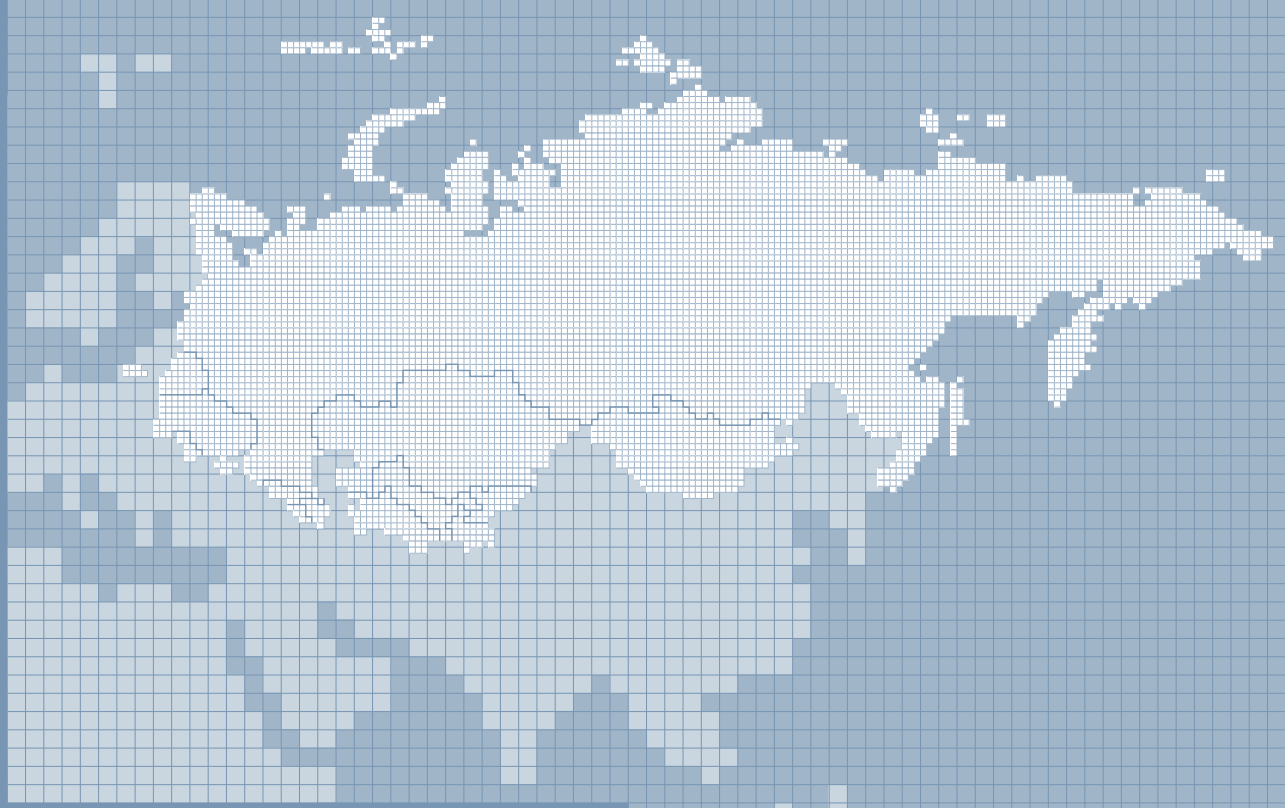

KEY INDICATORS
EDUCATIONAL INDICATORS AND POLICIES: A PRACTICAL GUIDE

APRIL 2003

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KEY INDICATORS EDUCATION INDICATORS AND POLICIES: A PRACTICAL GUIDE

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1. INTRODUCTION

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Over the past ten years, the concept of indicators which show the functioning of education systems has once again become a major concern in many countries. There are several reasons for this renewed interest.

Education systems in most countries in the world are vast organisations that are very complex to manage. Resources that were easily allocated to education not so long ago have now, at a time marked by general financial restrictions, become difficult to obtain. The social and political stakes of education are important, but education policy-makers must now employ more convincing lines of argument based on quantified information if they want to defend the education share of State budgets that are in turn frequently hard to balance. Irrespective of this need, education expenditure continues to account for a major share of public spending. It is therefore quite natural to introduce greater transparency into the way in which this money is spent.

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

As far as vocational education and training is concerned, problems of employment and the need to improve employability in a context of rapid technical change have resulted in a focus of attention on this area, and have led people to take an interest in its development and achievements. More than in the case of general education, assessment should take into account the external factor of the way in which the various diplomas and specialised training schemes are incorporated into working life.

Having objective information when monitoring and planning the education system as a whole is therefore seen as a requirement by policy-makers, and also more generally by members of the educational community. These data also enhance public debate, and improve its quality, and it follows that a culture of evaluation is being formed.

Most countries have education databases that are updated fairly regularly using the outcomes of school surveys. Although the quality and reliability of these data are far from perfect, their relevance and usefulness in policy decision-making are clear. However, it is noteworthy that decision-makers in very few countries use these data to guide their education policies. The problem posed is linked to the presentation and dissemination of available data. With few exceptions, they are only published in cumbersome statistical yearbooks that contain excessive raw data and a dearth of analysis. Decision-makers need an easier document to read and interpret: one that is therefore more analytical and more relevant.

Several types of publication containing a range of indicators have recently appeared by way of response to these various needs: UNESCO initiated the first comparative international work[1], the OECD has substantially developed this area over the last ten years[2], and several publications have also come out on single countries during the same period. These have mostly been produced by Ministries of Education. The first of these were *L'état de l'école* in France[3] and *Indicateurs de l'éducation* in Quebec[4]. To complement the picture of the education scene set out in *L'état de l'école*, the French Ministry of Education has also published a document that focuses on the characteristics of education by region and, in so doing, of regional disparities. It is called *Géographie de l'école*[5]. More recently, similar documents have appeared, for example, in Finland and Denmark, and on a less regular basis in Indonesia, the Netherlands and Algeria.

A project on key indicators in vocational education and training has been managed by the European Training Foundation (ETF), a European Union agency based in Turin. The project focuses on countries in central and eastern Europe, and the New Independent States and Mongolia. Since 1996, National Observatories, small units set up by the ETF and charged with gathering and analysing data on vocational education and training, have been collecting series of comparable key indicators with a view to producing international comparisons on the development of vocational education and training systems, and their links with the labour market[6].

Ideally, a document containing indicators should incorporate all of the ways in which an education system or subset (e.g. vocational training) works, and the information that emerges should be accessible to a readership not specialised in statistics or quantitative analysis. Reading and interpreting the most recent data should therefore be easy. Such a document can also be relatively easy to format and its publication is not financially demanding.

The common objective of the parties is to provide the entire education community with a small number of relevant indicators that are easy to use, and which offer a good description of the current state of the education system. In fact, choice of indicators and their presentation share many common features.

Computer tools (Windows, but also Mac OS hardware and software) are widely-used these days, and can greatly assist the production of such a document.

To help countries construct their own documents and their own systems of indicators, it is necessary to run training schemes for the various countries interested in the construction and

1 *World Education Report*, *UNESCO Paris*, 1991, 1993, 1995 and 1998.

2 *Education at a glance: OECD Indicators*, Organisation of Economic Cooperation and Development, Paris, 1993, 1994, 1995, 1996, 1997, 1999, 2000, 2001 and 2002.

3 *L'état de l'école. 30 indicateurs sur le système éducatif*, Ministry of National Education, Paris, annually from 1991.

4 *Indicateurs de l'éducation*, Ministry of Education, Quebec. Annual publication.

5 *Géographie de l'école.* Ministry of National Education, Paris, annually from 1993.

6 *Vocational education and training in the NIS and Mongolia: Key Indicators*, European Training Foundation, Turin, 2002.

implementation of systems of indicators. UNESCO's International Institute for Educational Planning (IIEP) in particular has played a very important role in this field as far as educational planning indicators are concerned, and several examples used in this guide have been taken from work carried out by the Institute: it contains good illustrations of the problems that arise on indicators[7]. However, unlike the work of the IIEP, this document focuses more specifically on problems relating to vocational education and training.

7 Sauvageot, Claude, *Des indicateurs pour la planification de l'éducation : un guide pratique (Indicators for educational planning: a practical guide)*, International Institute for Educational Planning, UNESCO, March 1996.

2. TWO ESSENTIAL ELEMENTS IN THE SUCCESSFUL CONSTRUCTION OF A SERIES OF INDICATORS

2

2.1 AN INFORMATION SYSTEM

Clearly, without a good information system, it is impossible to construct a relevant set of indicators. This is a *sine qua non* dear to mathematicians, but it is not enough.

Most countries in the world have implemented information systems, but the ever-increasing size of education systems, and the complex ways in which they work, have prompted a need to set out the grounds and arguments that constitute the foundations of education strategies and actions. This imperative has sometimes been further accentuated by the search for an efficient way of using resources in a context of growing shortages. This is the reason for the emergence of an ever-increasing need to develop or reinforce information systems so that they are integrated as key components in planning and decision-making processes.

Systems such as these cost money, but have often only produced statistical yearbooks that are inaccessible to most players in the education system such as decision-makers, teachers, parents and pupils. What is more, the quality and quantity of information has frequently declined because little-used information can easily become less reliable, and disappear. For example, information on pupils' ages is no longer available in some countries that once collected it, yet it is essential when calculating the enrolment ratio, and therefore when analysing the intensity of enrolment. It follows that, in the absence of available data, very important indicators can no longer be calculated. Furthermore, information has to be up to date if it is to be used, and that means another major constraint: the availability of recent data, that is to say recent data from the current school year or, at worst, from the preceding one.

This requirement is not always met in many countries, but decision-makers cannot be expected to base their decisions on

out-of-date information. They are interested in the impact of their actions, and it is therefore essential to provide them with data on the current year at a sufficient level of disaggregation to measure the effects of a recent policy. Ministers need pointers on the impact of their guidelines and actions, and parents want information relating to the schooling that their children are currently receiving.

The problem as regards vocational education and training is even more complex as, in addition to data on initial training, the information system needs to include data on continuing vocational training, vocational transition (i.e. the transition from training/education to employment), the global functioning of the labour market, current and future skills needs, and most particularly on people passing through the training system. It is therefore necessary to cover a number of fields, and use a range of sources of information to obtain a consistent body of information. Few countries have comprehensive information systems, and this will act as a serious brake on research on indicators. We will return to this later.

To make data more speedily available, a growing number of countries are conducting quick surveys based on representative samples of institutions and subpopulations (e.g. households, and workers in a given economic sector) to obtain data on education, employment integration and vocational training. A tool of this kind can be particularly useful, for example, in the following situations:

- to alleviate the burden on education and training institutions, some information (which, for administrative reasons, need not cover all institutions) need only be collected from a limited number;
- to obtain quick feedback, for example, on the implementation of a new policy, a sample of institutions or of a well-targeted sub-population can provide the necessary, relevant data;
- to find out about the employment integration of young people, and the situation vis-à-vis the employment of young people who have only just left the education system with a diploma, or even following highly-specialised training;
- to find out about the careers of young people who have left the education system in the last three or five years;
- to assess participation in continuing training.

The distribution by age in primary schools can, for example, be obtained from a sample-based survey, and then only some schools have to send the ministry this extensive information.

Every year, the ministry can conduct a quick survey using a sample of secondary and/or vocational schools three days after the beginning of the academic year. In this way, it can quickly have an initial idea of the evolutions of enrolment in different types of schools. This is a very useful piece of information for ministers to have at their first press conference after the beginning of the school year. Special support can be given to schools in the sample to ensure that they gave a quick, comprehensive reply. A sample is representative and easy to construct in so far as the basis of the sample (the total population of schools) is well-known, and experience shows that after one or two introductory years, the information obtained by the ministry is sufficiently accurate, and it is possible to identify the major trends that will be the focus in the schools census that usually takes place later in the school year.

As for the employment integration of graduates, a sample can provide information on the conditions and quality of their integration except, of course, where the training or specialism has involved a very small number of students, and too few people have been interviewed. This is where we begin to see something of the limitations of sample-based surveys.

Most information that derives from household surveys (e.g. level of the population, and participation in training) is contained in such a framework, and accordingly has advantages and limitations.

It is important to note at this stage that the objectives of a handbook of indicators and

those of a statistical yearbook are not the same: the former aims to display developments in the education system, underline certain trends and highlight problems; the latter seeks to bring all education data together in a single comprehensive volume. The latter must be exhaustive; the former need not be.

Consideration of indicators can improve the information system in terms of both volume and reliability. In fact, the publication of indicators involves giving information back to the people who produced it in the first place (e.g. heads of training institutions, regional departments and producers of statistics), and they can then see how important and useful their information gathering is, and what use is made of it.

