



Indicators for educational planning: a practical guide

Claude Sauvageot

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Preface

Rational decision making necessitates, in every field, the availability of objective information and educational planners worldwide are aware of this. Many countries have databases at their disposal which are regularly updated when, for example, school censuses are carried out. Even if the quality and reliability of these data are far from perfect, their relevance and utility for decision making are evident. It should be noted, however, that in a number of countries, policy-makers make little reference to this information to guide their educational policies. This results, at least in part, from weaknesses in the presentation and dissemination of the available data. They are published, with few exceptions, only in annual statistical documents which are produced late, contain too much information and lack analysis. A decision-maker needs more analytical and relevant information, which is presented in a user-friendly way. The development of an indicators system, which is updated regularly, is essential if information is to be used properly.

In order to respond to this need, the International Institute for Educational Planning (IIEP) has implemented different activities in recent years, and foresees others within the framework of its new Medium-Term-Plan 1996-2001. These activities form part of the follow-up to the World Conference on Education for All which took place in Jomtien in March 1990. The framework for action emanating from this conference indeed emphasized the necessity to improve technical data-collecting services and procedures, as well as the processing and analysis of data on basic education.

Studies, carried out first in Zimbabwe and later in a number of Southern African countries, used research procedures based on a representative sample of schools in order to establish indicators for monitoring the quality of teaching in primary schools. Subsequently, two other projects, in Lesotho and in Mali, set out to prepare a document outlining the state and evolution of the education system in approximately thirty indicators, using the existing databases. Such documents represent the first step in the process of setting up an indicators system.

Preface

The success of these different activities led the Institute to programme a series of intensive training courses, with the aim of diffusing the concepts, methods and the techniques necessary for the development of a system of indicators. A first course was organized for nine French-speaking West African countries, in September 1995, in Ouagadougou, Burkino Faso. A second course took place in July 1996 in Nairobi, Kenya, for specialists from selected English-speaking countries of Eastern and Southern Africa. Many of the countries represented at these two courses are already well advanced in the preparation of the first issue of their national indicators report, while others have already published such a first report. Similar courses will be implemented in the coming years and will be addressed to other regions.

The reports developed in the African countries which are participating in this project, have a common objective: to put at the disposal of the education community a limited number of relevant indicators, which are easy to use. The choice of these indicators is made in function of the educational policy objectives. Their presentation is also similar: each indicator is presented in the form of a table and a figure and is accompanied by an analysis.

This practical guide aims at outlining, in general, the principles and tools to be utilized in order to develop an indicators report. It describes, in detail, the different steps to be taken and offers practical guidance for solving the various problems which may arise. The author, who was involved in the preparation of studies in Lesotho and Mali, is a member of the team within the French Ministry of Education, which annually publishes similar documents on France. In this guide, he regularly gives examples by drawing on his rich experience in this area. It is hoped that this publication will help educational planners and policy-makers to establish a useful and relevant indicators system, which can be regularly updated and which may be used for monitoring and finally improving the quality of education.

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Claude Sauvageot

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List of abbreviations

BEP	Brevet d'Etudes Professionnelles (Secondary school/ Certificate of technical education)
CAP	Certificat d'Aptitude Professionnelle (Secondary school/ Certificate of vocational skills)
CERI	Centre for Educational Research and Innovation
DAF	Department of Administration and Finance
DEA	Diplôme d'Etudes Approfondies (5 year university diploma equivalent to a UK or US Master's degree)
DEPS	Department of Evaluation and Prospective Studies
EUROSTAT	Statistics Office of the European Union
GDP	Gross Domestic Product
GER	Gross Enrolment Rate
GNP	Gross National Product
GTTC	General Teacher Training College
IIEP	International Institute for Educational Planning
IPES	Indicators for the Guidance of Secondary Schools
MOE	Ministry of Education
NER	Net Enrolment Rate
NSO	National Statistics Office
OECD	Organization for Economic Co-operation and Development
PEA	Priority Education Area
PTAs	Parent Teacher Associations
PSLE	Primary School Leaving Examination
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNICEF	United Nations International Children's Emergency Fund

Indicators for educational planning: a practical guide

Introduction

The concept of an indicator on the functioning of the education system, virtually absent from the agenda for about twenty years, has come back to the fore in many countries. Several reasons for this renewed interest can be identified.

In most countries of the world the education system is a vast organisation, which is complex to manage. Resources, easily allocated to education some time ago, are becoming rather difficult to obtain at a time when general financial restrictions prevail. The social and political stakes of education are important, but education policy-makers now have to use arguments more solidly based on quantified information, in order to defend education's share of a national budget that is often very difficult to balance. Irrespective of this need, education expenditure still represents a significant proportion of public spending, and it is therefore quite natural to make its utilisation more transparent.

At the same time, after significant increases up until 1980, in many countries enrolment has not managed to maintain the same growth rates. In several countries universal school attendance is more of an ambitious target than a quickly attainable objective. Moreover, the quality of education is a preoccupying problem almost everywhere.

For this reason, the availability of objective data, not only for the monitoring and planning of the education system, but also for use in public debates, is seen as a necessity by policy-makers and more generally by all members of the educational community. Hence a culture of evaluation is being re-born.

Most countries do have education data bases, which are updated quite regularly from the results of school surveys. Even though the quality and reliability of these data are far from perfect, their relevance and utility for

The availability of objective data, not only for the monitoring and planning of the education system, but also for use in public debates, is seen as a necessity by policy-makers.

policy decision-making are clear. However, one notes that only in a few countries do decision-makers refer to these data as a basis for their education policies. This problem is related to the presentation and dissemination of available data. With just a few exceptions, they are published only in cumbersome statistical year-books, which contain too many raw data and a dearth of analysis. A decision-maker needs a document that is easier to read and to interpret, in other words, more analytic and more to the point.

To meet these various needs, several types of publications containing diverse indicators have recently appeared. UNESCO initiated the first efforts of international comparisons. The OECD has increasingly developed this aspect over the last five years¹. At the same time, several publications, each pertaining to a single country, usually produced by that country's Ministry of Education, have appeared. The first were *L'Etat de l'école* in France², and *Education Indicators* in Quebec³. To complete the portrait of education offered by *L'Etat de l'école*, the French Ministry of Education has prepared a document, that looks at education characteristics by region, and hence highlights regional disparities. This document is called *Géographie de l'école*⁴. More recently, similar documents appeared in an exemple Finland, Denmark, and on a not so regular basis in Indonesia.

The IIEP became involved in this type of work in 1991, which has resulted in the publication of two documents, one covering Lesotho (in English), and the other Mali (in French)⁵. The originality of these various single country documents lies in the type of presentation and the way numerical data are analysed, and hence in the type of published document, rather than in the concept of indicators as such.

This guide is only a continuation of the thinking, which has been prevalent at the Institute for many years, on the construction of useful indicators for educational planning. Research programmes on different themes have resulted in an examination of the role of indicators. This is particularly true of work on school-mapping⁶, on regional disparities⁷, and more recently on the quality of education⁸.

Ideally, an indicators document reports on the functioning of the education system in all its aspects. The available information must be accessible to a readership not specialised in statistics and quantitative analysis. It is therefore easy to read and uses the latest data. Moreover, the document can be relatively easy to format, and its publication is not financially demanding.

Not all the documents, that have been produced, satisfy these criteria. For example, some are rather luxurious in presentation, and hence fairly expensive

to publish. But their common objective is to put at the disposal of the entire education community a restricted number of indicators, which are easy to use and provide a good description of the state of the education system. In fact, these documents have many points in common both with regard to the selection of indicators and to their presentation.

Therefore, it did seem possible, on the basis of these different experiences, to prepare a guide with a general presentation of the principles and tools to be used for the production of such documents. That is the objective of this publication. It is a continuation of the work already done by IIEP in this area. More specifically, this guide focusses on the preparation of a report covering one country as a whole. Nevertheless, some suggestions are given as to the preparation of documents on regional diversity in a country, on indicators for the monitoring of schools, and even as regards documents dealing with international comparisons.

The new micro-computing tools (hardware and software using Windows) greatly facilitate the production of such documents. Hence the main principles of using these tools are rapidly sketched out.

A first version of this guide was presented on the occasion of a training seminar, bringing together nine West-African French-speaking countries in Ouagadougou in September 1995: Benin, Burkina Faso, Côte d'Ivoire, Guinea, Mali, Mauritania, Niger, Senegal, Togo. The work done during this seminar resulted in a publication⁹. Thus this study benefited from the fruitful discussions held during this seminar. Indeed, many of the remarks and examples presented below are direct references to those discussions.

The guide was then translated and adapted to the needs of an English-speaking readership and the draft version was discussed during a second intensive training course¹⁰, held in Nairobi in July, 1996, which brought together representatives from the following countries: Botswana, Ethiopia, Kenya, Lesotho, Malawi, Mozambique, Somalia, South Africa, Tanzania, Uganda, Zambia and Zimbabwe. This final version, therefore, has also benefited from the discussions which took place during the second seminar.

Following those workshops, several participating countries have started working on setting up an education indicators system. Senegal, for instance, has succeeded in publishing an indicators report on basic education in 1995 and 1996. Mali has finalized a similar report which will be published soon. Different English-speaking countries of Eastern and Southern Africa foresee to publishing the first issue of their national indicators report in 1997.

Preliminaries

a

An information system

It is self-evident, that without a good information system, it is impossible to construct a relevant set of indicators. This is the necessary, but not sufficient condition, so dear to mathematicians.

Most countries of the world have set up information systems. The ever increasing size of the education system, and the growing complexity of its functioning, have made it important and necessary to set out the grounds and arguments that constitute the foundation of education strategies and actions. This imperative has been further accentuated by the search for efficient utilisation of resources, which are in many cases becoming increasingly rare. Hence the even greater need to develop or strengthen information systems, in order that they be integrated, as a principal component, into the planning or decision-making process.

This system is very time-consuming. Very often, it generates nothing but statistical year-books, that are not very accessible to most agents of the education system: decision-makers, teachers, parents, pupils. As a result, the quality and quantity of information have often declined, because information used, but little or not at all, runs a great risk either of losing its reliability, or of disappearing. For example, information about pupils' ages is no longer available in countries that used to collect it. Yet such information is essential for calculating the net enrolment rate, and hence for analysis of the intensity of enrolment. This means that a very important indicator can no longer be calculated, for lack of data. Moreover, in order to be useful, the information must be up-to-date. This leads to another major constraint: the availability of recent data, that is, from the current school year, or at worst from the preceding one.

This constraint of updated data is not always respected in many countries. It should be remembered that decision-makers cannot be expected to base their decisions on out-of-date information. They are interested in the impact of their actions, and therefore it is necessary to provide them with data for the current year, at a sufficient level of disaggregation to measure the effects of a recent policy. A minister needs pointers on the impact of his guidelines and actions; pupils' parents want to use the information for the present enrolment of their children.

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In order to improve on the availability and timeliness of information, an increasing number of countries rely on samples to collect educational data. Such a tool can be particularly useful in one or both of the following situations:

- to alleviate the burden on schools, some information (which is not needed, for administrative reasons, from all schools) will only be collected from a limited number;
- to rapidly obtain some feedback, for instance on the implementation of a new policy, a sample can offer the necessary relevant data.

In France, both scenarios exist. The distribution by age in primary schools is obtained on the basis of a sample survey. As such, not all schools need to send this rather cumbersome information to the ministry.

As for the second scenario, every year, the Ministry undertakes a quick survey of a sample of secondary schools, three days after the opening of schools. The Ministry thus gains, without delay, an initial idea of the evolution of enrolment in the different types of schools. This is a very useful input for the Minister's first press conference following the opening of schools. Some specific support is given to the schools in the sample to ensure a prompt and complete response. The sample is representative and fairly simple to construct, as the defined population (in this case the schools) is well known. The experience of the last few years has shown that the information the Ministry thus acquires is sufficiently precise, when compared to the results of the school census, which will be undertaken later in the year.

In this respect, it is useful to recall that the objectives of an indicators document and of a statistical year-book are not the same. The former strives to show the evolution of the education system, to underscore certain trends and to highlight problems. The latter tries to put all data on education into a single, all-encompassing set. Being exhaustive is imperative for the latter, but not for the former.

