

SPECIAL REVIEW

INDICATORS IN EDUCATION

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Introduction

1. This article gives a brief review of some of the statistical indicators used in education. Apart from detailed statistical analyses used in educational planning, administration and research, indicators are compiled to give users a summarized picture of how the education system and sub-systems are functioning. However useful such indicators might be in serving as overall measures of the performance of the education system, especially in monitoring changes in the system, readers should not read too much into them. A more thorough understanding of how the education system or sub-system function can only be achieved through an in-depth study of all information available.

2. There are three main sources of education statistics from which indicators on education are compiled:

- (a) Population censuses and household surveys;
- (b) Surveys of schools, teachers and pupils;
- (c) Administrative returns or records kept by schools and other educational institutions, and agencies responsible for the administration of the education system, which include the Education Department and the Hong Kong Examinations Authority.

3. Population censuses are carried out by the Census & Statistics Department every five years. They provide information on the educational attainment of the population and data on other aspects such as field of study and participation in full-time or part-time education. For the periods between censuses, information on the educational attainment of the population can be obtained via the General Household Survey conducted by the Census & Statistics Department. More specific information not available in population censuses, such as illiteracy, educational qualifications obtained abroad and participation in adult education was obtained through the General Household Survey.

4. Regular surveys of schools, teachers and pupils are conducted by the Education Department. In addition, statistics are also compiled as a by-product of the Department's administrative functions. These provide most of the basic statistical information required in educational planning, administration and research. Other teaching and non-teaching agencies in the education system, which include the higher education institutions and the Hong Kong Examinations Authority, also compile statistics required for their own institutional planning.

Types of Indicators

5. At the risk of over-simplification, statistical indicators on education can be classified into two main groups: quantitative indicators and qualitative indicators. As the main concern of educational planners is to determine how much education for how many and the quality of education provided, these two groups of indicators are expected to give a summary picture of:

Quantitative Indicators

- (a) The number and proportion of children receiving education at various levels;

Qualitative Indicators

- (b) The input of resources into the education system, which are believed to have an effect on the quality of education provided;
- (c) The internal efficiency of the education system which reflects how well the education system is working and is determined to a great extent by the quality of education provided.

Quantitative Indicators

6. *Gross Enrolment Ratio* The commonly used quantitative indicators are the gross and net enrolment ratios. The gross enrolment ratio is the number of pupils enrolled at a given level of education expressed as a percentage of the total number of children in the age group considered appropriate for the level of education concerned. For instance, the gross primary enrolment ratio is defined as the number of primary pupils expressed as a percentage of the total number of children in the 6-11 age group. Table 1 shows the gross enrolment ratios for pre-primary, primary, secondary and tertiary levels of education for the period from 1978-1983:

TABLE 1 GROSS ENROLMENT RATIOS (PERCENTAGES) BY LEVEL OF EDUCATION, 1978-1983

	(age group)	1978	1979	1980 (as at September)	1981	1982	1983
Pre-primary	(3-5)	77	80	83	83	83	84
Primary	(6-11)	111	108	108	107	108	108
Secondary	(12-18)	61	62	64	65	68	70
Tertiary†	(19-21)	8	8	8	8	9	10

† Tertiary education comprises the two universities, the Hong Kong Polytechnic, the Colleges of Education, Technical Institutes, Baptist College and the other two approved private post-secondary colleges (Lingnan College and Shue Yan College) offering courses at the post-secondary level.

It should be noted that the above figures include only full-time enrolment, which is the usual practice. Changes in the enrolment ratios reflect changes in the proportion of children in the relevant age group receiving education. However, the ratio does not give the exact proportion of children in a given age group receiving education because:

- Not all pupils at a given level of education fall within the prescribed age range. For instance, in September 1983, it is estimated that about 9.7% of the primary pupils were not in the 6-11 age group. A significant number of over-aged primary pupils explains why the gross primary enrolment ratios in Table 1 exceed 100%;
- Some of the children in a given school-age group are studying at a level of education higher or lower than the appropriate one. In September 1983, for example, about 1.2% of children aged 6-11 were still receiving pre-primary or kindergarten education.