There is a lot of discussion going on at the moment on the reliability of data. True, it is often hard to be sure of the accuracy of a given piece of information about school enrolment and the functioning of the labour market, but we cannot expect some hypothetical data reliability to fall from the heavens. On the contrary, the quality can be improved by publishing and using the data – while, of course, taking the necessary precautions. This is the statisticians' commendable circle.

It should also be pointed out that some problems are so obvious that they do not need accuracy beyond a few per cent: for example, despite considerable uncertainty as to the quality of demographic data, and of data relating to education and employment, the decline in preschool education and high rates of unemployment in the NIS (New Independent States) are not disputed. Similarly, there will always be considerable differences between urban and rural areas. The quality of these data will be improved by placing the statistics in a living context.

Moreover, decision-makers will be able to give more support to the work of services that supply them with directly usable information.

We then need to move from data collected by information systems to a set of indicators. We will return to this step later.

2.2 AN EDUCATION POLICY AND/OR AN EDUCATION PLAN

As has already been observed, an information system is essential, but not sufficient, for the construction of a relevant list of indicators. An education policy or plan is also necessary as far as the choice of indicators is concerned.

A policy or plan may not be as essential as an information system, but it greatly facilitates the choice of indicators.

In addition to providing a clear, relevant, simple description, indicators have to measure the events and developments that concern the various players in the education system. And clear, measurable objectives also need to have been defined for the education system, or for a subset such as vocational education and training. These can be presented in a number of ways, including documents such as a plan, a framework policy, and measures well identified in laws and certain decrees.

The task therefore consists of drawing up indicators that are the most appropriate for following the selected objectives.

In a given developing country, the five-year plan may aim to make 80% of a generation literate, that is to say bring that 80% up to the level of the fourth year of primary school. In this case, the indicator is immediately defined: a proportion of a generation reaching the fourth year of primary school. The same kind of objective can be fixed for another country: reaching a gross enrolment rate of 78% over a fixed period of time, and an annual repetition rate on the order of 15%. In a third country, the objective may be to increase the net enrolment rate from 64% to 80% in 10 years, and raise the primary completion rate from 30% to 80% during the same period; literacy would then have to reach 80%. However, another country where primary education is much more developed might want to increase the provision of educational services at lower secondary level so that all primary school graduates can reach this level over a period of five years. Most countries have defined quantitative targets of this type. Objectives involving the reduction of

disparities between girls and boys, or an increase in the budget earmarked for basic education, can be included in the same category.

As far as vocational training is concerned, objectives may focus on its development (e.g. a given percentage of young people should undergo this type of education) or on improving the employment integration of graduates (e.g. reducing the rate of unemployment by a given percentage).

When the objectives are vague (i.e. less directly measurable), such as “improving the quality of teaching”, the work is tricker. It is important to know what quality means in the country under examination: is it, for example, the teachers’ qualifications, or the level of the pupils, or the number of years spent at school, a schooling without repetition, or a good pupil/teacher ratio, a good rate of management support? This is where we see the importance of the debate that will establish indicators, and the range of difficulties involved in turning a fixed set of political objectives into a set of indicators. Objectives such as “strengthening institutional capacities”, “improving the school network”, “improving the position and performance of vocational education” and “improving management support for teachers” are of the same ilk.

3. SOME DEFINITIONS OF AND SOME GENERALITIES ABOUT INDICATORS

3

3.1 WHAT IS AN INDICATOR?

Indicators are tools that should make it possible both to comprehend the current state of the education system, and to report on that state to the entire education community, in other words to the whole country.

This highlights a misunderstanding that should be avoided at all costs: an indicator is not basic information; it is a body of information that has been elaborated so that an educational phenomenon can be studied. It follows that we must not confuse a list of indicators with a set of tables that has been produced for a statistical yearbook, or to meet management needs. The number of pupils entering secondary school is interesting for a manager, as is the number of teachers and pupils, but the indicator in the former case will be the percentage of a cohort gaining access to secondary school, while in the latter it will be the number of pupils per teacher. The difference is clear, as is the difference in analytical potential.

There is often a big temptation to add raw data to indicators, but it is important to avoid this error, and ensure that this kind of work retains its own character.

It is possible, as various publications have stated, to set out the characteristics of a good indicator:

- its relevance;
- its ability to summarise the information without distorting it;
- its coordinated and structured character, which allows it to be linked to other indicators for a global analysis of the system;
- its accuracy and comparability;
- its reliability.

It must:

- measure distance in relation to an objective;
- identify problematic or unacceptable situations;

- respond to policy concerns, and to the questioning that has resulted in its being chosen;
- compare its own value to a reference value, to a norm, and to itself as calculated for a different period of observation.

A system of indicators must function like a control panel, facilitating the identification of problems and measuring their magnitude. Detailed diagnosis and the search for solutions will take place through complementary analysis and research. At this point, we might evoke the (classic, but appropriate) picture of a seer warning that an engine is about to overheat. When it blows up, the specialist must look for the reasons, and find solutions in order to solve the problem.

In short, indicators play a fundamental role in monitoring and evaluating an education system.

3.2 WHAT NEEDS TO BE MEASURED?

To build a good indicator, we need to be able to identify the most important phenomena to be measured, and these will depend on the countries' choices, as inspired by the objectives of its education policy. The relevance of other indicators is more universal, and more descriptive too, but their importance will depend on the context. The enrolment ratio in primary education is a good indicator, but if all children go to school in a given country, it loses much of its importance. It is therefore not surprising that that the enrolment ratio at primary level is prominent in the handbooks of indicators covering countries that have not achieved the objective of universal primary enrolment, and that it is not to be found in France's *L'état de l'école*. We therefore need to analyse the situation and the concrete projects of the country under examination.

These indicators must also contain a descriptive overview of the education system. We need something simple and precise. An overview is necessary, and one that provides an analysis of the various phenomena with points of comparison.

Furthermore, we know that certain aspects of an education system can only be observed over time, and it is therefore necessary to present the development of data over several years. Lastly, it must take account of what may be a large number of the diversities and disparities, which, for example, may be geographical or sociodemographic (e.g. gender or social category).

In addition to the descriptive aspects, indicators must provide elements of an analysis of education policy. However, when using a set of indicators, we must be able to find a means of better understanding and explaining causality relations underspinning the functioning of the education system. Such is the price of transparency.

These are unquestionably delicate interpretations, and that is why it is important for the selected group of indicators to accommodate several viewpoints. This is hard 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.

3.3 DEFINING THE OBJECTIVES OF THE EDUCATION POLICY OR EDUCATION PLAN

This is a key phase. Indeed, to be able to evaluate an education policy or plan correctly, it is vital to be able to explain the desired objectives clearly. They may be:

- **qualitative:** improving the quality of education, or aiming for more equality, effectiveness or efficiency in the education system, or
- **quantitative:** 80% for the enrolment ratio in primary education, 5% for the annual repetition ratio, or achieving a pupil-teacher ratio of 45:1.

This definition is never easy because a lot of education policies and plans do not set out their objectives precisely. They therefore have to be extracted from education policy statements and official texts, and the objectives thus redefined then have to be validated by the people responsible for the policies or plans.

In the New Independent States, National Observatories have been set up to collate and analyse data on vocational education and training, and their links with the labour market. They have also been asked about vocational education and training objectives in their countries. The objectives most frequently mentioned by the National Observatory are:

- improving the qualifications of the working population;
- establishing more links and pathways between education and the world of work;
- increasing the rate of employment of young people who have completed an initial level of vocational education;
- developing a closer link between the content of vocational education and training and the needs of the economy and employment;
- training more young people to meet the need for skilled workers on the labour market;
- combating unemployment among young people with no qualifications;
- increasing access to various levels of vocational education;
- improving the employment integration of young vocational and education training graduates;
- increasing the rate of vocational education graduates;
- reducing the number of young people completing vocational education courses without any qualifications;
- improving the pass rate in vocational education examinations.

Other objectives have also been mentioned, for example, in respect of Uzbekistan:

- linking the education system to reforms currently taking place in society and the establishment of a democratic State based on the rule of law;
- providing educational establishments with qualified specialists, and raising the prestige and social status of educational activities;
- implementing a reliable system for evaluating the quality of education;
- developing and implementing a system for eliciting funds from foreign and international bodies;
- developing international cooperation in teacher training.

Kyrgyzstan and Moldova are also interested in the development of adult education, and Moldova is concerned about the definition of standards of knowledge, which is linked to the acquisition of knowledge and skills that might be expected from a pupil at a given level of education.

3.4 SOME EXAMPLES OF OBJECTIVES

For example, it is interesting to study the objectives fixed in 1990 and 2000 as part of UNESCO's "Education For All" programme and the European Union's objectives for developing lifelong learning. They illustrate an approach based on an initial stage that involves defining well-identified goals before the indicators are drawn up.

3.4.1 EDUCATION FOR ALL (EFA)

The first of the two initiatives referred to above embraces objectives defined at the Jomtien Conference (Thailand) in 1990, and then at the Dakar Conference in 2000 on the "Education For All" (EFA) project. These conferences were organised by five leading international bodies (UNESCO, UNICEF, UNPD, UNFPA and the World Bank) to deal with the main development objectives of basic education. They concern all countries in the world.

The six Jomtien targets (Thailand 1990)

1. **Early childhood care**
   Target: Expansion of early childhood care and developmental activities, including family and community interventions, especially for poor, disadvantaged and disabled children.

2. **Primary education**
   Target: Universal access to, and completion of, primary education (or whatever higher level of education is considered as "basic") by the year 2000.
3. **Knowledge and improvement in learning achievement**
   Target: Improvement in learning achievement such that an agreed percentage of an appropriate age cohort (e.g. 80% of 14-year-olds) attains or surpasses a defined level of necessary learning achievement.
4. **Adult literacy**
   Target: Reduction of the adult illiteracy rate (the appropriate age group to be determined in each country) to, say, one-half its 1990 level by the year 2000, with sufficient emphasis on female literacy to significantly reduce the current disparity between male and female illiteracy rates.
5. **Training in essential skills**
   Target: Expansion of provisions of basic education and training in other essential skills required by young people and adults, with programme effectiveness assessed in terms of behavioural changes and impacts on health, employment and productivity.
6. **Education for better living**
   Target: Increased acquisition by individuals and families of the knowledge, skills and values required for better living and sound and sustainable development, made available through all education channels including the mass media, other forms of modern and traditional communication, and social action, with effectiveness assessed in terms of behavioural change.

The six goals of the Dakar Conference (2000)

1 Expanding and improving comprehensive early childhood care and education, especially for the most vulnerable and disadvantaged children.

2 Ensuring that by 2015 all children, particularly girls, those in difficult circumstances and those belonging to ethnic minorities, have access to and complete free and compulsory primary education of good quality.

3 Ensuring that the learning needs of all young people and adults are met through equal access to appropriate learning and life skills programmes.

4 Achieving a 50 per cent improvement in levels of adult literacy by 2015, especially for women, and equal access to basic and continuing education for all adults.

5 Eliminating gender disparities in primary and secondary education by 2005, and achieving gender equality in education by 2015, with a focus on ensuring girls' full and equal access to and achievement in good quality basic education.

6 Improving all aspects of the quality of education and ensuring excellence so that recognised and measurable learning outcomes are achieved by all, especially in literacy, numeracy and essential life skills.

Source: World Education Forum, Final Report. Dakar Framework for Action, para .7

A comparison of these two lists of objectives prompts the following comments:

- in response to the lukewarm report on progress since 1990, the World Education Forum held in Dakar in April 2000 reaffirmed the principles adopted at Jomtien;
- the objectives of "Education For All" have been restated, and are expected to be achieved by 2015;
- although the objectives all remain the same, the Framework for Action adopted in Dakar stresses other aspects of education such as the elimination of disparities between girls and boys in education (in primary education, in access to secondary education and non-formal education); these will require new indicators to be developed for progress to be monitored and assessed.

3.4.2 THE EUROPEAN UNION'S OBJECTIVES FOR LIFELONG LEARNING[8]

The European Union has defined three strategic objectives for lifelong learning:

1. improving the quality and effectiveness of education and training systems in the EU;
2. facilitating the access of all to education and training systems;
3. opening-up education and training systems to the wider world.

More specific objectives have been added to these strategic objectives:

- to build an inclusive society which offers equal opportunities for access to quality learning throughout life to all people, and in which education and training provision is based first and foremost on the needs and demands of individuals;
- to adjust the ways in which education and training is provided and at the same time to ensure that people's knowledge and skills match the changing demands of jobs and occupations, workplace organisation and working methods;
- to encourage and equip people to participate in all spheres of modern public life, especially in social and political life at all levels of the community, including at European level.

The European Union has also been eager to define the quality of this education and training in four main fields:

- skills, competencies and attitudes;
- access and participation;
- resources for lifelong learning;
- strategies and system development of education and training.