Reflecting on indicators can make it possible to improve the information system (in volume and in reliability). In fact, the publication of indicators constitutes information feed-back for those who produce it (school directors, regional offices, etc.). They are able to see how important, useful and utilised their information-collecting work is.

There is presently much discussion about data reliability. Undoubtedly, it is very often difficult to know the precision of a given item of information about school enrolment. However, there can be no question of waiting for some hypothetical data reliability to fall virtually out of the sky. Quite the contrary, it is

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by publishing and using data (naturally, with all necessary precautions), that one can improve their quality. This is the virtuous circle of statisticians.

It should be added, that some problems are so patent that they do not require precision of more than a decimal point. For instance, even with great uncertainty about the quality of demographic data, the regions of Misheweni in Tanzania or North-Eastern Kenya will not show up as having high enrolment rates, or the region of Gao in Mali will not show up as promoting the enrolment of girls. It is by giving life to statistics that one can improve their quality.

Moreover, decision-makers will be more eager to lend additional support to the efforts of departments that provide them with directly usable information.

The next step is to move from data collected by an information system to a set of indicators. We return to this step later on.

b

An education policy and/or an education plan

As mentioned above, an information system is vital, but not sufficient, for the construction of a relevant set of indicators. An education policy or plan are equally as important as far as the selection of indicators is concerned.

After all, in addition to providing a clear, relevant and simple description, indicators should measure events or changes of interest to the various agents of the education system. But then it is necessary that clear and measurable objectives for the education system be defined. These can be presented in different ways: through a plan, a framework policy, well identified measures in the education policy or in certain decrees, etc.

The work then consists in designing the most appropriate indicators for the selected objectives.

In Lesotho, the five-year plan aimed at ensuring literacy, that is, education through to the fourth year of primary school, for 80 per cent of one generation. Here the indicator is defined immediately: proportion of one generation reaching the fourth year of primary school. An objective of the same type has been set in Benin: a gross enrolment rate of 78 per cent is to be achieved by the year 2000, together with a repetition rate on the order of 15 per cent. In the Lao People's Democratic Republic, the objective is to increase net enrolment rate from 64 per cent (in 1990) to 80 per cent in the year 2000, and to raise the primary completion rate, from less than 30 per cent to 80 per cent in 2000. Adult literacy is to reach 80 per cent. Thailand, where primary education is much more developed, now aims at increasing the provision of

educational services at lower secondary level, so that all primary school graduates can transfer to this level by the year 2000. Most countries have defined such quantitative targets. Objectives of reducing disparities between girls and boys, or of increasing the proportion of the budget devoted to basic education can be put in the same category.

When the objectives and policy orientations are more vague, such as ‘improving the quality of teaching’, the work is trickier. One has to know what quality means in the country concerned: is it the qualification of the teacher, the achievement of the pupils, the average number of years spent at school, a schooling without repetition, a good rate of management support, etc.? This shows the utility of a debate preparing a fixed set of indicators, and the variability of difficulties in transforming a policy objective into an indicator. Objectives such as ‘strengthening institutional capacities’, ‘improving the school network’ or ‘improving management support for teachers’ are of the same nature.

Development of a list of indicators

a

What is an indicator?

An indicator may be defined as a tool that should make it possible both to have a sense of the state of an education system, and also to report on that state to the whole of the education community, in other words, to the whole of the country.

An indicator is not an elementary item of information.

An indicator may be defined as a tool that should make it possible both to have a sense of the state of an education system, and also to report on that state to the whole of the education community, in other words, to the whole of the country.

One misunderstanding is very important to avoid: an indicator is not an elementary item of information. It is information processed, so as to permit the study of an educational phenomenon. Therefore, one should not confuse a list of indicators with a set of tables produced for a statistical year-book or to meet management needs. The number of pupils entering secondary school is of interest to managers, as are the numbers of teachers and of pupils. In the former case, the indicator will be the proportion of a generation gaining access to secondary school, while in the latter, it will be the number of pupils per teacher. The difference is clear, and so is the difference in analytic potential.

It is often very tempting to add crude data to indicators. This distortion must be avoided, in order to preserve the appropriate character of work with indicators.

As mentioned in other works, the characteristics of a good indicator may be outlined as follows:

- its relevance;
- its ability to summarize information without distortions;
- its co-ordinated and structured character, allowing it to be related to other indicators for a global analysis of the system;
- its precision and comparability;
- its reliability.

It should make it possible to:

- measure how far or how close one is from an objective;
- identify problematic or unacceptable situations;

- meet policy concerns, and to answer the questions leading to its choice;
- compare its value to a reference value, to a standard or to itself, as computed for a different observation period.

A system of indicators should work like a control panel. It facilitates the identification of problems, and allows for their magnitude to be measured. Detailed diagnosis and the search for solutions are done by complementary analysis and research. An apt image (classical but appropriate) would be that of a light warning that an engine is over-heating. When the light goes on, a specialist has to find out why, and then find the solution to the problem.

In summary, indicators play an important role in monitoring and evaluating the functioning of the education system.

b

What should be measured?

In order to construct a good indicator, one has to be able to identify the most interesting phenomena to measure, which will depend, *inter alia*, on the country's choices, as inspired by the objectives of its education policy. The relevance of some indicators is more universal, and also more descriptive, but in every case their importance will depend on the context. The enrolment rate in primary education is a good indicator. But when a country has full school attendance, it loses much of its importance. No surprise, then, that the net enrolment rate at the primary level is certainly present in the indicator documents for Mali and Lesotho, but does not appear in France's *L'Etat de l'école*. On the other hand, the latter document contains an indicator of enrolment among children aged two to five years, which is of less importance in Mali and in Lesotho. It is thus very necessary to analyse the situation and the specific projects of the country concerned.

These indicators must also aim to describe the education system. In this respect, simplicity and precision must be the order of the day. A general overview is needed; it should provide points of comparison for the analysis of various phenomena. Moreover, it is clear that some aspects of an education system can only be observed in time series. Hence it is essential to present trends over several years. Finally, it is also essential to report on diversities or disparities, which may be multiple in nature: geographic or socio-demographic (gender, social class, etc.).

Apart from their descriptive aspects, the indicators must provide grounds for an analysis of the education policy. However, one should be able, by using a set of indicators, to find a means of better understanding and an

explanation of the causality relations underpinning the functioning of the education system. Such is the price of transparency.

Naturally, these different interpretations are delicate. This is why it is important that the selected group of indicators allow for several points of view. This is difficult work, but it is the only way to provide monitoring tools to decision-makers, and the means of understanding to the society as a whole.

C
From objectives to indicators

The identification of these indicators is done as a function of the objectives of the education policy.

For the constitution of the list of indicators and its subsequent analysis, a good way of proceeding is to identify some fundamental objectives of the education policy (about ten or so), and to classify the indicators by the objectives they are used to evaluate. The identification of these indicators is done as a function of the objectives of the education policy. Naturally, the same indicator can be used for several objectives. Different scenarios are set out below.

As examples of education policy objectives, both general and more specific, one can mention a few among those selected from different countries.¹

- Qualitative and quantitative development of primary education.
- Universalization of access to education.
- Raising the NER from 66.2 per cent in 1989/90 to 80 per cent in 2010.
- Improving the quality of teaching.
- Consolidating the internal efficiency of the system.
- Improving management support for teachers.
- Improving the qualifications of teachers.
- Attract and retain teachers in primary schools.
- Reduce pupil/textbook ratio from 4 to 2.
- Health and nutrition for pupils in lower grades.
- Attaining equal opportunity between girls and boys and by zone.
- Reduce drop-out rate of girls from 10% to 8%.
- Increasing basic education's share of the budget.
- Defining new strategies to control rising costs.
- Improve school management.

¹ These objectives came from different sources: some were identified by participants at the two courses, organized by the IIEP, while others are quoted in various national policy documents.

These objectives relate to four themes: access to education, the quality of teaching, disparities, and management and finance. Some are more precise than others. The difference between ‘improving the quality of teaching’ and ‘improving the qualifications of teachers’ is evident. A more precise definition of the objective facilitates the choice of indicators.

Pages 20 and 21 present the lists of objectives and indicators established for Mali and Lesotho. The columns show the objectives, of which each country identified eight. To each of these objectives there correspond a certain number of indicators, 32 in total for Mali, and 36 for Lesotho.

The objectives identified for Mali were as follows (see *Table 1*):

- increasing the education system’s **entry capacity**;
- increasing the **intensity of enrolment**;
- making the education system more **efficient**;
- improving the state of **facilities** and the availability of teaching materials;
- enhancing **pedagogical support** for teachers;
- improving the **quality** of teaching;
- increasing **enrolment of girls**;
- improving the management of resources and **costs**.

Five of these objectives are also to be found among those identified by Lesotho (see *Table 2*). These are the ones pertaining to: enrolment, efficiency, facilities, quality and costs.

Three different objectives were added in Lesotho:

- reducing **over-crowding** of classrooms;
- improving the **management** of the education system;
- improving the **achievement** levels of pupils.

Comparing these two lists, several comments can be made.

Lesotho is very concerned about over-crowding in its classrooms. As a remedy, it wants to restrict school entry for pupils who are either overage or underage. Consequently, Lesotho clearly indicated this objective, and constructed four indicators to measure it: number of pupils per classroom, percentage of underage pupils in first year, percentage of overage pupils per year of studies, and the pupil:teacher ratio. It will carefully monitor their evolution, in order to verify whether the objective of reducing the number of

Table 1. THE TRANSITION FROM OBJECTIVES TO INDICATORS
EXAMPLE - Mali: Indicators by objective

	Entry capacity	Intensity of enrolment	Efficiency	Facilities	Pedagogical support	Quality	Enrolment of girls	Costs
Schools	X							
Classrooms	X							
Number of pupils per classroom	X		X			X		
Multigrade classes	X							
Facilities for pupils				X				
Double shifts	X		X			X		
The state of infrastructure	X					X		
Gross admission rates	X						X	
Gross enrolment ratios	X						X	
Net enrolment ratios		X					X	
Repetition rates		X	X			X		
Access to different levels			X			X	X	
Access to diplomas			X			X	X	
Proficiency of pupils			X			X		
Pupils/teacher ratio	X		X			X		
Proportion of women among teaching staff							X	
Qualifications of teachers			X			X		
In-service training of teachers			X		X	X		
IPEG graduation flows	X		X		X	X		
Teaching materials			X	X		X		
PTA activities	X			X		X		
Pedagogical support					X	X		
Public expenditure on education as a share of GDP								X
Pub. expend. on educ. as a share of total public expend.								X
Expenditure on operations, facilities, investment								X
Sources of education funding								X
Education expenditure by level								X
Cost per pupil by level								X
Ratio by level of cost per pupil/per capita GDP								X
Education expenditure by type								X
Cost per teacher by level								X
Ratio of cost per teacher to per capita GDP								X

Source: Ministry of Basic Education of Mali, 1993. *L'Enseignement fondamental au Mali, Indicateurs, 1993*. Paris: UNESCO/International Institute for Educational Planning, p.50.

Table 2. THE TRANSITION FROM OBJECTIVES TO INDICATORS
EXAMPLE - Lesotho: Indicators by objective

	Facilities	Over-crowding	Management	Activities	Efficiency	Results	Quality	Costs
Percentage of pupils in classroom	x							
Pupils/classroom ratio		x						
Percentage of underage pupils in standard 1		x						
Percentage of overage pupils		x						
Net admission rate				x				
Net enrolment ratio				x				
Repetition rate					x			
Percentage of pupils completing standard 3					x			
Percentage of pupils completing standard 7					x			
Percentage of pupils gaining PSLE					x	x	x	
Availability and use of syllabus					x		x	
Availability and use of guides					x		x	
Availability and use of textbooks					x		x	
Use of guidelines					x		x	
Use of radios					x		x	
Number of pupils seated at desk	x							
Pupils/teacher ratio		x			x		x	
Qualification and experience of teachers					x		x	
In-service training					x		x	
Upgrading programme (LIET)					x		x	
NTTC graduates					x	x		
Attrition rates					x		x	
Teachers in hardship areas	x						x	
Teacher's house	x						x	
Professional support of teachers					x		x	
Management by inspector			x				x	
Activity level of school committee			x					
Total expenditure for education as a percentage of GDP								x
Total expenditure for education by school level								x
Sources of funding for educational institutions								x
Public expenditure on education as a percentage of total public expenditure								x
Expenditure per school pupil								x
Expenditure per school pupil in relation to per capita GDP								x
Expenditure per school teacher								x
Expenditure per school teacher as a proportion of per capita GDP								x
Sources of payment for teachers								x

Source: Ministry of Education, Lesotho. *Primary education in Lesotho, Indicators 1992*. Paris: UNESCO/International Institute for Educational Planning, p.38.

pupils per classroom is being achieved, and whether pupils are enrolled at the right age. Mali did not formulate such an objective. Its main problem is the development of intake capacity, and one can see that there are many, as many as eleven, indicators measuring this objective.

