre-primary education), 1 (primary education), 2 (lower secondary education), 3 (upper secondary education) and 23 (secondary education)

Interpretation:

A high value indicates high levels of teacher turnover which can be disruptive for the learning of students. Where teachers teach for 30-40 years, the attrition rate will be well below 5%. Attrition rates above 10% indicate that the average teaching career lasts only 10 years.

Type of data source:

Administrative data.

Disaggregation:

By sex and level of education.

Data required:

Number of teachers at each level of education in years t and t-1 and number of new entrant teachers at each level in year t.

Data sources:

Administrative data from schools and human resources records on educational personnel.

Limitations and comments:

In calculating this indicator, care should be exercised to avoid double counting regarding teachers that teach more than one level of education. Also, the existence of part-time teaching, school-shifts, multi-grade classes and other practices that may affect the precision of the number of teachers and the new entrants to the teaching profession should be taken into account.

This indicator does not provide information about the reasons why teachers leave the profession. Analysis of factors leading to teacher attrition usually requires detailed data collection (e.g. survey of teachers who have left the profession, annual school censuses) which may be challenging due to low response rates or large numbers of teachers leaving the profession for unknown reasons.

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

Definition:

Percentage of teachers by level of education taught (pre-primary, primary, lower secondary and upper secondary education) who, during the last academic year, have received in-service training required for teaching at the relevant level in a given country, by type of training received.

Purpose:

In-service teacher training programmes usually aim to improve the quality of classroom instruction. Besides pre-service qualification and training requirements, teachers should receive from time to time relevant in-service training for the level of education they teach in order to enhance their teaching proficiency. This indicator measures the share of the teaching work force which received in-service training during the last academic year.

Calculation method:

The number of teachers in a given level of education who received in-service training in the last year of a given type is expressed as a percentage of all teachers at that level of education.

$$PTIN_{n,j} = \frac{T_{n,j}}{T_n}$$

where:

$PTIN_{n,j}$ = percentage of teachers in level n of education receiving in-service training in the last year of type j

$T_{n,j}$ = teachers in level n of education receiving training in the last year of type j

T_n = total teachers in level n of education

n = 02 (pre-primary), 1 (primary), 2 (lower secondary), 3 (upper secondary) and 23 (secondary)

Interpretation:

A high value indicates that teachers are receiving additional training during their working careers in the given area of training thus enhancing their ability to teach.

Type of data source:

Administrative data or school-based surveys.

Disaggregation:

By sex, level of education, and type of training.

Data required:

Number of teachers at each level of education who received in-service training of each type in the last year and the total number of teachers in each level of education.

Data sources:

Surveys of head teachers or administrative data from schools, other organized learning centres and national teacher training centres.

Limitations and comments:

For ease of reporting, 'the last academic year' has been used as a proxy for 'the last 12 months'. While calculating this indicator, care should be exercised to include all teachers at a given level of education who received in-service training as part of their teaching responsibilities during the last academic year. Double counting of teachers who teach more than one level of education should be avoided.