These two kinds of example provide clear illustrations of the diversity of objectives that countries or groups of countries can set themselves. However, as soon as the objectives have been defined, it is necessary to manage the implementation, and evaluate the results achieved. This is where indicators come in.

8 *European Report on quality indicators of Lifelong Learning: Fifteen quality indicators*, European Commission, Brussels, June 2002.

4. MOVING FROM OBJECTIVES TO INDICATORS

4

As soon as an initial list of objectives has been drawn up, a series of indicators needs to be attached to each objective. An indicator can, of course, be used with several objectives. A number of cases are set out below.

First of all, it is essential to stress the importance when choosing indicators of each country's particular orientation and problems.

4.1 "EDUCATION FOR ALL"

To evaluate and monitor the objectives drawn up at Jomtien, the five organisations that organised the conference drew up 18 indicators. It is regrettable that they did not do so until 1996 following a fairly disastrous conference that was given the task of carrying out a mid-term review, but which, in the absence of reliable indicators, was unable to evaluate anything.

Objective 1

Indicator 1: Gross enrolment in early childhood development programmes, including public, private, and community programmes, expressed as a percentage of the official age group concerned, if any, otherwise the age-group 3 to 5.

Indicator 2: Percentage of new entrants to primary grade 1 who attended some form of organised early childhood development programme.

Objective 2

Indicator 3: Apparent (gross) intake rate: new entrants in primary grade 1 as a percentage of the population of official entry age.

Indicator 4: Net intake rate: new entrants to primary grade 1 who are of the official primary school-entrance age as a percentage of the corresponding population.

Indicator 5: Gross enrolment ratio.

Indicator 6: Net enrolment ratio.

Indicator 7: Public current expenditure on primary education a) as a percentage of

GNP; and b) per pupil, as a percentage of GNP per capita.

Indicator 8: Public expenditure on primary education as a percentage of total public expenditure on education.

Indicator 9: Percentage of primary school teachers having the required academic qualifications.

Indicator 10: Percentage of primary school teachers who are certified to teach according to national standards.

Indicator 11: Pupil-teacher ratio.

Indicator 12: Repetition rate by grade.

Indicator 13: Survival rate to grade 5 (percentage of a pupil cohort actually reaching grade 5).

Indicator 14: Coefficient of efficiency (ideal number of pupil years needed for a cohort to complete the primary cycle, expressed as a percentage of the actual number of pupil-years).

Objective 3

Indicator 15: Percentage of pupils having reached at least grade 4 of primary schooling who master a set of nationally defined basic learning competencies.

Objective 4

Indicator 16: Literacy rate of 15-24 year-olds.

Indicator 17: Adult literacy rate: percentage of the population aged 15+ that is literate.

Indicator 18: Literacy Gender Parity Index: ratio of female to male literacy rates.

It is noteworthy that no indicator was defined for Jomtien Targets 5 and 6. It has to be said that it was not easy, but this deficiency made it difficult to evaluate actions on these two targets during the period 1990-2000.

These indicators made it possible to carry out the statistical review that was prepared for the Dakar Conference.

On the basis of the experience drawn from this review, and from the new objectives fixed by the conference, we now need to process the list of 18 indicators.

They have to take account of the reduction in (ethnic, gender and other) disparities in access to primary education, and ensure that all young people who go to school complete primary education. It is therefore necessary to define a rate of access in the final year of education which can measure this objective: it will have to take account of both access for all to the first year of primary education (i.e. this must be universal; the rate of access must be 100%), and of the disappearance of dropouts from primary school courses (i.e. remaining in school must be 100% until the final year). It is also necessary to measure access to secondary education and continuing training to make sure that it is equal. Lastly, it is important to measure skills acquired in reading, writing and numeracy, and identify and measure the skills that are essential for everyday life.

To achieve all that, it is essential to improve the information system, not only as far as new objectives are concerned, but also in fields where the *2000 Statistical Review* identified new shortcomings: education financing (the need to take account of non-governmental funding sources and improve the quality of information); the need to improve demographic statistics, and particularly to regulate the issue of the large differences between the data supplied by countries and the data supplied by the United Nations (this problem prompts considerable uncertainty about enrolment ratios and the number of children not receiving an education).

In this area, we encounter problems that directly concern the New Independent States: developing rates of access to secondary education; putting a stop to course dropouts; finding out more about education financing; improving the quality

of demographic data; developing evaluations of learning achievements; and reducing disparities, even though the issue of gender disparities is less pronounced than in other regions.

4.2 EUROPEAN UNION INDICATORS FOR LIFELONG LEARNING

To evaluate and monitor activities related to lifelong learning, and particularly its quality, the European Union has drawn up 15 indicators over four fields. Although the indicators are clearly defined, identified and calculated (or at least calculable) as far as some of these fields are concerned, several other fields are still not covered. However, the approach is interesting, and the difficulties that have to be overcome are important. A successful outcome to this measure is therefore a very interesting challenge. Furthermore, a large number of qualitative aspects have been addressed, and some research topics have been proposed. The indicators may be analysed according to the broad field in which they are placed:

a) Indicators relating to skills, competencies and attitudes

1. Indicator on literacy and numeracy: percentage of students per country at proficiency level 1 or below on the PISA[9] or TIMSS[10] reading and mathematical literacy scales.
2. New skills for the learning society; definition of key skills linked to eight fields.
3. Basic skills in mathematics, science and technology;
4. The percentage of students per country who score below 400 points on the PISA scientific literacy scale.
5. The percentage of science and technology higher education graduates per 1000 inhabitants aged 20-29;
6. Skills in information and communication technology: evaluation in preparation by the International Education Assessment Association (IEA)[11]; elements forming part of PISA in 2006;
7. Skills in foreign languages: research has already been carried out in three countries, and is continuing.
8. Learning to learn skills: using a complex index based on pupils' learning strategies: the percentage of students in the lowest 25% of overall performance on the OECD's PISA "elaboration strategies" index.
9. Active citizenship, cultural and social skills; using IEA research in a comparative structure to identify the ways in which young people are prepared for their roles as citizens in a democracy, with three central areas:
   - democracy, democratic institutions and citizenship;
   - national and regional identity and international relations;
   - social cohesion and diversity.

b) Indicators on access and participation

10. Access to lifelong learning.
11. Participation in lifelong learning: participation in education and training of those aged 25-64, and the percentage of early school-leavers aged 18-24.

c) Indicators on resources for lifelong learning

12. Investment in lifelong learning: total public expenditure on education as a percentage of Gross Domestic Product.
13. Educators and learning: percentage of teachers who have received education training during the previous four weeks.
14. ICT (information and communication technology) in learning: percentage of households who have access to the Internet.

d) Indicators on strategies and system development

15. Strategies for lifelong learning: indicators drawn up on the basis of an analysis of national action plans.

9 PISA is a programme run by the OECD that measures the learning achievements of 15 year-olds in reading comprehension, mathematics and science. The programme was operated for the first time in 2001, and the outcomes have been widely disseminated and used.

10 TIMSS: Third International Mathematics and Sciences Survey. Survey undertaken by the International Education Assessment Association.

11 The IEA has been conducting evaluations of learning achievement for over 30 years.

Other indicators are planned on the coherence of the training supplied in this area, but they are not yet available; the same goes for indicators designed to find out about the scope of targeted populations and the benefits derived from these actions, and for indicators dealing with accreditation and certification. As far as the latter category is concerned, no indicators are available yet, but several countries have set up systems of accreditation and certification for adults. In the future the European Union also wants to look at the issue of quality assurance.

The approach adopted by the European Union is interesting, but it is far from completion as a large number of fields still have no indicators.

4.3 VOCATIONAL EDUCATION AND TRAINING INDICATORS COLLATED BY THE EUROPEAN TRAINING FOUNDATION (ETF)

The ETF, a European Union agency charged with supporting partner countries in reforming their systems of vocational education and training systems, has drawn up 15 key indicators to monitor the development of these systems over the last few years in partner countries (including the New Independent States and Mongolia). Using these indicators, data are gathered by “National Observatories”, small units with responsibility for collecting, analysing and disseminating information on vocational education and training.

The 15 indicators used by the ETF in the NIS and Mongolia are constructed around the following topics:

- levels of training of the total population, of people aged 25-29, by age group and by ISCED[12] level;
- levels of training by gender;
- unemployment by age, gender, and level of training;
- enrolment of 14-19-year-olds in general education, and ISCED level 3 in vocational education by gender;
- the number and rate of 14-19-year-olds by gender in the population who are not at school;
- dropouts from secondary education at ISCED levels 3A and 3B;
- public expenditure on all education, and on vocational education.

When this list of indicators defined by the ETF is compared to education policy objectives in the New Independent States and Mongolia, there is an obvious gap between what is desirable to measure and what is really happening.

The National Observatories in the New Independent States and Mongolia have defined the main objectives for vocational education and training policies in these countries. Development pathway indicators are set out below after each political objective.

- To improve the qualifications of the working population: indicators on the level of training of the working population constitute an initial measure of qualifications, but they are also necessary as guidelines. However, they are very difficult to use when defining and pursuing an education policy as they are too general. They therefore need to be complemented by indicators relating to the targeted skills that the countries want to develop. Examples might include European Union choices related to languages, mathematics and science.
- To establish more links and pathways between education and the world of work. There are no indicators on this subject. It would be necessary to measure different kinds of relationship between education and business (e.g. traineeships, apprenticeships and other kinds of on-the-job training, and twinning arrangements) to pursue this objective.

12 ISCED: International Standard Classification of Education. This classification particularly defines levels of training, and is used in international surveys. The classification was drawn up by UNESCO in 1978, and was revised by that body in 1997.

- To raise the rate of employment of young people with a first level of vocational education: the unemployment rate by age and level of training is an initial approach, but there will be a need for a more accurate picture of the unemployment and employment levels of young people who have undergone the various types of vocational education.
- To develop a closer link between the content of vocational education and training and the needs of the economy and employment. There are no indicators on this subject. There is a need for data on the employment integration of young people according to the kind of specialist training they have had, and to observe the rate of employment and unemployment according to these specialist forms of training.
- To train more young people to meet labour market needs for skilled employees. There are no indicators on this difficult subject. To meet this requirement, it will first be necessary to define the economy's needs for skilled staff in the near future (this will involve difficult forecasting work), and then determine which areas of training might meet these needs.
- To combat unemployment among young people with no qualifications: the indicator on the rate of unemployment by level of training is an initial approximation, but it needs to be complemented by the regular measurement of the number of people leaving the education system without qualifications. In this way, it might be possible to monitor movements in this number, and ensure that it falls. This information would complement information supplied by students who leave education at ISCED Level 3. It would also be necessary to measure employment and unemployment rates among young people more accurately.
- To increase access to the various levels of vocational education: participation rates in vocational education and training meet this need in part, and they could be complemented by rates which show numbers moving from different levels of general education to vocational education.
- To improve the employment integration of young people who have gone through vocational education and training: no indicator is currently being developed by the ETF. It would be necessary either to use data gathered in the course of surveys of the active population, or to conduct a series of surveys on the employment integration of young people who have left the education and training system.
- To increase the rate of graduates from vocational education. No indicator has yet been developed by the ETF. It will be necessary to gather data on people who have completed vocational education and training and, for example, calculate the proportion of a generation that obtains such qualifications. In this way, it will be possible to verify whether the proportion is rising.
- To reduce the number of young people leaving vocational education without a qualification. No indicator has yet been developed by the ETF on this subject. It would be necessary to measure or estimate the number of young people. It would be possible to use different methods, depending on the way in which the education system is organised.
- To raise the pass rate in vocational education examinations. No indicator has yet been developed by the ETF on this subject. It would be necessary to have statistics on vocational education examinations, and calculate the pass rates over several years.

Other objectives have also been mentioned, for example, in respect of Uzbekistan:

- To link the education system to reforms currently taking place in society and the establishment of a democratic State based on the rule of law. No indicator has yet been developed by the ETF on this subject. Surveys of young people's public-spiritedness could provide useful information on this very qualitative and delicate question.
- To provide educational establishments with qualified specialists, and raise the prestige and social status of educational activities. For the first of these objectives, it will be necessary to

measure first and foremost the professional qualifications of teachers, and to set up forecasts of recruitment needs for these staff. Future research could provide this information. For the second objective, it will first be necessary to define how the prestige and social status of educational activities can be measured. Teachers' salaries? Graduates' salaries? People's interest in educational activities? The proportion of the budget and of GDP earmarked for education? This question will have to be answered before the relevant indicator is defined.

- To implement a reliable system for evaluating the quality of education: it will be necessary to implement a system of indicators that evaluate the overall education system, and measure what pupils have learned. This would be an extensive programme, calling for considerable work on the information system.
- To develop and implement a system for eliciting funds from foreign and international bodies. Many developing countries and countries in transition are working hard to rationalise their requests for external aid. It would therefore be interesting to look for indicators that take account of these operations, although no indicator of this type currently exists.
- To develop international cooperation in teacher training: no indicator on this subject is currently available. It would be necessary to measure the various kinds of teacher and experience exchange. Nothing has been done in this area.