The enrolment of girls in Mali is half that of boys, hence the country's objective of developing the enrolment of girls. This is obviously not the case in Lesotho, which is one of the few countries of Africa with a higher enrolment of girls than of boys. On the other hand, both countries are very concerned about the efficiency of teaching. This objective is measured by seventeen indicators in Lesotho and eleven in Mali. However, the context of this concern is not the same. Lesotho has to produce well-trained young people, who can then easily find work in South Africa, for almost 50 per cent of Lesotho's GNP consists of the revenue of workers employed in that country. In the case of Mali, the concern is to make sure that resources are utilised optimally for the small number of enrolled pupils. Similarly, facilities and costs are mentioned in both countries.

The above clearly shows how important the given country's orientations and problems are for the choice of indicators.

d

How to classify indicators

Classifications of indicators vary from one publication to another. If the 'analysis of functioning' aspect is predominant, the breakdown used is into costs, activities and results, supplemented by a description of the social and cultural environment. If one wants to classify by the different entities, then one can use a breakdown of the type: schools, pupils, teachers, costs.

Several publications use the first classification, e.g., *L'Etat de l'école* and *Géographie de l'école* in France, *Facts and Figures* in Denmark, and the OECD's *Education at a glance*. The work done by the IIEP in Mali and Lesotho tends to apply the second.

One could also use groupings around major themes: the level of knowledge of pupils, preparation for the labour market, preparation for social life, the equity or democratisation of education. One then measures the effectiveness or the efficiency of the education system in these four areas. But these are themes for transverse analysis of indicators, rather than a logical way of presenting the document.

Finally, presentation in the form Resources / Activities - Processes / Results is no doubt the one that most facilitates the reader's analysis. It is the closest

to an explanatory model of education systems. The three components are actually linked by close and multi-directional relations. One can add the characteristics of the socio-demographic environment that interact with each of the components.

In any event, the sub-classifications resulting from each method are very similar: the breakdown by level of teaching is always present, accompanied by an analysis of costs. One could imagine moreover constructing several forecasting indicators, for example, on the future required numbers of teachers, but always on the condition of availability of reliable demographic data.

e

Summary

Summarising the preceding sections, it can often be said that there are two main steps to be taken in analysing indicators, which must be present and which constitute the heart of any work of this type:

- **The descriptive analysis:** this consists of the presentation and description of distributions related to official standards or average objectives. Chronological analysis and analysis of disparities (by region, by gender, urban or rural zones,...) will supplement the comparison with standards. This analysis will concern, first and foremost, the school admission rates and the enrolment rates at different levels. In this regard, it is very important to have net rates, for only they give an idea of the intensity of enrolment. Gross rates only give an indication of the system's intake capacity. Certain expenditure and cost indicators are also indispensable: education expenditure's proportion of the state budget or of GDP, expenditure breakdown by type (operations, facilities), funding sources.
- **The causal analysis:** the first type of analysis, outlined above, is not sufficient. One must also seek to understand, to explain and to introduce causality into the relations that exist with the other variables, brought to light by the descriptive analysis. The selection of indicators will depend on the selected objectives. Three categories which must always be present are the following: quality, efficiency, and the analysis of costs both by pupil and by level.
 - (i) indicators on the quality of teaching could include: number of hours of courses, conditions offered to pupils (double shifts, number of pupils per classroom or per teacher, school cafeterias, boarding schools), qualifications of teachers, availability of teaching materials.

- (ii) for the efficiency or the results of education: here one uses the rates of access to different levels, the repetition and drop-out rates, and examination pass rates and results of pupil evaluations, if such information is available.
- (iii) the analysis of costs per pupil and per level allows for verification of the match between expenditure and objectives: for example, is the distribution between basic education and higher education optimal?

The list of indicators should not be definitive, until after verification of the availability of the data needed to calculate the indicators.

Obviously, the list of indicators should not be definitive, until after verification of the availability of the data needed to calculate the indicators. Thus there will always be a compromise between what is desired and what is actually possible in reality. Policy-makers in Lesotho were interested in the use of the radio as a pedagogical tool. However, the available data did not allow for the calculation of this particular indicator. In some other cases, work on indicators may result in the addition of new questions to existing surveys, or even to the design of new surveys. For instance, Mali is trying to obtain more information about class text-books available to pupils. Lesotho asked for information about visits by inspectors, or the activities of school related associations. Sample surveys will be held in Lesotho to obtain information about the use of pedagogical manuals.

The number of selected indicators should not exceed about forty, for beyond that number the document is no longer easy to use.

The number of selected indicators should not exceed about forty, for beyond that number the document is no longer easy to use. Most publications, referred to in this guide, meet this standard, which is welcomed by their users. The OECD's *Education at a glance* has exceeded this upper limit, which many readers regret, advising that the number be reduced, or divided into several publications. Partly in response to this critique, which was shared by the authors themselves, the OECD has been publishing, since 1996, two different documents: *Education at a glance*, which is now in its fourth issue; and a much briefer volume *Education at a glance - Analysis*, which covers four themes and adopts a different presentation. As indicated above, it is important to avoid the distortion that consists in transforming the document into just another statistical year-book. The concept of an indicator, as defined in the foregoing, must be safeguarded.

By way of examples, the lists of indicators chosen for *L'Etat de l'école*, *Education at a glance* and *Géographie de l'école* are reproduced below (Tables 3, 4 and 5). For Mali and Lesotho, the list has already been given, with a classification by objectives.

One can easily see the great similarities:

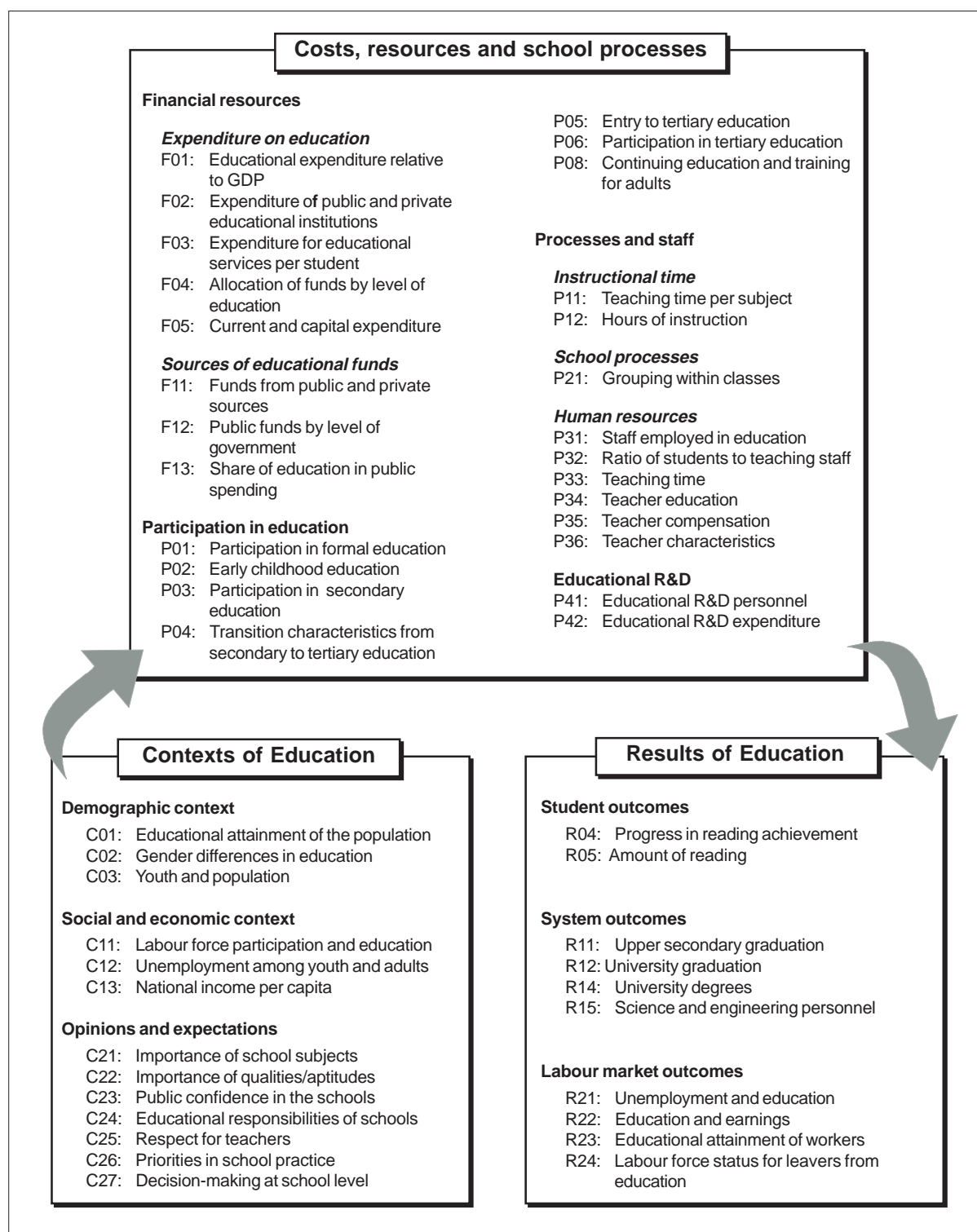
- indicators on the level of enrolment, and on the amount of education expenditure for descriptive purposes;
- indicators on access to different levels, achievements of pupils, duration of studies, and the influence of having a diploma on the likelihood of finding employment, which have a more analytic purpose.

Table 3. CONSTRUCTION OF A LIST OF INDICATORS
EXAMPLE - France: *Etat de l'école*

	General	Primary education	Secondary education	Higher education	Continuing education
Cost	1 Education spending 2 Education spending by the Ministry of Education (MOE) 3 Staff employed in the education system	12 Primary education spending	16 Secondary education spending	21 Higher education spending	27 Continuing education spending
Activities	4 Expected length of time spent in education 5 Percentage of pupils attaining the level of a baccalauréat or vocational qualification 6 Geographical differences in access to the baccalauréat	13 Schooling of two to five year-olds 14 Length of primary schooling	17 Demographic trends and progress with schooling 18 Annual hours of teaching	22 Immediate access of bacheliers to higher education 23 Percentage of young people in higher education	28 Continuing education activities 29 Continuing education activities in State-run secondary and higher education establishments
Results	7 General level of conscripts 8 Young people's qualification on completing their basic education 9 Impact of qualifications on the chances of finding a job 10 The relationship between salary levels and qualifications 11 Impact of the baccalauréat or a higher education qualification on social status	15 Performance of pupils entering sixième in French and mathematics	19 Chances of obtaining a CAP, BEP or baccalauréat for pupils in sixième 20 Differences in the performance levels of lycées	24 Percentage of university entrants who go on to the second level 25 Success rates for DEAs and doctorates 26 Levels attained by young people on leaving higher education	30 Professional advancement of employees who have received continuing education

Source : Ministry of Education. 1995. Indicators on the education system (5th ed.). Paris. p. 6-7.

Table 4. CONSTRUCTION OF A LIST OF INDICATORS
EXAMPLE - OECD: *Education at a glance*



Source: OECD. 1995. (3rd ed.) *Education at a glance. OECD indicators*. Paris: Organization for Economic Co-operation and Development.