7. *Net Enrolment Ratio* The net enrolment ratio is defined as the proportion of children in a given age group receiving full-time education at the appropriate level. Thus, the net primary enrolment ratio is the number of primary pupils aged 6-11 expressed as a percentage of the total number of children aged 6-11. Table 2 presents the net enrolment ratios for the various levels of education:

TABLE 2 NET ENROLMENT RATIOS (PERCENTAGES) BY LEVEL OF EDUCATION, 1978-1983

	(age group)	1978	1979	1980 (as at September)	1981	1982	1983
Pre-primary	(3-5)	73	77	80	81	81	82
Primary	(6-11)	96	96	96	97	97	98
Secondary F/M 1 to 3	(12-14)	70	73	75	77	79	81

Since the age distribution of students at the tertiary level of education are not available in the enrolment statistics, it is not possible to compile the relevant net enrolment ratio.

8. The net enrolment ratio gives the exact proportion of children in a given age group attending schools at the appropriate level. This ratio is in a sense better than the gross enrolment ratio in showing changes in educational opportunities for children in different age groups. However, because of late entry and repetition some of the children in a given age group are not receiving education at the appropriate level. For example, in September 1983, some 1.2% of children in the primary school-age group (i.e. 6-11) were still in kindergarten. Consequently, the ratio can at best give an incomplete picture of the participation of children in full-time education.

9. *School Attendance Ratio* A more comprehensive indicator of the proportion of children in a given school-age group receiving full-time education (ordinary and special education) is the school attendance (or non-attendance) ratio. This is usually derived from statistics collected in population censuses on the activity status of the population. Table 3 shows the percentages of children in various school-age groups attending schools or educational institutions at the time of the censuses.

TABLE 3 SCHOOL ATTENDANCE RATIOS (PERCENTAGES) BY SCHOOL-AGE GROUP, 1971, 1976 and 1981

	1971	1976	1981
6-11 age group	95	98	98
12-18 age group	66	64	71
19-21 age group	17	10	14

Again it should be remembered that the level of education actually received by children in a given school-age group (say 12-18) may not correspond to the appropriate level of education (i.e. secondary). In 1981, for example, about 10.3% of children aged 12-18 were attending primary schools.

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10. School attendance ratios can be derived from statistics on the age distribution of pupils in schools from the enrolment surveys and the estimated total population in a given age group. However, because the two sets of statistics are both subject to estimation and reporting errors, the derived school attendance ratios have to be interpreted with care. The school attendance ratios for the period 1978–1983, in respect of the 6–11 and 12–18 age groups are shown in Table 4:

**TABLE 4 DERIVED SCHOOL ATTENDANCE RATIOS (PERCENTAGES)
BY SCHOOL-AGE GROUP, 1978–1983**

	1978	1979	1980 (as at September)	1981	1982	1983
6–11 age group	100	100	100	100	100	100
12–18 age group	66	66	67	69	71	72

Qualitative Indicators

11. *Average Class Size* The average class size represents an indirect measure of the quality of education provided. The smaller the class size, the more attention teachers could give to individual pupils. As a result, in theory, the quality of teaching should be better in smaller than bigger classes, other things being equal. It is also an indirect indicator of the amount of resources, on a per pupil basis, spent on the education system. Table 5 shows the average class sizes in primary and secondary schools for the last six years:

**TABLE 5 AVERAGE CLASS SIZES (NUMBER OF PUPILS PER CLASS)
IN PRIMARY AND SECONDARY SCHOOLS, 1978–1983**

	1978	1979	1980 (as at September)	1981	1982	1983
Primary	36.5	36.8	37.0	36.9	36.9	36.6
Secondary	41.7	41.1	40.7	40.3	39.8	39.0

12. *Pupil/teacher Ratio* As teachers' salaries represent a major proportion of total recurrent costs in education, the pupil/teacher ratio is also a measure of the amount of resources, on a per pupil basis, spent on education. This ratio supplements the average class size, and is a more commonly available indicator.

TABLE 6 PUPIL/TEACHER RATIOS IN PRIMARY AND SECONDARY SCHOOLS, 1978–1983

	1978	1979	1980 (as at September)	1981	1982	1983
Primary	29.8	29.8	30.1	30.1	27.8	27.8
Secondary	31.1	29.7	29.3	28.9	27.2	25.9

13. *Retention Rate* The retention rate is one of the measures of the internal efficiency of the education system. The retention rate for Primary 1 to 6, for example, is defined as the ratio of the number of pupils in Primary 6 to the number of pupils in Primary 1 five years ago. Thus, it is an approximate rate of promotion to Primary 6 for those studying in Primary 1 five years ago with no allowance being made for repeaters and new entrants in the higher grades. In Hong Kong, however, the incidence of and changes in repeating mean that this rate is not so useful, and indeed, can be quite misleading as a measure of efficiency of the education system.