Kyrgyzstan and Moldova also mentioned the development of adult education, and Moldova referred to its concerns about standards of knowledge.

As far as adult training is concerned, it is necessary to construct an information system that measures participation in training schemes of this kind, and to deduce (if possible, by major sources of financing) participation rates by broad categories of the population (e.g. gender, age and level of education).

As for standards of knowledge, this is an exercise that leads to a measurable standard of knowledge (or aptitude) for each level of education. It will then be necessary to verify how much young people have learned in relation to these standards. This, again, will be demanding work that has never been properly completed in the field of vocational education and training.

5. HOW SHOULD INDICATORS BE CLASSIFIED?

5

Classifications of the various indicators vary from one publication to another. If the "analysis of functioning aspect" predominates, classification also relies on a distribution by costs, activities and outcomes and is complemented by a description of the social and cultural environment.

If there is a preference for classifying according to the various bodies, classification may rely on distribution according to institution, pupil, teacher and costs.

Three publications employ the first form of distribution: *L'état de l'école* and *Géographie de l'école* in France, and the OECD's *Education at a glance*. Research carried out by the IIEP[13] in several developing countries uses the second form.

It is also possible to group by major topics, such as the level of knowledge, preparation for employment, preparation for social life, and equity in (or the democratisation of) education. In this way, the effectiveness and efficiency of the education system can be measured in these four areas. However, the focus is more on topics that perform a transversal analysis of indicators than on the document's presentational logic.

Lastly, the Resources/Activities-Process/Outcomes presentation is definitely the one that best facilitates analysis for the reader: it comes closest to an explanatory model of education systems. In practice, the three components are linked by close, multidirectional relationships. It is also possible to add characteristics of the sociodemographic environment that interact with each of the components.

Classification of indicators according to the objectives that they evaluate is, or has been, used by international organisations such as UNESCO and the European Commission.

13 IIEP: International Institute for Education Planning. The IIEP is part of UNESCO, and is based in Paris.

It has been possible to see this in the classification made by UNESCO of the 18 core indicators of the “Education For All” project. The European Commission’s 15 indicators or groups of indicators are directly linked to the lifelong learning objectives.

It is possible to think of other classifications in the field of vocational education and training. For example, it is important to know the situation of the population as regards their level of knowledge or skills in a given field. It would then be interesting to know how different forms of vocational education and training (including that undertaken by young people and adults, and formal, non-formal and informal education) function as far as funding and activities are concerned. It would also be possible to evaluate outcomes under several aspects such as pass rates for diplomas and other forms of certification, and the quality of the employment integration of young people who have completed various forms of education and training.

Subdistributions that derive from each method are usually closely connected: distribution by level of education, for example, is always represented, and is accompanied by a cost analysis. It would be possible to imagine constructing forecasting indicators, for example, on future requirements for teachers, but only as long as there are reliable demographic data available.

It might also be possible to complement analysis of vocational education and training with the outcomes of forecasts of the needs of the economy linked to predictions relating to education and training.

6. SUMMARY: DESCRIPTIVE ANALYSIS – CAUSAL ANALYSIS

6

In summarising the above paragraphs, we may conclude that there are always two stages in the analysis of indicators that must be present, and which are the core of any work of this type:

- **descriptive analysis:** this involves presenting and describing distributions relating to official standards or objectives. Chronological analysis and the analysis of disparities (e.g. by region and gender, or between urban and rural areas) will complement the comparison of standards. This analysis will first and foremost look at school intake and enrolment ratios at various levels, and therefore in vocational education and training. It is very important to have net ratios that only take account of the intensity of enrolment. Gross ratios only give an indication of the ability of the system to take in students. Some indicators of expenditure and costs are also essential: these include education expenditure as a percentage of the national budget or of GDP, distribution of expenditure by type (e.g. operational and equipment costs), and sources of finance. In addition to these indicators, in vocational education and vocational training, it is vital to have indicators covering all expenditure (irrespective of its source), activities (whether they concern young people or adults, and formal, non-formal and informal training), the level of people's training and skills, access to (and outcomes of) various forms of vocational certification, and the employment integration of young people who have undertaken forms of training;
- **causal analysis:** the first type of analysis referred to above is not enough. It is also necessary to try and understand, explain and introduce causality into relations between the other variables highlighted by the descriptive analysis. The choice of indicators will depend on the objectives chosen. Three must always be present: quality, effectiveness, and analysis of costs by pupil and by level:
  (i) quality of teaching: number of hours of lessons, reception of pupils

(e.g. double shifts, numbers of pupils by class and by teacher, refectories and boarding facilities), teachers' qualifications, and available teaching materials;

(ii) effectiveness or results: this will use rates of access at various levels, annual repetition rates, dropout rates, and pass rates at examinations. The results of pupil evaluations will be introduced here if such information is available. With regard to vocational education and training, the quality of work integration according to the kind of training undergone, and the quality of the link between the way in which the education system works and the needs of the economy (or, more generally, of society) and evaluation of its impact on the level of the population's training and skills are elements that it ought to be possible to analyse using the available indicators;

(iii) an analysis of costs by pupil and by level will verify whether expenditure matches objectives: for example, is there optimal distribution between basic and higher education? The same question might be asked about the distribution between general and vocational education.

Clearly, the final list of indicators can only be fixed after a check has been made on the availability of the data necessary for calculating the indicators. It will therefore always be a compromise between what is desirable and what is possible. It is likely that research on indicators will result in the introduction of new questions into existing surveys, and even the construction of new surveys. For example, in vocational education and training, it has been possible to observe that the data needed to calculate relevant indicators were very often lacking: it followed that work in this field was particularly gruelling.

No more than 40 indicators should be used as the document will not be readable if there are any more. The OECD's *Education at a glance* exceeds this ceiling and many people have recommended that it be slimmed down, or broken down into several publications. These suggestions have led to a second publication, *Analyse des politiques éducatives* (Analysis of education policies), which deals with only a few issues, but does so much more analytically. However, the emergence of this journal has not resolved the problem of the size of *Education at a glance*. Other publications abide by this rule, and their users are delighted. As has been stated earlier on, it is important to avoid the error of turning the planned document into yet another statistical yearbook: it is therefore important to preserve the notion of indicator as defined above.

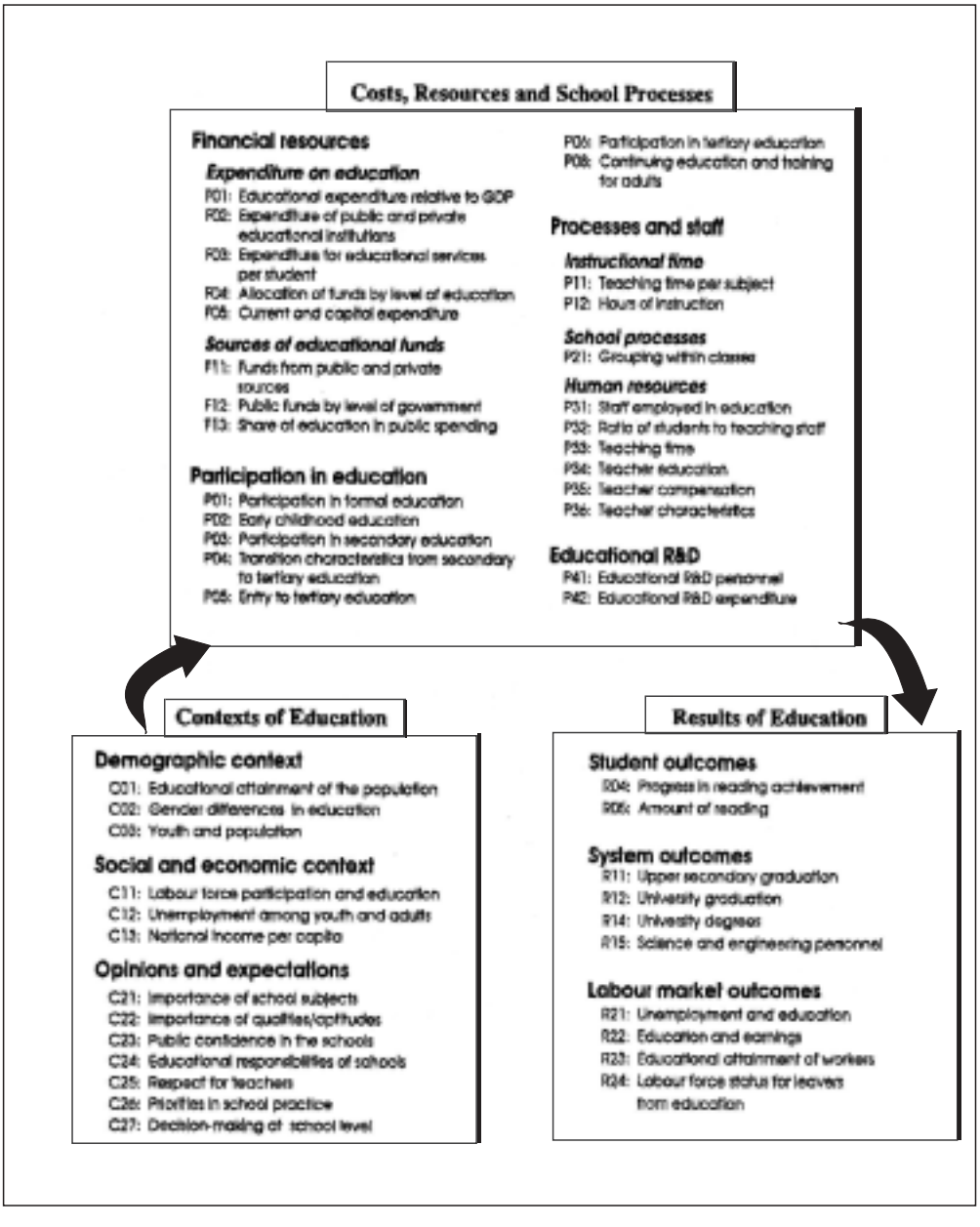
Here, for example, are the lists of indicators chosen for *L'état de l'école* and *Education at a Glance* (see overleaf).

Key Data in Europe 2002 should also be mentioned as a good example.

List of indicators of "L'état de l'école"

	Overall	Primary education	Secondary education	Higher education	Continuing education
Costs	Education spending	Primary education spending	Secondary education spending	Higher education spending	Continuing education spending
Activities	Staff employed in the education system	Schooling and facilities in primary education	Schooling and facilities in secondary education	Students with the baccalauréat, and access to higher education	Continuing training bodies and their activity
	Structure of teaching staff			Recruitment from the main sectors of higher education	
	Administrative, technical and supervisory staff			Enrolment in higher education	
	The duration of schooling				
	The teaching of foreign languages				
	Priority education				
	Social welfare for students				
Outcomes	Students leaving without qualifications	Evaluation of learning achievements on entering CE2 and "sixième" (6th grade)	Employment and career development on completion of secondary education	Rate of university entrants who go on to the second general cycle	
	Rate of access to training Levels IV and V			Student pass rates in the third university cycle	
	The level of training and the diplomas of young people having completed initial training			Employment and career development of higher education graduates	
	Social background, access to baccalauréat level and higher education				
	Degrees and the risk of unemployment				
	Diploma, social situation and salary				
	Schooling of girls				

CONSTRUCTION OF A LIST OF INDICATORS
EXAMPLE - OECD: Education at a Glance



Source : Education at a Glance, OECD indicators, (3rd edition). Organisation for Economic Cooperation and Development, Paris, 1995 .

7. SOME ADVICE WHEN CONDUCTING AN INDICATORS PROJECT

7

A first piece of advice: set an objective of publishing a document within a maximum period of 18 months to two years. It is the best way of creating a dynamic for meeting the reasonable deadlines for such an exercise. This is the view that we will take for the remainder of this manual, and we will highlight various elements that are important for the successful completion of this document.

Next, in order to successfully construct a relevant list of indicators at national level, or one enabling useful international comparisons, a project leader must be appointed from the beginning of the exercise. This is the person who will be in charge of the various structures that are set up or mobilised by the project. He or she will have considerable experience in statistics, and good skills in analysing the overall education system, and will also be capable of running a project of this type from conception to final publication.

The project must be incorporated into existing structures. When engaged in a project for the first time, on-site services must be organised as well as possible, and it is against this backdrop that the following comments are made.

The list of indicators must be constructed through a close involvement of the various departments responsible for formulating and implementing education policy. As has already been stated, the list must in part direct choices and identify the objectives to be monitored.

In the case of vocational education and training, the various structures (e.g. the ministry of education, the ministry of vocational training, institutions responsible for analysing the training-employment relationships, and professional integration, the ministry of employment, and the office of statistics) must be involved in the project.