Table 5. CONSTRUCTION OF A LIST OF INDICATORS
EXAMPLE - France: *Géographie de l'école*

<p>The social and cultural environment</p> <p>The diploma level at 25 years of age or more</p> <p>Social structure and occupational sector</p> <p>The situation resulting from unemployment</p> <p>The wealth of regions and households</p> <p>The demographic situation</p> <p>Proportion of young people and enrolment intensity</p>
<p>Resources and their utilisation</p> <p>Education expenditure by the MOE and by regions</p> <p>The personnel of the national education system</p> <p>Composition of the teaching staff as of 1 January 1994</p> <p>Class size at the primary level</p> <p>Class size at the secondary level</p> <p>The dispersion of class sizes</p> <p>Proportion of grant holders</p> <p>Schools in ZEPs</p>
<p>The functioning of the system</p> <p>Enrolment at age 3</p> <p>Enrolment at the secondary level</p> <p>Access to matriculation ("baccalauréat")</p> <p>Academic situation at age 17</p> <p>The enrolment of girls</p> <p>Streaming at the end of the seventh year of school</p> <p>Streaming at the end of the general ninth year</p> <p>Guidance procedures at the end of the general ninth year</p> <p>Special education</p> <p>Enrolment of foreign pupils</p> <p>Private teaching institutions</p> <p>The weight of higher education</p> <p>Secondary graduates and new students</p> <p>Entry flows to university</p> <p>The third levels of university</p> <p>Geographic migration of higher education graduates</p> <p>Traineeships and employment/study alternation contracts</p> <p>In-service training</p>
<p>Achievements of pupils and their vocational careers</p> <p>School achievement</p> <p>School achievements in third grade and at entry to first year of secondary</p> <p>The general level of conscripts</p> <p>Secondary school withdrawals by level</p> <p>Proportion of secondary graduates</p> <p>Proportions of general, technological and vocational secondary graduates</p> <p>The situation of young people seven months after their break with the education system</p> <p>Vocational careers in the first three years after the end of studies</p>

Source : Ministry of National Education. 1995. *Géographie de l'école* (3rd ed.). Paris. p.1.

Structures to be set up

The list of indicators must be constructed with the close involvement of the various actors responsible for the preparation and implementation of education policy.

For this work on indicators, it is therefore often very useful to constitute a monitoring or steering committee, consisting of representatives of all these entities.

A project leader must be designated right from the outset. This is the person who will motivate the various structures set up or mobilised by the project. He/she will have good experience in the statistics field and good analytical skills of the education system. Moreover, he/she will be capable of steering a project of this type from its inception right through to final publication.

The project must be integrated into existing structures. For its first implementation, the existing entities will organise themselves in the best possible way, and it is in this sense that these comments are being made.

The list of indicators must be constructed with the close involvement of the various actors responsible for the preparation and implementation of education policy. As indicated previously, such involvement will facilitate the specification of objectives to be monitored.

These choices must be the subject of discussions among senior officials of all the units involved. For this work on indicators, it is therefore often very useful to constitute a monitoring or steering committee, consisting of representatives of all these entities. This group can be made up of members from different ministries, whenever, for example, higher education and vocational training come under other ministries. The point is to report on the whole of the education system, and not just the activities of one ministry.

Once the steering committee has identified the main orientations and the objectives to be measured, a working group, consisting of a small number of experts and chaired by the project leader, must do the actual implementation work.

In summary, two bodies are required: a project steering committee and a working group responsible for implementation. This is quite typical for project management, but it is indispensable. Deadlines should be clearly defined, with strict timetables for the production of indicators by the working group, and for policy validation by the steering committee.

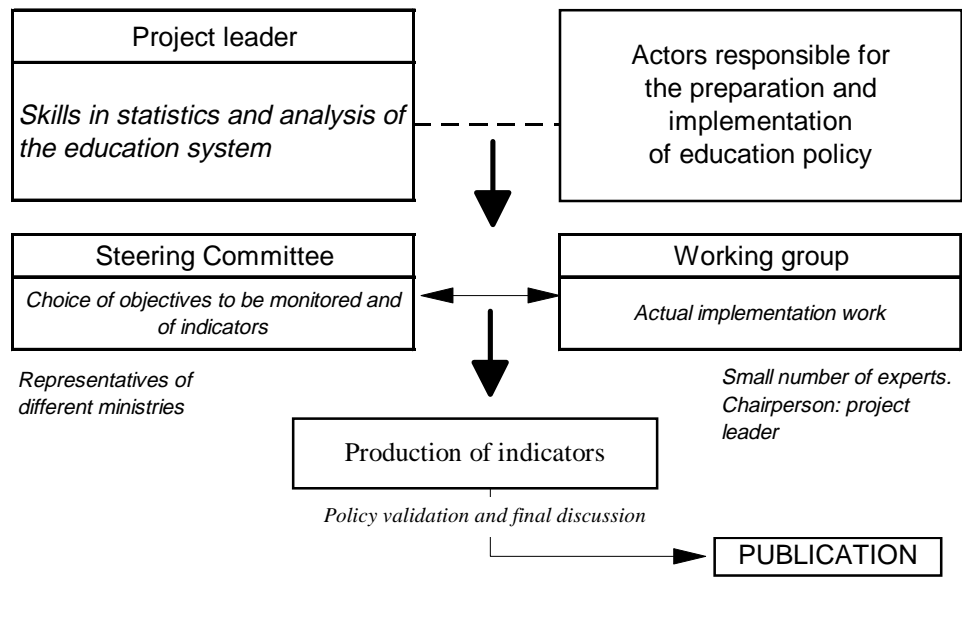
The total duration from the project's beginning to the publication of a first issue of the document must not exceed eighteen months, for the implementation deadline should be short in order to involve and mobilise all the necessary energy. The organisational form must keep this in mind.

Two or three meetings of the steering committee are enough to finalise a definitive list of the indicators to appear in the publication. Only substantial and unforeseen problems of data availability can then put into question the list validated by the steering committee.

After this validation, the steering committee becomes involved again during the final discussion of the document before its publication. We return to this point later (see Chapter 5, p.54).

For the sustainability of the operation, it is indispensable that the concerned entities of the ministry or ministries be involved. After the first edition, it is necessary to prepare number two, which is of capital importance for the project's success. If the operation ends after the first issue, the purpose is missed. Since it is always regular components of the administration that will produce the document, the project's organisation must involve them completely (this has already been mentioned), and then quickly be absorbed into the regular administration. Naturally, there will still have to be an editor-in-chief, as successor to the project leader. These points will be further specified below (see Chapter 5).

Figure 1. Structures to be set up



Preparation of the document

Once the indicators have been identified and the necessary structures have been set up, the preparation of the document itself can begin. The completion of a finalized report involves different steps. Firstly, an inventory of available sources and data should be presented. The following step, the calculation, is not as easy as it may appear at first glance. One reason for this is that it may be possible to use different methods of calculation. Therefore, it is essential to underline the importance of a precise definition of the indicators, particularly the necessity of a glossary to define the terms used. These issues are covered in detail in the following paragraphs, as well as the subsequent steps, that is: the verification of the consistency of the results; the analysis of the indicators; and the layout of the document using micro-computer tools.

a

Inventory of available sources and data: different types of data, annual surveys, selective data, management data

Most of the data needed to prepare an indicators' document come from annual school censuses, and from annual surveys about the staff, the results of examinations, and infrastructure components. Some are internal to the ministry of education, but not necessarily to its statistics department: for example, while data about pupils and schools are generally available from the statistics department, information about the personnel, their status, their housing conditions, their initial training and their in-service training is often available from the department that manages human resources.

Demographic data are usually the responsibility of the national statistics office; these data are extremely important, for it is essential to have the data per age for all years. It is necessary that estimates made for inter-census or post-census years (with respect to the last census) be of high quality. If this is not the case, enrolment rates may be very imprecise. Similarly, it is important to have regional data, in order to be able to report on regional disparities in enrolment. Finally, it is useful to have projections, so as to be able to forecast school enrolment, and hence teacher recruitment needs. Several forecasting indicators can then be constructed.

Financial data come from the department responsible for financial affairs, and from the national statistics office in charge of financial accounting. Many indicators need data such as the Gross Domestic Product, or information drawn from an analysis of the government's budget.

One can also use partial data covering several regions or a sample of pupils. For example, inspectors' reports are an important source of information about teaching materials or pedagogical support offered to teachers. Such information can be a good illustration of an analysis. Selective data, collected for a specific study or project, can be used in the same manner.

One should not hesitate to use data obtained from a sample. As indicated above, the important point is that the sample be well constructed and representative of the level under study.

One should not hesitate to use data obtained from a sample. As indicated above, the important point is that the sample be well constructed and representative of the level under study. It is sometimes absolutely necessary to have recourse to samples, because the study would be too expensive if done exhaustively. The resulting level of precision is quite acceptable for the analysis of many problems encountered in the education system.

The lists of data sources used to elaborate the documents on Mali and Lesotho are given in *Tables 6* and *7*.

One notes the significance in Mali of data obtained from inspection reports or from the follow-up to a project: 14 indicators are taken from inspection reports, and 8 from the project's follow-up.

It should be specified that inspection reports in Mali are standardised and serve as statistical sources. But the large number of indicators associated with a project can cause a problem, because there is no guarantee of the permanence of such indicators. It is important that data, identified as indispensable for the calculation of indicators, be collected through regular surveys. Otherwise, these indicators will disappear, and constructing time series for analytical purposes will no longer be possible. One sees here how important it is to build up a long-lasting system of information collection for calculating indicators.

From this point of view, Lesotho has a more stable system, since only 6 indicators are drawn from specific surveys.

b

Calculation

A calculation formula must be given explicitly for each indicator.

A calculation formula must be given explicitly for each indicator. This procedure makes it possible to draw up the detailed list of basic information needed to calculate the indicators. For example: for the net enrolment rate corresponding to the theoretical ages of primary education (often 6-11 or

Table 6. INVENTORY OF SOURCES OF INFORMATION
EXAMPLE - Mali: Indicators by source

	Reports by inspectors	Follow-up to the IVth project	D.A.F.	World Bank Report	Report on education funding	NSO demogra. data	NSO econom. accounts
Schools	X						
Classrooms	X						
Number of pupils per classroom	X						
Multigrade classes		X					
Facilities for pupils		X					
Double shifts		X					
The state of infrastructure		X					
Gross admission rates	X					X	
Gross enrolment ratios	X					X	
Net enrolment ratios	X					X	
Repetition rates	X						
Access to different levels	X						
Access to diplomas	X						
Proficiency of pupils		X					
Pupils/teacher ratio	X						
Proportion of women among teaching staff	X						
Qualifications of teachers	X						
In-service training of teachers		X					
GTTC graduation flows	X						
Teaching materials		X					
PTA activities		X					
Pedagogical support	X						
Public expenditure on education as a share of GDP			X	X	X		X
Pub. expend. on educ. as a share of total public expend.			X	X	X		
Expenditure on operations, facilities, investment			X	X	X		
Sources of education funding			X	X	X		
Education expenditure by level			X	X	X		
Cost per pupil by level			X	X	X		
Ratio by level of cost per pupil/per capita GDP			X	X	X		X
Education expenditure by type			X	X	X		
Cost per teacher by level			X	X	X		
Ratio of cost per teacher to per capita GDP			X	X	X		X

Source: Ministry of Basic Education of Mali, 1993. *L'Enseignement fondamental au Mali. Indicateurs, 1993.*
 Paris: UNESCO/International Institute for Educational Planning, p.51.

Table 7. INVENTORY OF SOURCES OF INFORMATION
EXAMPLE - Lesotho: Indicators by source

	Annual surveys	Teaching Service Unit	Inspectors report	Bureau of statistics report	Special surveys
Percentage of pupils in classroom	x				
Pupils/classroom ratio	x				
Percentage of underage pupils in standard 1	x				
Percentage of overage pupils	x				
Net admission rate	x			x	
Net enrolment rate (NER)	x			x	
Repetition rate	x				
Percentage of pupils completing standard 3	x				
Percentage of pupils completing standard 7	x				
Percentage of pupils gaining PSLE	x				
Avaibility and use of syllabus	x		x		
Avaibility and use of guides	x		x		
Avaibility and use of textbooks	x				
Use of guidelines	x		x		
Use of radios	x		x		
Number of pupils seated at desk	x				
Pupils/teacher ratio	x				
Qualification and experience of teachers	x				
In-service training					x
Upgrading programme (LIET)					x
NTTC graduates	x				
Attrition rates		x			
Teachers in hardship areas		x			
Teacher's house	x				
Professional support of teachers					x
Management by inspector					x
Activity level of school committee					x
Total expenditure for education as a percentage of GDP					
Total expenditure for education by school level	x				
Sources of funding for educational institutions					x
Public expenditure on education as a percentage of total public expenditure	x				
Expenditure per school pupil	x				
Expenditure per school pupil in relation to per capita GDP	x				
Expenditure per school teacher	x				
Expenditure per school teacher as a proportion of per capita GDP	x				
Sources of payment for teachers	x				

Source: Ministry of Education, Lesotho. *Primary Education in Lesotho. Indicators, 1992.*
 Paris: UNESCO/ International Institute for Educational Planning, p.39.

