



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 most students are being taught by teachers who are pedagogically well-trained to teach.

Type of data source:

Administrative data.

Disaggregation:

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:

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). 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 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 $t-1$.

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

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.