The choice of indicators must be the subject of discussions between high-ranking officials in all departments. It is therefore often very useful in work on indicators to set up a steering group

consisting of representatives of all departments. This group can be made up of members of various ministries if, as mentioned above, higher education and vocational training come under different ministries. It is important to ensure that the whole of the education system is incorporated, and not just the activity of the Ministry of Education.

As soon as the main guidelines and objectives to be measured have been defined by the steering group, a working group consisting of a small number of experts under the project leader needs to carry out the work in a concrete way. All aspects must be covered.

In short, two levels are required: a steering group, and a working group charged with seeing the project through. A fairly classical approach to running a project, but vital. Deadlines will be clearly defined, with a strict timetable for establishing indicators for the working group, and a political validation timetable for the steering group.

The total duration from the beginning of the project to the publication of the first issue of the document should not exceed 18 months as the deadline for completing the project must be tight in order to involve and mobilise all energies. There is a need to organise accordingly.

Two or three meetings of the steering group are needed in order to produce a final list of indicators that will appear in the publication. Only serious, and unexpected problems relating to the availability of data can cast any doubt on the list validated by the steering group. After validation, the steering group will again intervene during the final discussion on the document prior to publication. We will return to this later. For the exercise to continue, it is vital for departments of the ministry, or ministries, to be involved. After the first issue, it is important to start preparing the second: this is key to the project's success.

If the exercise stops after the first issue, the objective has been a failure. As regular departments will make the document in future, the organisation of the project must involve them completely (this point has already been made), and then quickly disappear and merge into the departments. The chief editor who succeeds the project leader must, of course, stay on. These points will be clarified later.

As soon as the indicators have been identified and the necessary structures have been set up, the concrete work can begin.

8. THE VARIOUS STAGES IN WORK ON INDICATORS

8

There are several stages in work on indicators. First, it is necessary to identify available sources and data. The next stage, which involves calculation, is not as easy as it looks at first sight. One reason for this is that different methods of calculation can be used, and it is therefore necessary to stress the importance of a precise definition of indicators, and particularly the need for a glossary of the terms used. These matters are addressed in detail in the following paragraphs: they concern verifying the consistency of outcomes, the analysis of indicators, and the format of the document using the calculations.

8.1 INVENTORY OF AVAILABLE SOURCES AND DATA: DIFFERENT TYPES OF DATA, ANNUAL CENSUSES, SELECTIVE DATA AND MANAGEMENT DATA

All sources that can be used must be identified and used.

Most data on education, and particularly on vocational education, come from annual school censuses and staff surveys, examination results and infrastructures. Some are Ministry of Education internal data, and some are statistical departmental data: for example, although data on pupils and institutions are normally available to the statistical service, data on staff, their status, their housing conditions, and their initial and in-service training are often held in these employees' personnel departments.

Demographic data are often the responsibility of the National Institute of Statistics. They are very important as it is essential to have data by age for all years, and estimates made for inter-census and post-census (with respect to the last census) years must be of high quality. Enrolment ratios may, like all indicators involving a sound knowledge of population data, be otherwise badly distorted. Similarly, it is important to have regional data so as to be able to take account of regional disparities in enrolment. Lastly, it

is important to have projections in order to be able to make forecasts of school rolls and recruitment needs for teachers. It follows that some forecasting indicators might also be constructed.

Financial data come from the directorate with responsibility for financial matters, and from the national institute of statistics, which is responsible for national accounts. Many indicators need data such as the Gross Domestic Product and data taken from an analysis of the State budget. It is also possible to use partial data on certain regions, or a sample of pupils. Inspection reports, for example, are an important source of information on teaching materials and the pedagogical support offered to teachers: they can illustrate an analysis. Selective data gathered for the purposes of a study or a particular report can be used in the same way.

There must be no hesitation in using data from a sample. As has already been stated, what is important is that the sample should be well constructed, and representative of the level under examination. It is sometimes essential to use sample-based studies, as comprehensive ones are too expensive to carry out. The accuracy obtained is quite acceptable for an analysis of many problems encountered in the education system.

In the case of vocational training, it is necessary to mobilise all the information availabe on formal, non-formal and informal training. Here again, it is necessary to define exactly what is meant by these terms. Once more, we see the importance of producing a glossary containing the main definitions used in the gathering of data and the calculation of indicators. It is necessary to have this information according to the section of the population (e.g. young people, adults, and by gender), and according to the duration of the training schemes because, unlike initial training, the duration of vocational training can be very different from the school year. Knowing the number of enrolments alone is therefore not enough. It is necessary to know the duration of the training courses followed, as it is possible to work out the number of days (or hours) of training from this. It will then also be possible to calculate the average duration of training for each enrolment. Another important element in vocational training is to try and find out exactly how many people have taken part in these training schemes. Here, again, the number of enrolments is not enough as a given person may have taken part in several training exercises in a given period (e.g. the school year). The ministry responsible for vocational training may obtain data based either on an inventory of various training schemes or on surveys based on samples (e.g. of households) that include questions about vocational training courses undertaken during a reference period.

A good knowledge of forms of certification awarded by type and by training specialisation is also required. This information is normally available from various certification bodies, but it is often necessary to ask a number of institutions including the ministry of education, the ministry of vocational training, the ministry of health, the ministry of labour, and professional bodies.

As has been stated earlier, it is also necessary to build up a comprehensive picture of the various sources of funding for vocational education and training (e.g. ministries, local authorities, private enterprises and households).

Furthermore, it is necessary to have data on the employment integration of young people and on the transition from vocational education to employment. To do this, either household surveys (of the “employment survey” kind) that include questions on the prior situation (in this case “while undergoing training”), and on the employment situation at the time of the survey, or special surveys using samples of young people leaving the education and training system can be used. The latter usually provides more accurate information, and makes it possible, for example, to measure differences of integration that are linked to specialised training. Specialised industrial training produces better integration than specialised tertiary training, for example, but it is more expensive.

Lastly, it is good to have forecasts of the needs of the economy and society in order to put predictions and the training scheme in perspective.

8.2 CALCULATION

A calculation formula has to be explained for each indicator. This procedure makes it possible to draw up a detailed list of the basic information that is needed to calculate the indicators. For example, for the net enrolment ratio for the theoretical ages of primary education (often 6-11 or 7-12), it is necessary to know both the school rolls at these ages and the total population of these ages. This explanation is also necessary because the same indicator can often be calculated in different ways by different people. This is also true of other data such as the enrolment ratio and access ratios. Ambiguities are thus avoided, or at least limited. At this stage, it is interesting to identify breakdowns (e.g. by gender and category) that are needed when calculating indicators.

Here are some examples taken from the document on “Education For All”:

Name: Gross intake rate.
Aim: To measure the increase in the capacity to accept pupils.
Level: National and regional.
Breakdown: By gender.
Method of calculation: Numbers of new enrolments in a cycle/Population at the theoretical entry age into the cycle (e.g. 1st cycle = 7 years of age).
Source: Annual census.
Validity: ? (in practice, the validity of data can be uncertain).
Frequency: Annual.

Name: Gross enrolment rate.
Aim: To measure the capacity of schools to accept pupils.
Level: National and regional.
Breakdown: By gender.
Method of calculation: Total number in a cycle at all ages/Population of the cycle’s theoretical age group (e.g. primary school age group = 7-12).
Source: Annual school census.
Frequency: Annual.

Name: Net enrolment rate.
Aim: To measure the intensity of enrolment.
Level: National and regional.
Breakdown: By gender.
Method of calculation: Enrolment figures for a given age group/Population of this age group.
Source: Annual school census.
Frequency: Annual.

Examples of vocational education and training indicators:

Name: Rate of transition into vocational education and training.
Aim: To measure access into vocational education and training.
Level: National and regional.
Breakdown: By gender.
Method of calculation: Number of students admitted into the first year of technical and vocational education during a given school year/Number of students enrolling in the last year, for example, of basic education during the preceding year.
Source: Annual school census.
Frequency: Annual.

Name: Rate of vocational education graduates.
Aim: To measure the proportion of a cohort that obtains a vocational education diploma.
Level: National and regional.
Breakdown: By gender.
Method of calculation: Number of vocational education diplomas in a given school year at a theoretical age for obtaining the diploma/Total population at this age.
Source: Annual school census.
Frequency: Annual.

It is helpful for sources that have supplied data to indicate their validity. This enables the reader to have a more precise understanding of the information provided.

It is also important to define the terms used, and a glossary is essential in the final document. Some examples of definitions are given below. However, it is important to point out that glossaries can vary from country to country depending on how the indicators are interpreted. For international organisations, it is clearly

desirable that they should use the same definitions. Sadly, it is unusual for this to happen in practice.

Example of a glossary

Public expenditure on education: All money spent on education by local, regional and national administrations, including local authorities. Household contributions are usually excluded. Public education outgoings include current and capital expenditure.

School: An administrative unit where education takes place.

Formal education: A hierarchically-structured, and chronologically stepped, education system that extends from primary education to university and in addition to general academic teaching, includes a body of specialised curricula and varied institutions of technical and professional training.

Non-formal education: A process that extends throughout life whereby each person acquires aptitudes, values, skills and knowledge based on day-to-day experience and educational influences and resources in his/her environment (e.g. family, neighbours, workplace and play, the marketplace, the library and the mass media).

Informal education: This refers to any educational activity organised outside the formal system (whether carried out separately or within the framework of a broader activity), and aimed at serving clienteles of learners and identifiable learning objectives.

Private education: This includes religious schools, secular schools and basic schools. It usually takes place in establishments (schools or colleges/high schools) that are not linked to a public authority, but are administered and managed by private profit-making or non-profit-making bodies such as nongovernmental organisations or associations, denominational bodies, special interest groups, foundations and commercial enterprises.

School indicators: These are indices, rates, growth rates and quantities calculated on the basis of school statistics and, when necessary, on demographic, economic and other data. They have to summarise the data to make it more accessible and easier to use for the various people who employ quantitative data.

8.3 VERIFYING THE CONSISTENCY OF RESULTS

After the various indicators have been calculated, it is necessary to verify the consistency of the results obtained. In practice, a number of information sources are mobilised. All statisticians know the problems of using information in this way. For example, it is necessary to verify that net enrolment ratios do not exceed 100%, that they are not inconsistent with employment rates, and that education expenditure figures supplied by the ministry of education are of the same order of magnitude as those provided by the Ministry of Finance or the national statistics institute. This work is very important as it is what guarantees the validity of the whole exercise. It must be allocated the necessary amount of time.

Some examples of problems: in *Education at a glance No 3*, if we add net enrolment and employment rates for post-primary education, one obtains rates above 100% for several countries. This arises from a problem of definition: in fact, on-the-job training schemes are counted twice as the young people concerned are undergoing training but at the same time have an employment contract.

Net enrolment rates sometimes exceed 100% when demographic data and school data are inconsistent. In some countries, and particularly in the capital cities, net enrolment rates can exceed 100% because some children who come from isolated parts of the country that have little school equipment are enrolled in more educationally developed regions. In one country, for example, the net enrolment ratio exceeds 100% in the western area because that is where children from neighbouring districts are enrolled.

As far as financial data are concerned, use is often made of the planned budget as it is the easiest piece of information to find. It is often also the most recent. However, actual expenditures may be very different from planned budgets. The former are usually decided very late in the day, and data are often available a year or two later. This has to be researched very specifically for all these problems to be clarified, and series of consistent data constructed. If such research already exists, it is clearly very valuable, but estimates have to be made if it is not possible to harmonise all the data. Reliable elements over several years are needed to make estimates possible. The other solution is to indicate the sources of the data clearly, and to explain why there are differences. Let us not forget that this document is aimed at non-statisticians. Therefore, one must avoid jargon. Concepts associated with the various data should be comprehensible. It is important to make it clear that it is not possible to say everything with statistics. This is what verifying the consistency is all about, and it is important not to miss this target. It will be through transparency that the target is reached.

It is worth repeating here that accuracy is not a *sine qua non*. It is possible to monitor developments in the education system and identify crucial problems (which an indicators document is meant to achieve) even if one does not have particularly accurate data.

8.4 ANALYSIS OF THE VARIOUS INDICATORS

This is an essential stage if the work is to be successful. The analysis must be accessible to everyone involved in education, and this aspect must therefore be worked on with great care. The simple presentation of information is not easy, particularly for statisticians, but the quality of the document will be judged on how clear the text is. Even if the phenomena displayed are complex, they need to be presented simply, without any loss of accuracy. Many of the documents referred to are constructed according to the same logic: each indicator (or group of indicators) fills a double page, and each page consists of some of the text and is complemented by tables and graphs. The presentations of documents by Quebec and France are particularly successful.