This procedure makes it possible to draw up the detailed list of basic information needed to calculate the indicators.

7-12), one needs to know the number of such children actually enrolled, and the total population of the same age. This explicit formula is also needed, because the same indicator, such as the enrolment rate or the access rate, can often be computed in different ways by different people. Thus one avoids, or at least reduces ambiguity. At this stage, it is of interest to specify the breakdowns required in the calculation of indicators: age, sex, other categories, etc. For example, the Lesotho document presents the explicit formula for each indicator, some of which are outlined below:

Indicator 1:	Percentage of pupils in classroom
Objective:	To measure the increase of pupils in classroom
Rationale:	Facilities, overcrowding
Level:	National and by district
Breakdown:	By district and by standard
Formula:	Number of pupils in classrooms ----- Number of pupils in primary schools
Source:	Annual surveys
Frequency:	Yearly
Indicator 2:	Percentage of underage pupils in standard 1
Objective:	To measure the decrease of underage pupils in standard 1
Rationale:	Overcrowding
Level:	National and by district
Breakdown:	By district, by sex
Formula:	Pupils < 6 years old in standard 1 ----- Pupils enrolled in standard 1
Source:	Annual surveys
Frequency:	Yearly
Indicator 3:	Net admission rate
Objective:	To measure the admittance
Rationale:	To assess capacity of school system to accept age 6 in school
Level:	National and by district
Breakdown:	By district, by sex
Formula:	New entrants aged 6 ----- Population aged 6
Source:	Annual surveys, Bureau of Statistics' reports
Frequency:	Yearly

Indicator 4:	Net enrolment rate
Objective:	To measure part of pupils enrolled in the normal age
Rationale:	Education for all
Level:	National and by district
Breakdown:	By district and by sex
Formula:	$\frac{\text{Number of pupils enrolled aged 6-12 years}}{\text{Total population aged 6-12 years}}$
Source:	Annual survey, Bureau of Statistics' reports
Frequency:	Yearly

Indicator 5:	Repetition rate
Objective:	To measure the decrease of repetition
Rationale:	Overcrowding, efficiency
Level:	National and by district
Breakdown:	By district, by standard and by sex
Formula:	$\% \text{ repeaters} = \frac{\text{Number of repeaters in standard x year y}}{\text{Total enrolment in standard x year y}}$ $\text{Repetition rate} = \frac{\text{Number of repeaters in standard x year y}}{\text{Total enrolment in standard x year y-1}}$
Source:	Annual surveys
Frequency:	Yearly

Some documents, for instance the one on Mali, also include, in the presentation of indicators, an approximation of its validity as indicated by the provider of the data. This allows the readers to make a more exact appreciation of the information with which they are provided.

It is also important to define the terms used; hence a glossary is an essential part of the final version of the document. The following is an extract from the glossary which was prepared for the Lesotho document. It should be noted that glossaries can differ from one country to another depending on the interpretation of the indicators.

Glossary

Age-specific enrolment rate: The proportion of a given age-group enrolled in school in a given year to the population of the same age in that year.

Attrition rate of teachers: The proportion of teachers who leave the profession permanently.

Capital expenditure: Expenditure entailed by construction, equipment, maintenance of school buildings and other resources that last for more than one year.

Church hall: A church used to accommodate one or more primary classes.

Classroom: Any building attached to a school used to accommodate a class, other than a church hall.

Cost per pupil: The average amount spent by the Ministry of Education (MOE) on each pupil.

Drop-out: Leaving school before the completion of a given stage of education or leaving at some intermediate or non-terminal point in a cycle of schooling.

Educational indicators: The indices, ratios or growth rates which are calculated using educational statistics and, where necessary, demographic, economic and other types of data.

Expenditure per pupil: The total expenditure of parents, the MOE, etc. per pupil.

Overage pupils: Pupils more than eight years old in standard 1, nine years old in standard 2, etc.

Pupil: A child enrolled in full-time education; the figures are taken from the attendance register.

Recurrent expenditure: Expenditure on items which are generally consumed in one year or less, including salaries and administration costs.

Teacher: Any person teaching full-time in a primary school, whether paid by the government or from private sources. The annual survey includes teachers temporarily absent, e.g. on sick leave. Any teacher on leave for a period of more than six months should not be included.

Underage pupils: Pupils less than six years old in standard 1.

C

Verification of the consistency of results

Having calculated various indicators, it is necessary to verify the consistency of the final results. After all, several sources of information will have been used, and every statistician knows the difficulties involved in such an approach. For example, it must be verified that the net enrolment rates do not exceed

100 per cent, that they are not inconsistent with employment rates, and that the education expenditure figures provided by the ministry of education are of the same order of magnitude as those provided by the ministry of finance, or the national statistics office. The verification is very important, because this is what ensures the validity of the overall effort. The necessary time must therefore be allocated to this step.

Some examples of consistency problems: in *Education at a glance* (3rd ed.), if one adds net enrolment rates to employment rates for the post-primary levels, one obtains rates above 100 per cent for several countries. Here we have a problem of definition. It turns out that training in alternation, such as on-site traineeships, is counted on both sides, because the young people concerned are in training, but at the same time they have an employment contract.

Net enrolment rates are also sometimes greater than 100 per cent, when there is a lack of consistency between demographic data and school data.

It is less surprising that, within a country, net enrolment rates exceed 100 per cent in some regions, in particular in capital cities, as children from more remote regions, with less school facilities, are enrolled in a more educationally developed region. In Tanzania, for instance, the net enrolment is 117.1 per cent in the West district, because it enrolls children from neighbouring districts.

For financial data, the budget as adopted is often used, because that is the easiest information to find. Often, it is also the most recent. However, it can be very different from the budget as disbursed, which is generally determined very late in the day, with a delay of one to two years. For Mali, studies of education funding, carried out by the World Bank, among others, have made it possible to shed light on all these problems, and to construct series of coherent data. This is quite rare, but very valuable when it occurs.

If all the data cannot be harmonised, estimations can be made. They require that appropriate and reliable information be available over a period of several years. The other solution is clearly to indicate the sources of the data, and to explain why there are differences.

If all the data cannot be harmonised, estimations can be made. They require that appropriate and reliable information be available over a period of several years. The other solution is clearly to indicate the sources of the data, and to explain why there are differences. Let us not forget that this document is addressed to non-statisticians. Therefore, one must avoid jargon, and one must clearly explain the concepts corresponding to the different data sets. It is important to clearly demonstrate that one cannot say everything and its opposite with statistics. That is what is at stake in the verification of consistency, and one must not miss this goal. It is only through complete transparency that one can succeed.

It can be repeated at this stage that precision is not a *sine qua non* condition. It is possible to monitor change in the education system, and to identify crucial problems (which is precisely the purpose of an indicators document), even if one does not have infallible data.

d

Analysis of the different indicators

The quality of the document will be judged on the clarity of the text. Even when the phenomena presented are complex, one must manage to present them both in simple terms, and, precisely.

This is an essential stage for the success of the work. The analysis has to be accessible to all those concerned with education. Hence this part needs to be worked on carefully. Presenting information in a simple way is not easy, especially for a statistician. But the quality of the document will be judged on the clarity of the text. Even when the phenomena presented are complex, one must manage to present them both in simple terms, and, precisely.

It is advisable that the text starts with a general analysis of the indicator, and more particularly of its change over time. Then the most recent results are examined in greater detail, after which one studies one or several break-downs of this indicator: for example, by sex, and by region. The commentary should be written in simple and precise language, comprehensible by the non-specialist.

An excess of data detracts from the text's readability. One should not overburden the analysis with too many figures, especially if they already appear in a table or a graph.

The tables and graphics should be carefully chosen, and should provide maximal information with minimum data.

Depending on the indicator, they may present a chronological series, a distribution of the indicator with respect to a given category, and if possible a break-down by region. In the case of graphics, the following most common uses may be noted:

- the use of line charts to present chronological series;
- the use of bar charts to present the distribution of a given indicator by region or by sex;
- the use of cartographic representations to highlight regional diversities or disparities.

In a document of this type, one cannot systematically present tables and graphs of all indicators, for lack of space. The choice has to be made as a function of required precision, or the need for better legibility.

In a document of this type, one cannot systematically present tables and graphs of all indicators, for lack of space. The choice has to be made as a function of required precision, or the need for better legibility. If an indicator, such as education's share of GDP, displays small variance over time, it can

be presented in a table, with the slight variations in the precise value, which are not very readable from a graph. On the other hand, access rates that have changed a lot are more visible on a graph than in a table.

The main principle is to be flexible, and always to look for the representation, easily understandable to the non-specialist. Different types of graphs are presented further on (see *Figure 2*), as examples of representations which are simple and clear.

At this point it may be useful to make three remarks, respectively concerning the selection of indicators, the presentation and design of figures, and the period covered by the document.

1 - Final selection of indicators

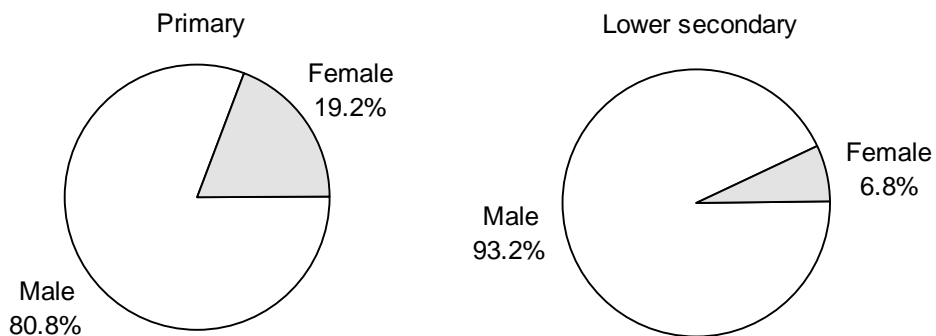
It can happen that the analysis of a phenomenon leads to a modification in the choice of indicator. Suppose, for instance, that one wishes to study the evolution of gender disparities in primary education in Guinea. The basic data are as follows:

School year	Total enrolment	Enrol. of boys	Enrol. of girls	% of girls	Gross enrol. rate of boys	Gross enrol. rate of girls
1989/90	301 218	208 634	92 584	30.7	39.3	16.7
1990/91	346 807	237 456	109 351	31.5	44.5	19.7
1991/92	359 406	246 156	113 250	31.5	44.6	19.7
1992/93	421 869	288 092	133 777	31.7	51.1	22.8
1993/94	471 792	317 654	154 138	32.7	55.2	25.7

Looking at the percentage of girls, one draws the conclusion that the disparity has diminished. However, continuing the analysis one realises that the gap between the enrolments of boys and girls, or the gap between the enrolment rates of boys and girls, has increased. This leads to the conclusion that the disparity has increased, and to demonstrate this, it is preferable to choose one of the two elements above rather than the percentage of girls. One can look at this table from yet another angle, by calculating the boy-girl ratio (or its inverse). This time, one notes a slight decline (from 2.25 in 1989/90 to 2.06 in 1993/94). In relative terms, then, the enrolment of girls has increased