The text is based on a general analysis of the indicator, and more particularly of how it has developed. The most recent results are examined in greater detail, after which, one studies one or several breakdowns of the indicator: for example by gender, and then by region. The commentary must be sober and precise, and comprehensible to the non-specialist. Too many figures make a text difficult to read. It is advisable not to overload the analysis with too many figures, particularly if they are in a table or graph.

Tables and graphs must be chosen carefully, and provide as much information as possible with as few data as possible. As indicators, they can present a time series, a breakdown of the indicator according to a category and, if the data are available, distribution by region. Graphs most commonly use:

- line charts to present time series;
- barcharts to present breakdowns of a given indicator by region or by gender;
- cartographic representations to highlight diversities and regional disparities.

In a document of this kind, it is not possible to present large amounts of data and graphs on all data because of the lack of space. The choice is therefore made on the basis of the requirement for accuracy or greater intelligibility. If we see a slight shift in an indicator as education's share of GDP, we can present a table with the exact value varying slightly, but this will be difficult to read in a graph. By contrast, access rates that have increased substantially are more visible on a graph than in a table.

The principle is to be flexible, and always to go for the representation that is easiest for the non-specialist to understand.

We shall add three comments here concerning the analysis and choice of the indicator, the presentation and design of the graphs, and lastly the period presented. The next few pages present various types of graph as examples of simple, clear representations.

8.4.1 ANALYSIS AND CHOICE OF THE INDICATOR

Analysis of a phenomenon can result in a change in the choice of indicator. Suppose, for instance, that one wishes to study the evolution of boy-girl disparities in a given area of education and a given country. The basic data can be seen in the table below.

If we look at the percentage of girls, we see that the disparities have fallen. However, if we continue our analysis, we see that the gap between the total number of boys and the total number of girls, or the gap between boys' and girls' enrolment rates, has risen. We can therefore conclude that disparities have increased, and to demonstrate this, it is preferable to choose one of the gaps rather than the percentage of girls. In this way, we can examine this table from a different angle, and calculate the boy/girl ratio (or the opposite). This time, we see that the former have fallen slightly (2.25 in 1989-1990 compared with 2.06 in 1993-1994), and in relative terms, the total number of girls has risen slightly faster than the total number of boys. Using the same basic data, we can therefore deduce two indicators that give impressions that are different and seem to contradict the same situation. In fact, this contradiction is only apparent. The absolute gaps and this relative growth are two sides of the same problem. They complement one another without contradicting one another.

In any event, we see that the percentage of girls taken on its own is not a good indicator of the changes in disparities.

It follows that we have to be careful when choosing how to calculate the indicator. The analysis can, as a result, play a role in redefining the indicator.

School year	Total enrolment	Enrolment of boys	Enrolment of girls	% girls	Gross enrolment rate – boys	Gross enrolment rate – girls
1989/90	301 218	208 634	92 584	30.7	39.3	16.7
1990/91	346 907	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	289 092	133 777	31.7	51.1	22.8
1993/94	471 792	317 654	154 138	32.7	55.2	25.7

We cannot stress enough how important it is to have a clear analysis of these questions.

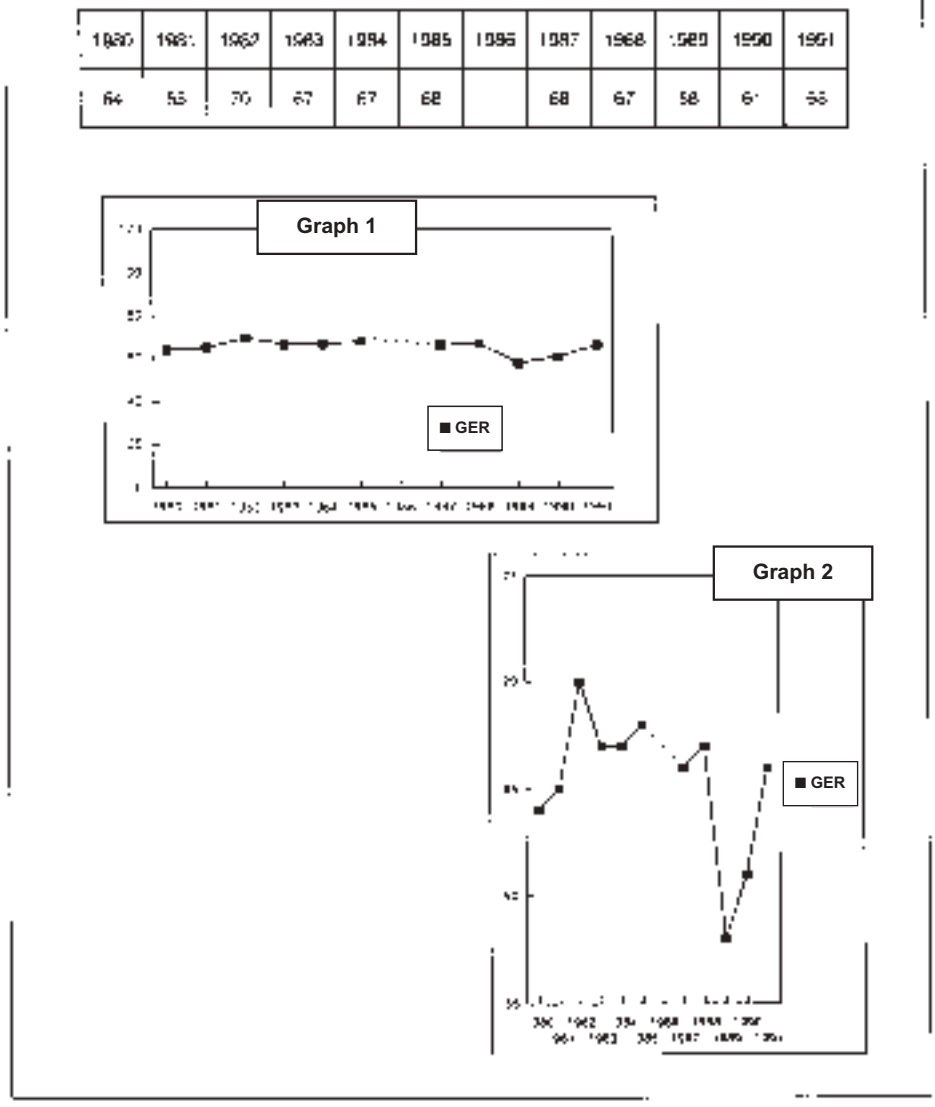
Question	Which indicator?
Can your education system receive all school-age children?	Gross enrolment rate
How many school-age children are enrolled?	Net enrolment rate
How many children are going to school for the first time?	Net Intake Rate, Apparent (or Gross) Intake Rate. Requirement for very detailed, but not always available, data (enrolment and number of repeaters for standard 1 by age). If these data are not available, it is possible to calculate the proportion of children born in a given year and starting school. Proxy: intake rate.
What is the duration of their school life?	Analysis of cohort, school life expectancy.
Do all children complete the first cycle?	Access rate in the last year of primary school. This may be calculated in at least two ways: as a product of the real intake rate by "school survival" until the end of primary education; or by calculating all pupils entering the last year of primary school in a cohort divided by the total population of this generation (a cohort = all the children born in a given year).
Do I have to develop vocational education for the industrial field?	Observe the employment integration of young people on completion of these training schemes, observe continuing training in this field, and obtain information on economic development in industry.

8.4.2 THE LAYOUT OF THE FIGURES

The presentation of an indicator is another important element. In fact, depending on the choice of the type of graph, and even of the form, it is possible to change the perception of the ill-informed reader. For example, by altering the breadth or length of the graph, that is to say its scale, it is possible to accentuate or diminish the perception of developments and disparities. It is therefore important to represent the graph in such a way as to facilitate visual analysis.

The example of the two graphs given below illustrates this point. These two graphs are based on the same table and represent the gross enrolment ratio (GER) for primary schools in country x in the form of line charts for the period 1980-1993 (the data were only available for certain years).

Graphic presentation
EXAMPLE: Gross Enrolment Rate (GER) in primary education

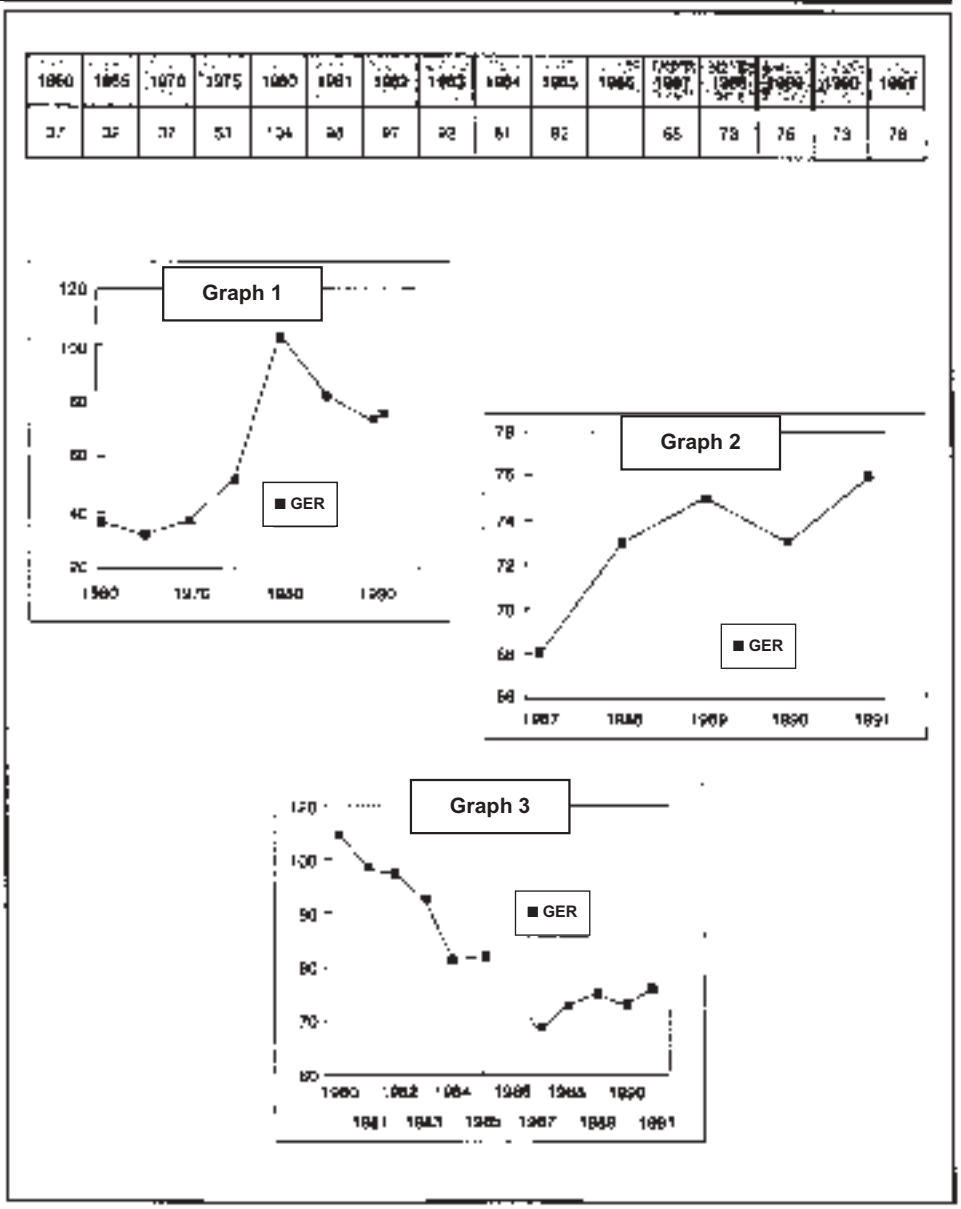


Where do the differences between these graphs come from? They are explained by two choices, which have been made by the author: they relate to the width and length of the graph, and the maximum and minimum values of the Y axis. The result is obvious: the first shows a fairly gentle development; the second a very sharp fall between 1987 and 1991. Here, it is interesting to show recent problems, but undoubtedly in a less accentuated way than in the second graph, and more perceptibly than in the first one. Again, it is a matter of balance between two extremes.

8.4.3 THE PERIOD PRESENTED

The breakdowns and the periods presented also have an impact on the presentation of the indicator. The following example provides an illustration of this.

Analysis of indicator: the period of coverage
EXAMPLE: Primary education Gross Enrolment Rate (GER)



The above table shows the movement in the gross enrolment rate (GER) at primary level in a country given between 1960 and 1991. The three graphs are based on this table, but have different reference periods:

- *Graph 1* covers the period from 1960 to 1991, and incorporates data for 1960, 1965, 1970, 1975, 1980, 1985, 1990 and 1991;
- *Graph 2* covers the period from 1987 to 1991, and presents annual data;
- *Graph 3* presents annual data from 1980 to 1991, with the exception of 1986, for which there are no available data.