Figure 2. Examples of graphs
Bangladesh

(a) Teachers in primary and lower secondary education by gender, 1989/1990



(b) Enrolment in Government primary schools, 1985/1989

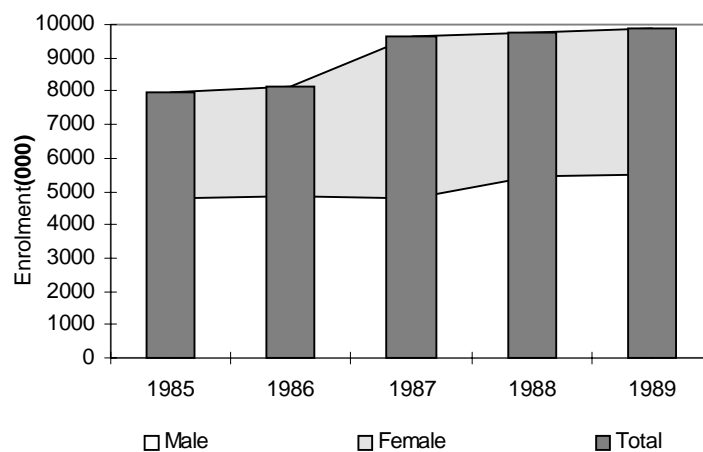
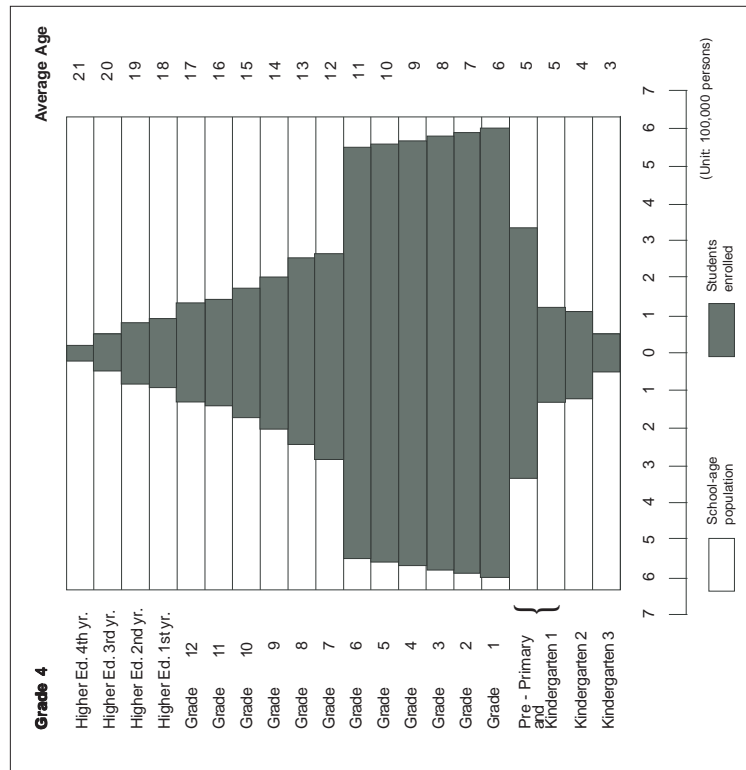


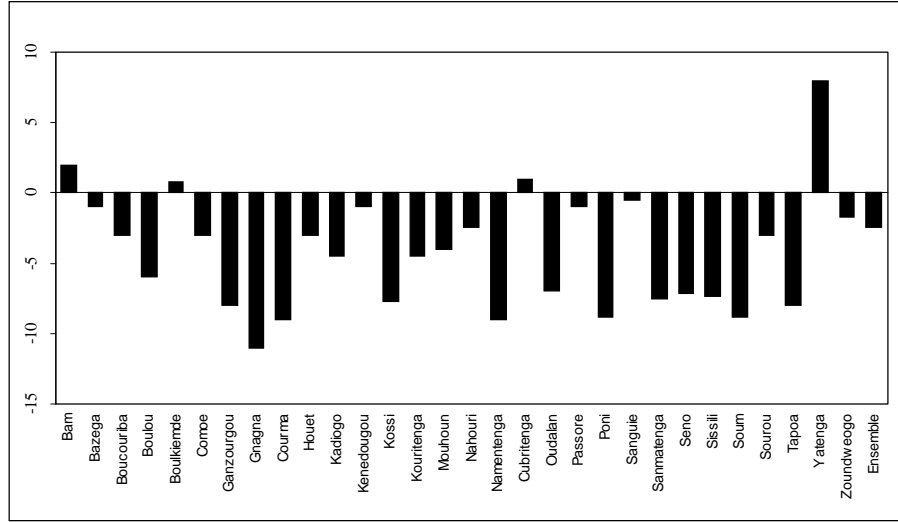
Figure 2. (continued)

c) Ministry of Education, Thailand
Pyramid of Education: Academic Year 1990



Source: Ministry of Education, Office of the Permanent Secretary, Educational Planning Division.

d) Burkina Faso - Gap between objectives of education policy and achievement by province, 1993-1994



Source: IIEP, 1995. *Developpement d'indicateurs pour le planification de l'éducation en Afrique francophone de l'ouest.*

slightly more quickly than that of boys. The same basic data yield two indicators, that give a different, apparently contradictory impression of the same reality. But this contradiction is only apparent. The absolute gaps and the relative increase are two aspects of the same problem. They complement and do not contradict one another.

In any event, it is clear that the percentage of girls, taken on its own, is not a good indicator of change in gender disparity.

One must thus be careful in choosing how to calculate an indicator. The analysis can indeed lead to a re-definition of the indicator. The importance of clearly analysing questions in this respect cannot be over-emphasised. For instance, what question is asked when the level of enrolment is being analysed? Some examples are given below:

Question	Which indicator
<i>Can our education system house all the children of school-going age?</i>	Gross enrolment rate.
<i>How many people of school-going age are at school?</i>	Net enrolment rate.
<i>How many people start school?</i>	Very detailed data are needed which are not often available: enrolment and number of repeaters for standard 1 by age. If these data are not available, the ratio of people born in xx who started school can be calculated. Proxy: net admission rate.
<i>How long do they stay?</i>	Cohort analysis, school life expectancy.

...by altering the scale of a graph, one can accentuate or weaken the perception of change or of disparity. Hence it is important to present the graph in a relevant way, so as to facilitate its visual analysis.

2 - Choosing the layout of the figures

The layout of the figures is also of importance. Depending on the choice of type of graph, or even of its form, one can change the perception of the ill-informed reader. For instance, by altering the width or the length of a graph, by altering its scale, one can accentuate or weaken the perception of change or of disparity. Hence it is important to present the graph in a relevant way, so as to facilitate its visual analysis.

The example of the two graphs on page 45 is a good illustration. They are based on the same Table, and represent the gross primary enrolment rate in the Lao People's Democratic Republic in the form of line charts, covering the period from 1980 to 1993 (data were available for certain years only, and are taken from the UNESCO Statistical Yearbooks).

So why are the two graphs so different? The explanation lies in two choices, made by the 'presenter', having to do with the width and length of the graph, and with the maximal and minimal values on the vertical axis.

The result is manifest. The first graph shows a rather sedate development, while the second highlights a very substantial drop between 1987 and 1991. In this case, it is certainly of interest to point out recent changes, but doubtless in a less accentuated way than in the second graph, while more perceptibly than in the first. Once again, it is a question of finding the right balance between two extremes.

3 - Period of coverage

The break-downs or time periods covered by graphs also have an impact on the presentation of the indicator. *Figure 4* (page 47) gives a good illustration.

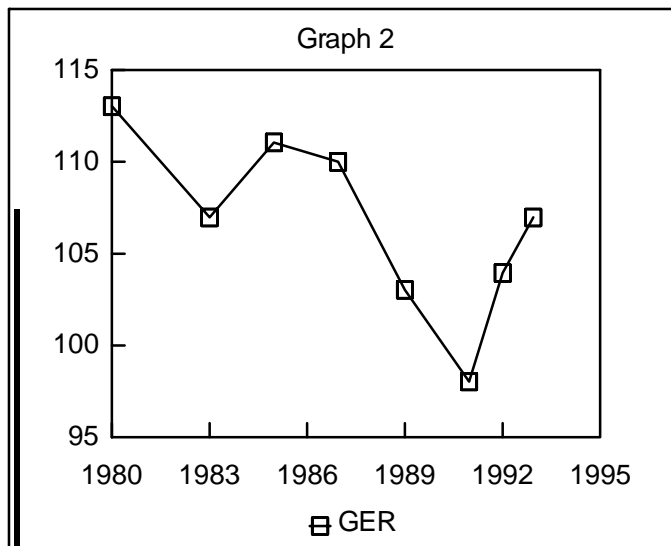
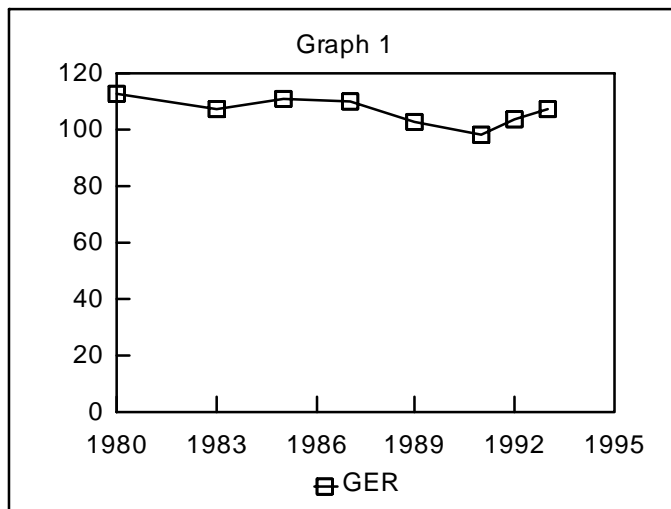
The table shows the evolution of the gross enrolment rate at the primary level in Nigeria, between 1960 and 1991. The three graphs are based on this table, but they have different reference periods:

- *Graph 1* covers the period from 1960 to 1991, taking into consideration the data for 1960, 1965, 1970, 1975, 1980, 1985, 1990 and 1991;
- *Graph 2* covers the period from 1987 to 1991, presenting annual data;
- *Graph 3* presents annual data for the period from 1980 to 1991 (with the exception of 1986, for which data were not available).

It can be seen, yet again, to what extent the choice of presentation, in this case in terms of the represented years, changes the analysis. The second

Figure 3. ANALYSIS OF THE INDICATOR: graphic presentation
EXAMPLE - Lao DPR: Primary gross enrolment rate

year	1980	1983	1985	1987	1989	1991	1992	1993
GER	113	107	111	110	103	98	104	107



graph allows for a feeling of great satisfaction with constantly increasing results. The third gives cause for considerable alarm, because it displays a very large drop, not fully compensated by the recent rise. The first clearly repositions the recent drop against the background of very strong growth from 1965 to 1980. The choice of graphs will partly depend on the objective one wants to attain. In this case, however, there is little doubt that the first graph supports the most relevant analysis: strong growth followed by a steep decline, and then by slow growth in the last year. Obviously, it is of great importance to find explanations for these variations.

In summary, the above examples show how important the choice of graphs can be.

As for the text, the terminology must be precise. The reader has to be 'educated' by always using the right term. This is very important for communication. If a graph is complex, it must be accompanied by an explanatory note to help the reader understand.

If, for the same phenomenon, the data come from several sources and are different, it is absolutely necessary for the document's credibility to note this fact, and to give the reason for it in simple terms.

Two examples serve to conclude this brief presentation: one is taken from a publication on Denmark (pages 50 and 51), while the other is drawn from *Education indicators from Quebec* (pages 52 and 53).