Here, too, we can see how far the choice that has been made (in this case, the years represented) will change the analysis: the second graph allows for a feeling of great satisfation with constantly increasing results; the third is very alarmist, as it shows a substantial fall that is not compensated for by a recent rise; and the first clearly repositions the recent drop against the background of a fairly substantial growth from 1965 to 1980.

The choice of graphs partly depends on the objective, but here, there is little doubt that the first graph supports the most relevant analysis: substantial growth followed by a steep decline, and then slight growth over the last few years. It is clearly very interesting to look for explanations for variations such as these.

To summarise, the above examples show how important the choice of graphs can be.

As far as the text is concerned, the terminology must be precise. It is necessary to "educate" the reader by always using the right term. This is very important for communication. If a graph is complex, it must be accompanied by comments to aid comprehension.

If data relating to a given phenomenon come from several sources and are different, it is necessary to say so, in order for the document to be credible, and to give the reason in simple terms.

Two examples presented below will close this brief explanation: one is taken from *L'état de l'école*; the other comes from the document on indicators produced by Denmark.

The success of the indicator operation depends on the quality of work carried out during this stage. It is therefore necessary to devote maximum resources to it, mobilise all skills, and strive to produce relevant, short syntheses. It is the essential ideas that should be put forward, without foregoing the nuances associated with a system as complex as the education system. It is also important not to under estimate the time needed to put this information together. It is of capital importance. The project leader, who must take on the role of editor-in-chief, verifies that the editing style is consistent, particularly when there are several writers, and that all the indicators used (years of observation, and the presentation of tables and graphs) are also consistent.

For example, the project leader must ensure that the document uses the same symbols in all graphs. Ideally, he or she should be in charge of a team of statisticians and/or analysts who produce the document after they have shared out the indicators according to their expertise. Each writer will then have to take responsibility for his or her indicator(s).

The project leader's work here is very important. Given the breadth of his or her tasks, the project leader must ensure that he or she is assisted by another person who has good experience as a editor-in-chief: he or she must lay down an editorial line, and harmonise the various writers' styles and ways of working. Too much diversity is not acceptable in a work of this type.

Training and expert assistance will often be needed in this area in particular.

First example: an extract from *L'état de l'école*.

ANALYSIS OF THE INDICATOR
EXAMPLE - France: L'état de l'école

Six out of seven pupils enter the 6th year with at least basic reading skills. Three out of four pupils enter the 6th year with at least basic skills in numeracy.

In the evaluation of pupils' learning achievement on entering the 6th year in 1994, pupils gave correct answers to an average of almost 64% of questions in French, and 62% in mathematics.

Disparities between pupils are marked in these two subjects, the scores of the 10% best students being about 2.5 times higher than those of the 10% weakest. The disparities are slightly smaller in the two subjects compared with CE2. The disparities noted in previous years by gender, age and social background continued into 1994.

In addition to these averages, it is vital to try and make sense of the information in terms of skills. The Directorates of the Ministry that are involved, and the General Inspectorate, have accordingly worked hard to establish a nomenclature of reading, numeracy and geometry skills that enable us to assess pupils' levels in relation to skills thresholds. This allows us to estimate that more than eight out of ten pupils enter the 6th year with at least basic reading skills (extracting express information from a text). Almost eight pupils out of ten have basic numeracy skills (knowing and using whole numbers, and knowing the basic rules relating to decimals), and six out of ten pupils entering the 6th year have at least basic skills in geometry (knowing, and being able to draw, visual figures in the plane).

At international level, there is an indicator based on a study carried out in 1994 on the reading ability of children aged nine. A comparison of average marks obtained by samples of pupils in each country shows that, on average, French CM1 schools have a higher reading ability than most European countries.

Assessment of pupils' French on entering the 6th year is aimed at estimating reading and writing skills in four areas of application: the approach to texts, vocabulary, grammar and spelling. Assessment of mathematics is aimed at estimating skills and communications objectives in three areas of application: geometrical work, measurement and numbers. The national results of the assessment carried out in September 1994 on pupils entering the 6th year were obtained from a sample of pupils in public and private educational establishments. For the most part, the content of the tests varies from one year to the next, and efforts will be made to make comparisons in terms of improvement at the level of global scores.

Source: MEN, DEP. In respect of international comparisons: Education at a glance No 3, OECD CERI. Data have been taken from a study by the International Association for Educational Assessment (IAEA) on reading ability conducted in 1990 and 1991.

Field: All parts of France.

Source: L'état de l'école. 30 indicateurs sur le système éducatif, Ministry of National Education, Paris, 1995

EXAMPLE - France: L'état de l'école

1. Differences in success in French and maths-sixième (sixth year) – September 2001

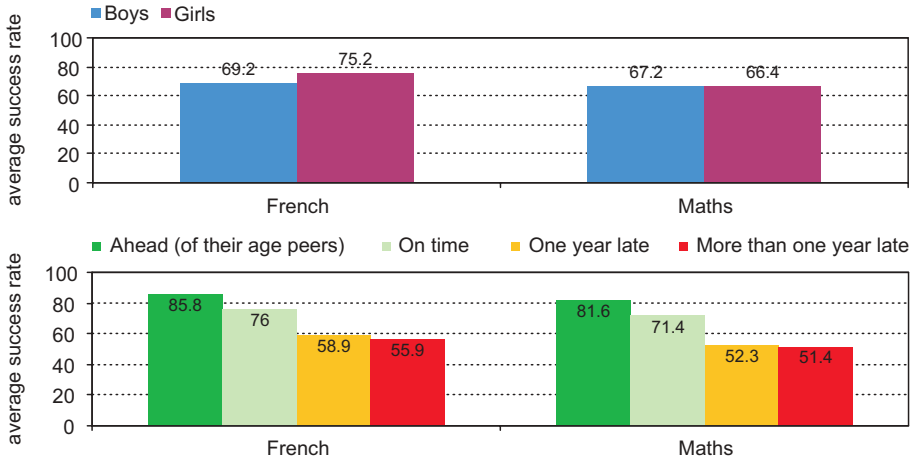
Marks out of 100

Sixième (sixth year)	Total	Gap analysis	Average* of bottom 10%	Average* of top 10%	Bottom 10% limit**	Top 10% limit**
French	72.0	15.3	39.0	92.8	52.2	90.2
Maths	66.9	19.0	28.2	92.5	39.7	89.0

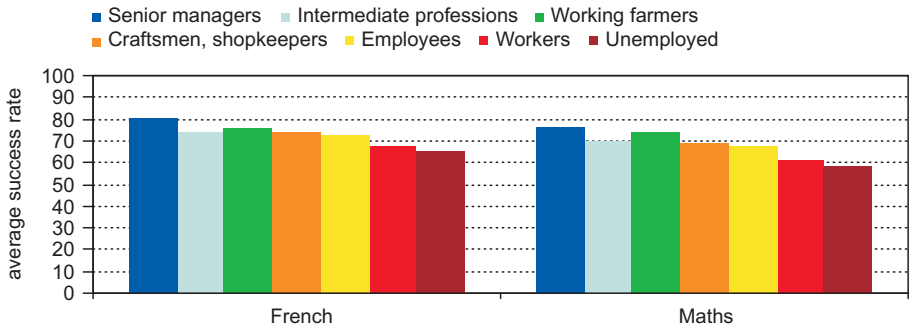
* *Average marks obtained by the bottom 10% or top 10% of students.*

** *Value of the first and ninth tenths: 10% of students obtain a mark of less than 52.2% in French; 90% of students obtain a mark of less than 90.2%*

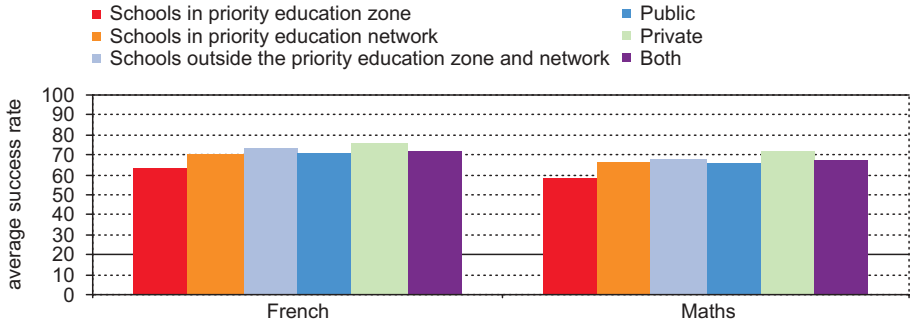
2. Results according to gender and age



3. Results according to social background



4. Results according to educational establishment



Source: L'état de l'école. 30 indicateurs sur le système éducatif, Ministry of National Education, Paris, 1995

Second example from Denmark:
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 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.

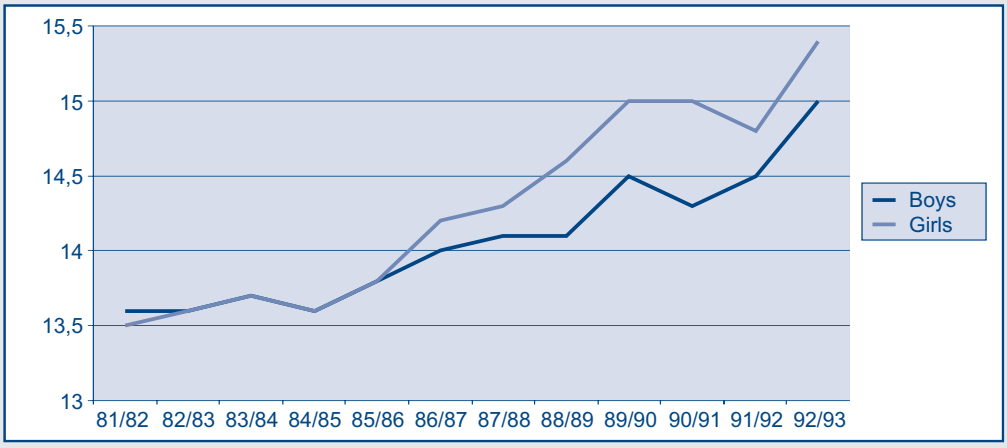
Seen in an international context, Danish children and young people receive more years of education. In highly industrialised countries, it is often expected that all young people have a minimum of 12 years of education. Fifteen years are relatively many, and in addition, there is one year in pre-school class for almost everyone. Today, 98% 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, the 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, the expected total duration of education was higher for girls than for boys. At the beginning of the 1980's, 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, aj 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% for women compared to 31% for men.

Expected total duration of education by gender, 1981/1982 - 1992/1993



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

8.5 USING THE DOCUMENT FOR INTERNAL AND EXTERNAL EVALUATIONS: THE CRITICAL NEED FOR TRANSPARENCY

Publication of a document of this type demonstrates a desire for transparency in the way in which education functions in a country, and it is for this reason that the decision to proceed with such a publication is political. It is therefore necessary to secure the minister's support and agreement. It is the minister who will validate the document – or, better still, write the preface.

It is not always easy, but is fundamentally important. It is vital to persuade political decision-makers of the need to publish information on a wide scale and, as has sometimes happened, to ensure that documents of this type do not lie gathering dust in (sometimes armour-plated) cupboards.

As soon as the document is published, it must be disseminated widely, and feed into the debate on education. It must therefore be accessible to politicians, (e.g. ministers and elected representatives), senior officials in the education system, associations of pupils' parents, teachers' unions, school directors, and administrative and technical staff in education establishments.

The aim is to turn it into a reference document for political discussion and the media. It is an ambitious objective, but it is the objective that must be set for a project of this kind.

Obviously, the operation will only be really successful if publication of the document accompanies, or follows, a change in the way in which decisions are taken: the culture of objective data must spread and develop. Without this change, the document will become less interesting and less useful. Documents of this type used to appear, and then disappear for lack of real impact. The ball is now in the decision-makers' court. The producers of the document must do everything in their power to demonstrate how useful it is and, as has already been said several times, must put it together in such a way that it becomes "something you cannot do without". A good example of a successful document is *L'état de l'école*, which became an essential tool in all political and social discussions on education in France.

8.6 UPDATING THE DOCUMENT

It is not enough to publish the document once, and then, after putting in so much hard work, go no further. To be used and to be useful, it must become a standard document, and to achieve that, there is only one solution: it must be published regularly so that the most recent data are always available.

It is therefore necessary to organise things in such a way that the document is produced regularly. This has an impact on work organisation and the gathering of data.

Computer tools allow us to update texts, tables and graphs relatively easily, and it is therefore necessary to organise the data on a spreadsheet and keep the same layout for the document. Updating must take place as soon as new data become available. It is, of course, possible to make use of automatic procedures, but they can sometimes be more cumbersome than manual updating. It is therefore necessary to analyse procedures properly before investing in automatic updating. The ideal, naturally, is to move rapidly towards annual publication. That must be the objective.