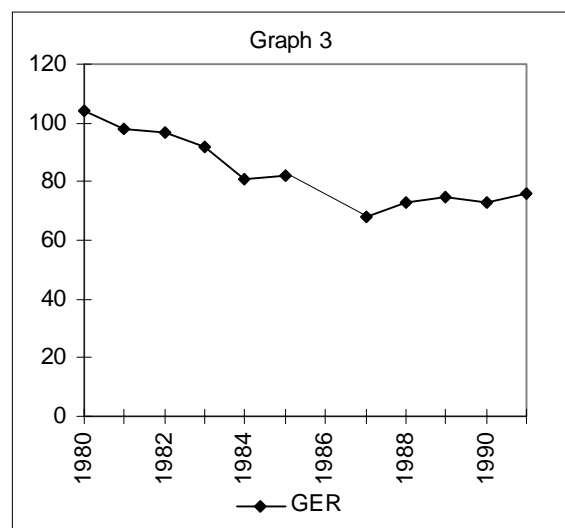
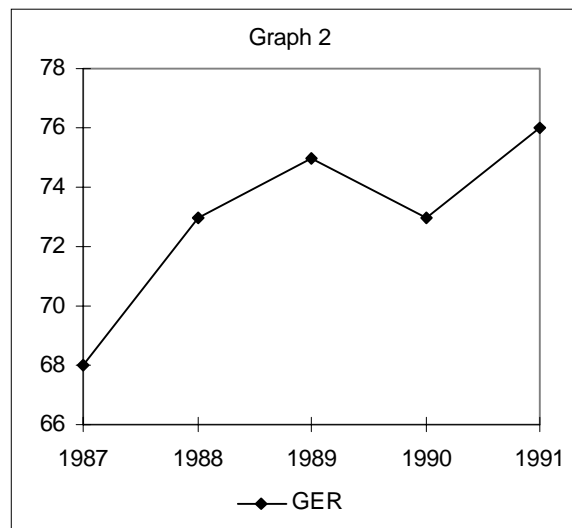
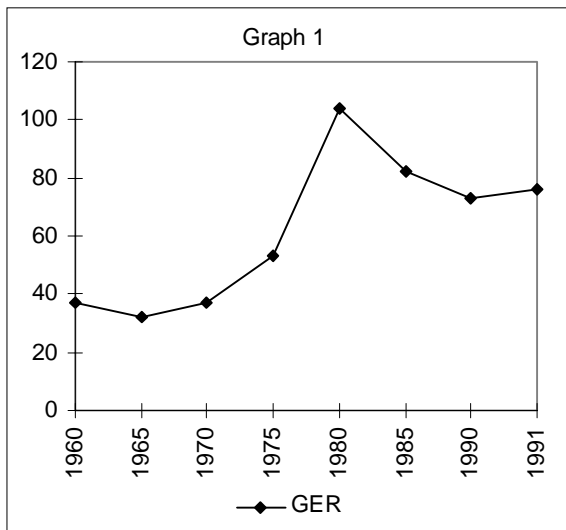
The success of the indicator operation depends on the quality of the work done during this stage. Hence the maximum means must be deployed, with all the required expertise, and with a great effort to produce relevant and concise syntheses. It is the essential ideas that should be put forward, without losing sight of the nuances of a system as complex as the education system. One should not underestimate the time required for this drafting. It is of capital importance.

The project leader has to play the role of editor-in-chief. He/she verifies the homogeneity of the drafting style, especially when there are several writers, as well as the overall consistency of the presented indicators: years of observation, presentation of tables and graphs. For example, he/she checks that the symbols used in graphs are the same throughout. It is desirable that he/she supervises a team of statisticians and/or analysts, who draft the document, after having distributed the indicators amongst themselves according to their expertise. Each writer should consider himself/herself responsible for the quality of his/her indicator or indicators.

One should not underestimate the time required for this drafting. It is of capital importance.

Figure 4. ANALYSIS OF INDICATOR: the period of coverage
EXAMPLE - Nigeria: Primary education gross enrolment rate

1960	1965	1970	1975	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991
37	32	37	53	104	98	97	92	81	82		68	73	75	73	76



He/she still has very important work to do at this stage. Given the scope of his/her tasks, the project leader may be assisted by another person, with good experience in supervisory editing. He/she has to set out the editing principles, harmonising the styles and drafting of the various writers. It is not acceptable for a work of this type to have too much diversity.

In this particular area, training and expert assistance are often necessary.

e
The layout of the document: micro-computing tools

This is also a very important part of the work. Calculating tools, that allow for easy formatting of the document, are now available. The document is made up of text, tables and graphs. As shown by the examples (pages 50-51 and 52-53), drawn from the documents on Denmark and Quebec, the point is to present each indicator clearly enough to allow the reader to form quickly an impression of its evolution. The best method is to include everything having to do with the same indicator (tables, graphs and the analysis), on a double page, which is then easy to take in as a whole. This is the layout used in most documents cited in this guide. As soon as the tables and graphs are ready, a dummy of the double page should be produced. It is used to position the various components, and to check that the composition is well balanced.

The point is to present each indicator clearly enough to allow the reader quickly to form an impression of its evolution. The best method is to include everything having to do with the same indicator (tables, graphs and the analysis), on a double page, which is then easy to take in as a whole.

The simplest computer software solution for the tables and graphs is to use a spread-sheet. The texts are then formatted by means of a word processor package. Next, the tables and graphs are imported into the word processor for final page composition. This importation is possible, provided the two software programmes (word processor and spread-sheet) operate under Windows or are used on a Macintosh computer. This is the necessary condition for simple production of the document.

One can try to feed data to the formatting software directly from a data base used to manage the statistics. This is possible, because data can be exported from a data base to a spread-sheet. This is true, in particular, of software packages such as D-Base, Foxpro, Paradox and Access. However, one must be careful about the time required to set up this interface. Data entry is actually not a very cumbersome operation. Therefore, one should not devote too much time to the creation of a gateway that is not indispensable. The choice has to be made as a function of this ratio between the gateway creation time and the data entry time. It will depend on local conditions, but must not set back the work's progress.

The quality of present word processor packages is good enough for the production of high quality black and white documents, provided one has a recent laser printer. It is not necessary to have recourse to desk-top publishing software, which is more complicated to use. The extra effort is justified only if one wants to produce a publication in several colours. One then has to go through a graphics chain made up of different pieces of software. The operation becomes more complex, and much more costly.

For example, the document on Mali was produced in black and white with Word for Windows and Excel. In France, *L'Etat de l'école* was produced by means of a graphics chain using Corel Draw and Ventura. These software import the texts and graphics produced by drafters with Word and Excel. They are used to make possible the subsequent work in the graphics chain, and in particular the separation of colours to produce the films, corresponding to each selected colour, before moving on to printing. Other software combinations are possible: WordPerfect or Lotus in the first case, PageMaker or Xpress in the second. In fact, as soon as one can use Windows, most problems for a black and white publication are resolved, for the printing is done directly on a (good and high-speed) photocopier from an original produced by a (good) printer. Difficulties arise when the document has to go through a graphics chain, in the case of two- or four-colour publications. Then the numerous technical problems to be resolved will necessitate lengthy training for the staff entrusted with the document's preparation. It is possible, of course, to use a local publisher, but then the cost of the document for the ministry changes its order of magnitude. In any event, a good analysis of local costs must be made before deciding on the type of document to publish. In this respect, being very ambitious can do more harm than good.

A good analysis of local costs must be made before deciding on the type of document to publish. In this respect, being very ambitious can do more harm than good.

It is also important to publish the document soon after it has been produced. Throughout this study, we have stressed the necessity of producing a document containing the most recent data. One should not lose too much time on the physical production and printing phase. This must be kept in mind when choosing the type of document to be published.

ANALYSIS OF THE INDICATOR

EXAMPLE - Denmark: Facts and Figures

4.3 Expected duration of education for pupils starting schools

The 7-year-olds starting school today, can expect a total education of 15.2 years on average. Some will have less and some much more. The total expected length of education for a child is increasing, and today girls are expected to stay in the education system a little longer than boys.

A child who started in the 1st Form in 1993 can expect to stay in the education system for about 15 years. This corresponds to nine or ten years at primary and lower-secondary school, followed by, for example, a three- or four-year vocational education and training programme and a short-term higher education programme. The time a child is expected to stay in the education system is increasing.

The expected total duration of education constitutes a rough average, as some young people will not even stay for 15 years, while others will stay in the education system for 18 years or more. The figure covers all forms of education, irrespective of whether the young person completes the education or changes to another education programme. Adult education is not included in the calculation.

Seen in an international context, Danish children and young people receive more years of education. In highly industrialized countries, it is often expected that all young people have a minimum of 12 years of education. Fifteen years are relatively many, and in addition, there is one year in pre-school class for almost everyone. Today, 98 per cent of all children attend pre-school class. Furthermore, the upgrading of qualifications is very common in Denmark, but adult education is, as mentioned above, not included in the figures.

During the period from 1981/82 to 1992/93, expected duration of education increased from 13.5 years to 15.2 years, an increase of almost two years over an only 11-year period, and an increase which accelerated around 1991.

In 1992/93, expected total duration of education was higher for girls than for boys. At the beginning of the 1980s, boys had the longest expected duration of education. The duration of education of girls became the same as that of the boys from 1982/83 to 1985/86. After this, the girls overtook the boys. In 1992/93, the total duration of education was 15.4 years for girls compared to 15.0 years for boys.

The difference between total duration of education for girls and boys is levelling off at around six months to the girls' advantage, and the duration of education as such is increasing at the same rate for both sexes. One explanation for the difference is that girls more often than boys complete a general upper-secondary education programme. Boys more often choose to start on a vocationally oriented education programme directly after lower-secondary school. Also, more women than men complete a higher education programme today. In 1994, the figure was 38 per cent for women compared to 31 per cent for men.

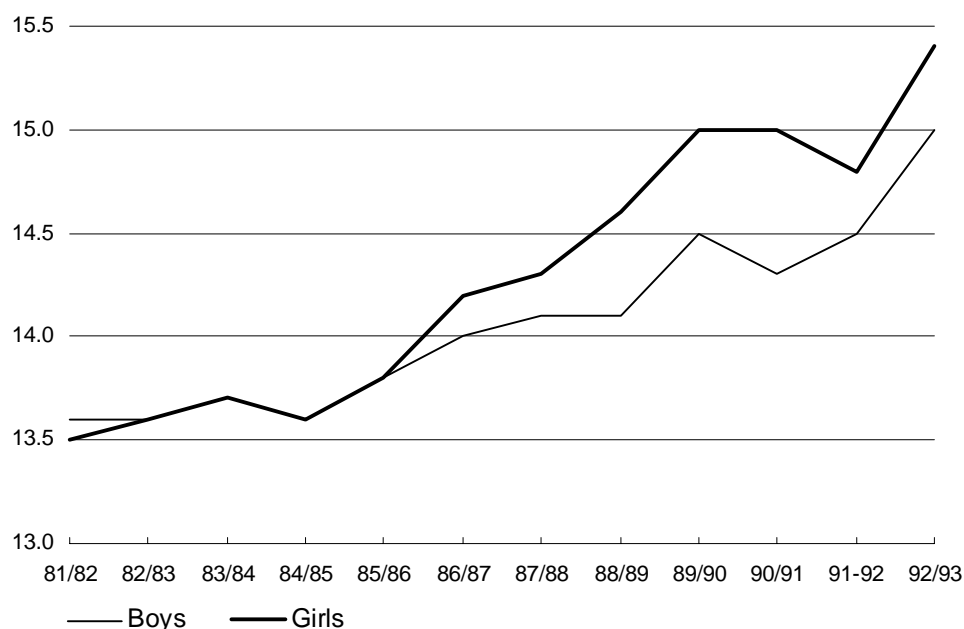
EXAMPLE - Denmark: Facts and Figures (continued)

Table 4.3 Expected total duration of education for pupils starting the 1st year of primary school by gender, 1981/82-1992/93

	1981/82	1982/83	1983/84	1984/85	1985/86	1986/87	1987/88	1988/89	1989/90	1990/91	1991/92	1992/93
	Average number of years											
All	13.5	13.6	13.7	13.6	13.8	14.1	14.2	14.4	14.8	14.6	14.7	15.2
Boys	13.6	13.6	13.7	13.6	13.8	14.0	14.1	14.1	14.5	14.3	14.5	15.0
Girls	13.5	13.6	13.7	13.6	13.8	14.2	14.3	14.6	15.0	15.0	14.8	15.4

Note: Almost all children in 1992-93, 98 percent, attend a pre-school class in primary school and will be a further year in the education system. The calculations also exclude adult education.

Figure 4.3 Expected total duration of education by gender, 1981/82 - 1992/93



Source: Ministry of Education, Denmark. *Facts and Figures*. Education indicators, 1996, p. 40-41.

ANALYSIS OF THE INDICATOR

EXAMPLE - Quebec: Education indicators

3.1 Secondary school examination results, by several variables

In June 1993, the *Ministère de l'Éducation* administered 15 sets of examinations to students in Secondary III, IV and V for purposes of certification. The average result was 72.3¹ per cent, and the success rate was 83.8 per cent.

While girls have a much better record than boys for staying in school (see sections 2.2., 2.5, 2.8, 3.9 and 3.11), no differences have been observed between boys and girls with regard to the results obtained on ministry examinations. This is probably due to the higher dropout rate among boys, for it is usually the weaker students who leave school before graduation.

The average mark of students in private schools was 8.6 percentage points higher than those in the public system. The success rate was 81.4 per cent in the public system, compared with 94.7 per cent in the private system. One of the factors likely to explain these differences is that private schools impose selection criteria for admitting students, whereas school boards must accept all students eligible for secondary school.

The ministry examinations covered seven subjects. The best results were obtained in French as a second language, English as a second language, Geography of Quebec and Canada, and English language Arts. The lowest results were obtained in History of Quebec and Canada, and French, Language of instruction.

There was little difference in the performance of girls and boys in the English as a second language, Economics, and History of Quebec and Canada examinations. Girls obtained

slightly better results than boys in the English language, Arts and French as second language examinations. The largest differences occurred with the French, Language of instruction examination in favour of girls, whereas boys had better results on the Geography of Quebec and Canada examination.

In general, the results of students receiving instruction in French were slightly better than those of students studying in English. However, the results of students receiving instruction in French were considerably better in Geography of Quebec and Canada, and History of Quebec and Canada. The results on the Economics examinations were similar for both groups.

The success rate for the secondary school June 1993 ministry examinations was 83.8 per cent. Overall, there was no difference between the results of boys and girls.

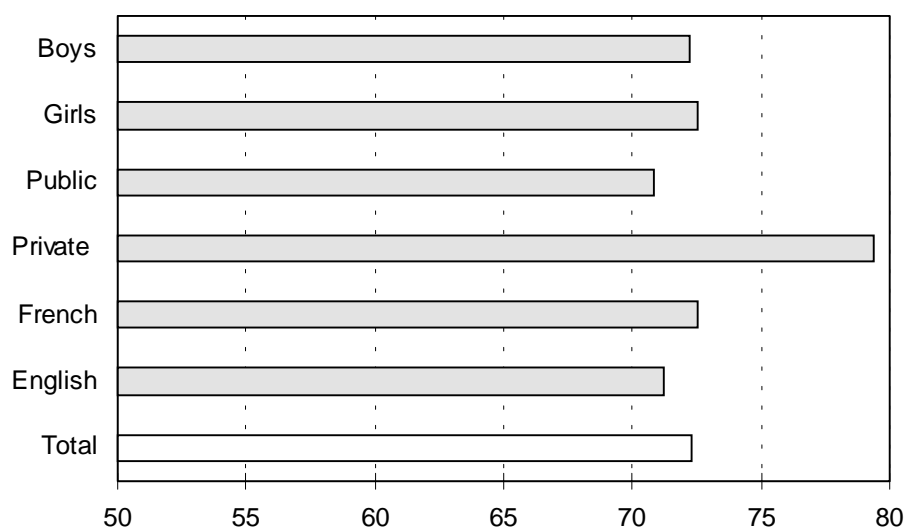
¹ These results are calculated on the basis of the students' final marks. The final mark is made up, in equal proportions, of each student's result on the ministry examination and the 'moderated' school mark. 'Moderation' is a procedure which renders the marks assigned by different schools comparable by using the results of the ministry examination for each student group as the basis of comparison.

EXAMPLE - Quebec: Education indicators (continued)

Table 3.1 Results on ministry-prepared secondary school examinations in the youth sector, by gender, school system, language of instruction and subject: June 1993 (percentage)

	Average	Success Rate
Boys	72.2	83.9
Girls	72.5	83.7
Public schools	70.8	81.4
Private schools	79.4	94.7
Language of instruction: French	72.5	83.9
Language of instruction: English	71.2	82.5
English Language Arts (Secondary V)	72.5	94.6
English as a second language (Secondary V)	75.2	86.6
Economics (Secondary V)	72.1	85.2
French language of instruction (Secondary V)	68.4	82.1
French as a cond language (Secondary V)	76.2	92.4
Geography of Quebec and Canada (Secondary III)	74.9	84
History of Quebec and Canada (Secondary IV)	70.5	79.9
Total	72.3	83.8

Graph 3.1 Averages on ministry-prepared secondary school examinations in youth sector, by gender, school system and language of instruction: June 1993 (percentage)



Source: Ministry of Education, Quebec, 1994. *Education indicators*.

a

**Using the document for internal and external evaluation:
the transparency concern**

The publication of such a document is proof of the will to instill transparency about the functioning of schools in a country. This is why the decision to publish is political. For this reason, it is necessary to win the support and approval of the minister. It is he/she who must approve the final document, and, even better, write a preface to it.

Naturally, the success of this operation will not be ensured unless the publication of the document accompanies or follows a clear transformation in the way in which decisions are taken: the culture of objective data must be disseminated and developed.

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This is not always easy to achieve, but it is of utmost importance. It is necessary to convince political decision-makers of the need to disseminate this information widely, and to avoid, as has sometimes occurred, having documents of this type end up in (occasionally locked) cupboards.

Once published, the document must be distributed widely, and must contribute to the debate about schools. Therefore, it must be available to politicians (ministers, elected representatives, etc.), to those in charge of the education system, to Parent Teacher Associations (PTAs), to teachers' trade unions, to school directors, and to the administrative and technical staff of schools.

The goal is to turn it into a reference document for political discussion and the media. This is an ambitious objective, but it is the right one to set for this project.

Naturally, the success of this operation will not be ensured unless the publication of the document accompanies or follows a clear transformation in the way in which decisions are taken: the culture of objective data must be disseminated and developed. In the absence of such a change, the document loses value and no doubt becomes less useful. In the past, documents of the same type have appeared, and then disappeared for lack of a genuine impact. Here the ball is in the decision-makers' court. The producers of the document must do everything to demonstrate its utility, and, as has already been suggested several times, to design it in such a way that it becomes a *sine qua non*. A good example of success in this respect is France's *L'Etat de l'école*, which has managed to become the indispensable tool in any political or social discussion about schools in France.

b

Updating the document

It is not a matter of publishing this document once, and considering it a fait accompli. In order for it to be useful and used, this document must become a good habit, and there is only one way to achieve this, namely to publish it very regularly.

It is not a matter of publishing this document once, and considering it a *fait accompli*. In order for it to be useful and used, this document must become a good habit, and there is only one way to achieve this, namely to publish it very regularly, in order that the most recent data always be available.

Regular production of the document must therefore be organised. This has certain consequences for the organisation of the work, for data collection, etc.

Computing tools make it possible to update text, tables and graphs relatively easily. With this end in mind, the data should be organized appropriately in the spread-sheet, and the same page layout retained. The updating should be done as soon as new data are available. One can, of course, envisage automatic procedures, but they can sometimes be more cumbersome to implement than manual updating. Such procedures should be carefully analysed before investing in automatic updating.

The ideal, of course, would be to rapidly move to annual publication. This should be the objective.

For the operation to become a routine, it must be completely immersed in the concerned departments of the ministry.

As indicated previously, the editor-in-chief will replace the project leader. For the operation to become a routine, it must be completely immersed in the concerned departments of the ministry. Obviously, the role of the editor-in-chief remains essential. He/she is the guardian of the document's quality and homogeneity, and ensures that distortions are avoided, including those due to the success of the first issue, such as a demand for more information or more indicators.

c

Other uses: international comparisons, regional diversities, monitoring schools

It is of interest to provide a few international comparisons in a national document.

Throughout this guide, much has been made of documents covering the whole of a country: e.g. Denmark, Mali, Lesotho or France. However, we presented another document prepared according to the same principles, but centred on regional analyses, namely, *Géographie de l'école* in France. Similarly, one can produce a publication, that presents comparative indicators for different education systems. The most significant work in this regard was done for the OECD's *Education at a glance*, with the help of several groups of national experts.

In any event, it is of interest to provide a few international comparisons in a national document. Such is the case for instance in the publications on Finland, on France and on Denmark. It allows for a better sense of the relativity of

It allows for a better sense of the relativity of certain analyses.

certain analyses. Similarly, one can introduce tables by region in a national publication. The documents on Mali and Lesotho have done this. In France, it was decided to produce a separate document about regions, so there are few tables by region in the national publication.

For a document about regions, the main difficulty is that of data availability, for quite often, for example in the case of financial indicators, one cannot obtain the same details at the regional level as at the national level. In so far as tools are concerned, one must use cartography software, in order to represent regional diversities as visually as possible. For *Géographie de l'école*, ADDE's 'Cartes et Bases' ('Maps and Bases') software was used, but other packages, such as AtlasGIS or MapInfo, can do the job. The most important point is that moving data between the spread-sheet and the cartography software be as simple as possible.

For a document with international comparisons, the two main difficulties are the comparability of data and their analysis. The OECD has been cited frequently in this document. It should also be mentioned that UNESCO has done a lot in the area of international comparison. For example, the *World Report on Education*¹¹ is an extremely informative document, but not of the same type as those analysed here. Hence it is used differently. Despite the progress already achieved, especially through the joint efforts of the OECD, UNESCO and EUROSTAT, much remains to be done along these lines.

The work on indicators can also be focussed on schools. This should make it possible to report on their functioning and on their results. In this case, each school indicator should be accompanied by its regional and national values. These data serve as references; they are very useful for schools that want to see where they stand with respect to other schools.

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As an indication of this sort of work, one can mention a project in France for secondary schools¹². An instrument called Indicators for the Guidance of Secondary Schools (IPES) gives them access to a set of indicators, together with regional and national references. This instrument takes full advantage of input from the information system. It is also the first feed-back of information to the schools, which, after all, produce this information in the first place, often with some difficulty.

Figure 5 shows a list of indicators used for upper secondary schools (the lycées).

Figure 5. INDICATORS FOR THE MONITORING OF SCHOOLS EXAMPLE - France: Standard indicators for lycées

Indicators about the school population

- Characteristics of pupils present at the beginning of school: sex, average age, socio-professional category, proportion of pupils overaged, proportion of foreign pupils, proportion of repeaters;
- Characteristics of pupils entering the lycée at the beginning of school: sex, age, proportion of repeaters, proportion of pupils coming from private schools;
- School origins of pupils entering the lycée at the beginning of school.

Resource and means indicators

- Teaching hours;
- Characteristics of the teachers;
- Pupil enrolment by option.

Result indicators

- Success rate in the baccalaureat (matriculation) by stream;
- Rate of access to the baccalaureat;
- Proportion of baccalaureat holders among those leaving the school;
- Situation of pupils seven months after their departure from the education system;
- Acquisitions of pupils in French, mathematics, history-geography and a modern language.

Functioning indicators

- Future of pupils at the end of second year;
- Proportion of teaching hours actually dispensed to each pupil;
- Size of divisions;
- The importance of teaching related services;
- The importance of school life related services;
- Turnover of the teaching staff;
- Accidents in the school;
- Status of the lycée pupils.

Environmental indicators

- Intensity of relations with the economic environment;
- Socio-economic data by employment zone.

The publication of indicators by school raises various types of problems: there is again the issue of transparency, of confidentiality of certain data; it is difficult for the form of the document to be of the type presented here. In France, only three indicators were published. It should be mentioned that some had already been published by the press in a rather summary fashion, and that the ministry was obliged to be more precise. The crude comparison of examination results by school can easily lead to hasty conclusions about the school's efficiency and quality. This is why the document on French lycées gives a lot of importance to environmental indicators, and to those having to do with the school population. These various problems fall somewhat outside the scope of this work and, therefore, they are simply being mentioned.

Statistics and data collected about the education system have to be brought to life. The publication of an indicators report is the right way to do this. The tools already exist. They are simple to implement and, if one remains reasonable, not very costly. Only the right political decision is needed to achieve this end. But is it not necessary to bring transparency to the fore, in order to demonstrate the will to improve what is one remaining hope in the face of all the dangers haunting this end of the twentieth century, namely education?

One must try to focus debates in this domain on objective data, accepted by all. One can then deal more seriously with the numerous real problems that arise in each country. Facilitating debate and providing food for thought: which bring us back to the objectives defined at the beginning of this study.

Once this work is well in hand, one can go further, with indicators to support the monitoring of schools. But that is another story. To be continued ...

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