As has been indicated above, the chief editor must replace the project leader, and for the operation to become routine, it must be completely immersed in the ministry departments.

Clearly, the role of the chief editor is essential. It is the chief editor who maintains the document's quality and consistency, and who avoids any slippages, including those associated with the success of the first issue, such as requests for more information and more indicators.

9. OTHER USES OF INDICATORS:
INTERNATIONAL COMPARISONS, REGIONAL DIVERSITY, AND MONITORING SCHOOLS

9

Reference has been made throughout this guide to numerous documents that cover the whole of one country (e.g. Denmark – *Facts and figures - Education indicators*. Ministry of Education, 1996 Denmark – or France), but there has also been a presentation of a document that was constructed according to the same principles, but which focuses on regional analyses namely the French *Géographie de l'école*.

Similarly, one can also provide international comparisons in a national document: examples of this include the publications on Finland, France and Denmark. In this way, certain analyses can be put into a better perspective. Similarly, it is possible to include tables by region in a national publication. In France, it was decided that a special document would be developed for the regions, and this has resulted in some regional tables appearing in the national publication.

The main difficulty for a document that focuses on a region is related to the availability of data, because as far as financial indicators are concerned, for example, it is not possible to obtain the same detail as at national level. As for tools, it is necessary to use cartographical software to achieve the best visual representation of regional diversities. The ADDE "Cartes et Bases" software was used in *Géographie de l'école*, but other software packages such as AtlasGIS and Mapinfo may also be suitable. What is important is that the movement of data between the spread-sheet and the cartographical software is a simple as possible.

Work on indicators can also focus on educational establishments and vocational training centres. This should make it possible to report on their functioning and on their results. In these circumstances, each indicator for a given school must be accompanied by its regional and national value.

These are reference data, and are very useful in helping schools to compare themselves to one another. An example of this is work carried out in France in relation to secondary schools. Since 1994, an

instrument called the IPES (Indicateurs pour le Pilotage des Établissements Secondaires – Indicators for the Guidance of Secondary Schools) gives them access to a set of indicators backed up by regional and national references. The IPES boasts maximum computerisation of its information system. This is also the first feedback of information to the schools, which, afterall produce the information in the first place, often with some difficulty.

The list of the indicators used by upper secondary schools (*lycées* or high schools) appears on the next page. It includes an indicator that is very important for vocational education: the number of pupils having found a job seven months after leaving the *lycée*.

The publication of indicators by schools raises a range of problems: the issue of transparency, of the confidentiality of certain data re-emerges, and the presentation of the document can hardly be the same as the document presented here.

Only three indicators have been published in France. It has to be said that some had already been published in newspapers in a fairly summary manner, and the Ministry should have been more precise. In practice, a rough comparison of examination results by school can easily lead to hasty conclusions as to their effectiveness and quality. That is why the document on *lycées* in France gives great importance to environmental indicators and indicators having to do with the school population. These various problems lie somewhat outside the framework laid down for this work. We shall therefore only refer to them briefly here.

INDICATORS FOR THE MONITORING OF SCHOOLS

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 the 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

10. THE SPECIAL CASE OF COMPARATIVE INTERNATIONAL INDICATORS

10

It is also possible to produce a publication that sets out comparative indicators of various education systems. The most important research has been conducted for *Education at a Glance* by the OECD with the help of several groups of national experts, but work has also been carried out recently by UNESCO and the European Union.

It is essential for this work to define and gather *comparable* data and indicators. That makes it more difficult to define the indicators and gather the information necessary for the calculations. To illustrate these difficulties, it is interesting to use research carried out by UNESCO when drawing up the report in 2000 for the "Education For All" (EFA) programme.

10.1 PROBLEMS ENCOUNTERED AT THE LAST "EDUCATION FOR AU" EVALUATION IN 2000

Although technical instructions defining each indicator and the method of calculation were sent to all countries, the team in charge of evaluating at world level, which was based at UNESCO's Institute for Statistics, was faced with problems when comparing certain data provided by countries. The problems derived partly from the fact that countries did not have the same definition or understanding of a given indicator, and partly from the field covered (e.g. age group). This applied, for example, to early childhood programmes, which should only have covered those that had an educational function, and the calculation of whose gross ratios must in principle only take account of the preschool education age group, which is normally 3-5 years of age. Some countries incorporate all programmes, including child welfare programmes (e.g. crèches, nurseries and similar establishments), thereby overestimating the value of the gross ratio. These problems of definition and poor interpretation of what the indicator is supposed to measure have also been found in primary education.

10.2 ILLUSTRATION OF THE PROBLEMS ENCOUNTERED AT "EDUCATION FOR AU" 2000

Let us take the case of Kazakhstan as an example. In Kazakhstan, the age for entering primary education is theoretically seven, but the law allows parents to send their children to primary school before then, so a lot of children actually start school at six. As a result, when statisticians in Kazakhstan calculate the net intake ratio and the net enrolment ratio in primary education, they include the age of six, despite the fact that the logic of calculating these indicators insists that it should be based on the age of seven, the theoretical age for entering primary education.

The rates calculated in Kazakhstan, therefore, can be considered as Gross Intake Rates (GIR) and enrolment rates instead of net ratios, strictly speaking. In fact, the calculation of a net ratio means that there is consistency between the numerator and the denominator, although that is not the case here. The number of children at school aged six to seven is transferred to the seven-year-old population as far as the net intake ratio is concerned, and children aged six to ten are transferred to the seven to ten-year-old population in respect of the net enrolment ratio.

The incorrect method of calculating these two indicators has an impact on the outcomes and, as we can see in the table below, affects comparisons between Kazakhstan and other countries.

2000/01	School rolls and population			Net intake rate	
	New entrants aged 7	New entrants aged 6-7	Population aged 7	International level	Kazakhstan level
NIR	192 740	277 173	291 978	66.0	94.9
2000/01	**School rolls and population**			**Net enrolment rate**	
	School rolls of 7-10-year-olds	School rolls of 6-10-year-olds	Population of 7-10-year-olds	International level	Kazakhstan level
NER	1 068 457	1 154 352	1 216 165	87.9	94.9

It is therefore important to avoid this kind of problem as much as possible if we want to compare indicators between countries.

10.3 HOW TO CARRY OUT DATA COMPARISON AT INTERNATIONAL LEVEL

10.3.1 USING ISCED[14] 97

First of all, the definitions used by countries when gathering data at international level need to be harmonised. In other words, levels of education need to be defined according to relevant international criteria. The International Standard Classification of Education (ISCED) system, which was revised in 1997, offers the type of framework that is needed. It is one of a number of tools for harmonising data according to international standards, and for adapting them for international comparisons.

ISCED 97 classifies programmes of education. It has six levels of education, and inside each level, distinctions are drawn as to the orientation of the programme (e.g. general and vocational), and destination, which is what pupils can theoretically do after they have completed the given programme.

In addition to these levels, ISCED also produces a classification of fields of study[15].

Other nomenclatures are frequently used in analysing the training-employment relationship: one example is the ISCO classification, which is also used for employment activities. As with ISCED, it is very important to have a good understanding of the nomenclature being used; any international comparative study is otherwise ruled out.

10.3.2 IDENTIFYING WAYS OF CALCULATING EACH INDICATOR

The gathering of data at international level also means that all countries have to understand, and define, a given indicator in the same way. To achieve this, it is important to have an explicit calculation formula for each indicator. This practice involves drawing up a detailed list of the information needed in order to calculate indicators. This explicit formula is also necessary because, as we saw in the case of Kazakhstan, a given indicator can be calculated in different ways by different people. In this way, ambiguities are avoided or, at least limited.

14 International Standard Classification of Education

15 *Un outil au service des comparaisons internationales* = la CITE (A tool for international comparison: ISCED) - see bibliography, UNESCO, November 1997.

11. SOME EXAMPLES OF HOW TO USE INDICATORS IN VOCATIONAL EDUCATION AND TRAINING

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11.1 MONITORING THE EFFECTIVE LINKS BETWEEN TRAINING AND EMPLOYMENT, THE TRANSFORMATION OF VOCATIONAL TRAINING, AND THE ESTABLISHMENT OF DIPLOMAS AND FORMS OF VOCATIONAL CERTIFICATION

It is particularly important to evaluate vocational training diplomas by examining the employment integration of young people who leave the education system with these diplomas. In this way, it is possible to verify the relevance of the diploma and the recognition it is granted on the labour market. In France, commissions responsible for creating and modifying vocational diplomas attach great importance to surveys of the employment integration of young people. A number of surveys have been carried out in this area, covering periods ranging from seven months to five years after the students have left the education system. In the latter case, it is also possible to use surveys to study all the employment trajectories followed.

The results of these surveys, and particularly the various indicators that are obtained, strengthen discussions on the opportunity to change the content of training schemes, and therefore the diploma, and on the importance of stopping a given training scheme. The indicators used include the time spent in unemployment, the time spent in finding a job, the total duration of the employment, the kind of employment taken (linked or otherwise to the diploma), the status of the employment (i.e. precarious or stable), and salary.

When creating a diploma, it is vital, while studying the professional integration of students having graduated from training schemes that are close to those still being developed, to mobilise other information, particularly any that concerns changes in the sector targeted by the training.

11.2 MONITORING HUMAN RESOURCE MANAGEMENT IN ENTERPRISES, AND ITS IMPACT ON THE RECRUITMENT OF YOUNG PEOPLE

Work on this also provides an opportunity to observe the recruitment behaviour of enterprises, and to identify slippages in their demands, or developments in employment in the sector that has been targeted by the training: for example, it has been possible to see that in France secretarial jobs are no longer being given to holders of initial diplomas in vocational training, but to more qualified young people. In such circumstances, it is important to stop or change these first-level training schemes. In some industrial sectors, it has also been possible to observe that enterprises have become more demanding; here, too, it has been necessary to adapt the training and the diplomas. However, it is important to verify that the behaviour of enterprises is not influenced by temporary events on the market: substantial unemployment can often encourage them to recruit more highly qualified staff because they are available and not necessarily more expensive. It is therefore necessary to get more general information on the training-employment relationship, which can be obtained from surveys of the active population such as employment surveys or labour force surveys.

Indicators that make it possible to find out a lot about enterprises and sectors that recruit young people after they have left the education system are also very useful; the proportion of young people who have just left the education system and in enterprises recruitments constitutes an interesting indicator to identify by economic sector and size of enterprise. It often serves to put the political declarations into perspective, and is therefore an important tool in the dialogue between the education system and enterprises.

11.3 OBSERVATION AND FORECASTS OF THE TRAINING-EMPLOYMENT RELATIONSHIP AT MACROECONOMIC LEVEL

At macroeconomic level, it is important to check the main balances between the needs of the economy and the functioning (and therefore the “production”) of the education system. If it is clear that there cannot be a perfect match between these two elements, it is necessary to ensure that the gap remains small and does not result in serious dysfunctioning. This work must be conducted on the basis of the facts and be forward-looking. This is all the more important given that the demographic situation in France indicates that tension on the labour market is very likely to be associated with a large number of retirements. Very useful comparisons can be made between indicators on the levels of training required by the enterprises and indicators on the observed or predicted levels produced by the training system. Major imbalances can trigger remedial actions that can impact on the education system and on human resource management in enterprises. In practice, a training and internal promotion policy in enterprises can usefully relieve the education system in its a frantic race to raise the level of training courses.

In this way, it is possible to see how important it is to receive observations and reports regularly on the training-employment relationship and forecasts, notwithstanding the limitations of forecasting exercises.

11.4 LIFELONG LEARNING PARTICULARLY AS PART OF WORKING LIFE

Attention has already been drawn to the importance of training during working life. It is therefore essential to build indicators that can measure the importance of these training measures and their impact on people’s careers and on economic development. It is also very useful to know about the development of the kinds of certification obtained after initial training. The development of training schemes and forms of certification during working life will be a major issue in the coming years.

12. CONCLUSION

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It is necessary to place the statistics and data gathered on the education system in a living context. The publication of a report on indicators is the right way of going about this, particularly as the tools to do so are available nowadays. They are easy to use and, if one is careful, quite inexpensive. A political decision is essential for the report to be produced. But it is also crucial to stress transparency in order to underline the will to improve what is still a hope as we confront the perils that beset us at the start of the 21st century namely education.

Debates in this field must rely on objective data that are accepted by all. In this way, an in-depth study of the numerous real problems that arise in each country is possible. Facilitating debate and providing food for thought: which brings us back to the objectives defined at the beginning of this guide.

As for vocational education and training, expectations are equally great. The qualifications and skills that are acquired constitute a key element in a country's development, and here, too, the need for evaluation in order to report and give better direction is unquestionable.

As soon as the statistical work has got under way, it is always possible to go further and improve the reliability of existing indicators and, for example, create indicators to help run schools and vocational training centres. But that is another story. To be continued.

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