

**Handbook on**

**MONITORING  
LEARNING  
ACHIEVEMENT**

**Towards capacity building**

**Vinayagum Chinapah**

**UNESCO-UNICEF follow-up to Jomtien**



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## **FOREWORD**

Providing access to, and improving quality, in basic education continue to challenge educators in the major part of the world. In 1990, this concern was one of the major recommendations of *the World Conference on Education for All*, held in Jomtien, Thailand, under the joint sponsorship of the UNDP, UNESCO, UNICEF and the World Bank. More precisely, the Declaration adopted from that Conference pointed out the need to “define acceptable levels of learning acquisition for educational programmes and to improve and apply systems of assessing learning achievement”.

Recognizing the need to develop appropriate systems of assessment, to monitor learning achievement and by the same token to improve learning achievement, UNESCO, in collaboration with UNICEF, launched the Joint Monitoring Learning Achievement Project which aims at strengthening national capacities in this field.

The purpose of the present *Handbook* is to provide policy-makers with the necessary analytical tools and indicators to raise the quality of basic education delivered. Throughout, by putting emphasis on learning achievement, the *Handbook* keeps in view UNESCO's fundamental objectives: **the promotion of learning for all**.

The *Handbook* focuses on the experiences of the group consisting of five pilot countries (China, Jordan, Mali, Mauritius, and Morocco) in designing and in conducting their own monitoring learning achievement programmes. These concrete examples indicate the steps that might be taken to bring about improvement in monitoring learning achievement. Furthermore, the various experiences described in this *Handbook* illustrate how national task forces can be mobilized to reinforce the *monitoring culture at country level*.

This *Handbook* should, therefore, be of assistance to all those who are genuinely concerned about how to improve and to monitor the quality of basic education on a permanent basis, and learning achievement, in particular. As it is the case now in some 20 additional countries participating in the Monitoring Project, it is hoped that this *Handbook* will inspire other countries to undertake similar projects in order to build and strengthen the **Monitoring Culture** required to keep the learners at the centre of all educational initiatives.

**Colin N. Power**

Assistant Director-General for Education  
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## **ACKNOWLEDGEMENTS**

This *Handbook* grew out of the concerted efforts of multiple actors who, over a long period of time, strived a lot to voice out their concerns and convictions that a **Pedagogy for All** is possible for the learner whoever she/he is, wherever she/he lives and whatsoever she/he has inherited. My own experience, over 20 years, in international and comparative education and more recently, since September 1992 in leading the Joint UNESCO-UNICEF Monitoring Learning Achievement (MLA) Project, points at this direction. The *Handbook* is therefore meant to bring to the fore the added contributions of a wider group of policy-makers, planners and educational practitioners from China, Jordan, Mali, Mauritius and Morocco for the institutionalization of a Monitoring Culture in their respective countries. It is built upon a user-friendly approach, nationwide partnership and inter-agency cooperation for an **Education of Quality for All**, responding, henceforth, to the initiatives of the World Conference on Education for All, held in Jomtien (1990).

This *Handbook* would not have come into being without the UNESCO-UNICEF Inter-Agency Cooperative Programme and support from headquarters and in-country offices. I am grateful for the support from my colleagues of the Education Cluster at UNICEF headquarters, of the Education Sector at UNESCO and of UNICEF and UNESCO in-country offices.

The other members of the Monitoring Project team, Florence Migeon and Stephanie Termoul as well as the consultants associated with the project since 1992, Cheick Omar Fomba, Uta Papen, Oshani Perera, Antonia Miklikova, Astera Koskas, Romain Maitra, Zhao Shangwu and Kim Chi Tran, played an important role in the preparation of this *Handbook*. My thanks are due to all of them and so is my appreciation for their support and time given to this project.

Finally, I wish to express my sincere appreciation for the participation of thousands and thousands of pupils, their parents, teachers and school headteachers in the Monitoring Project since 1992. We all hope that other works of this nature will help the building and strengthening of a Monitoring Culture for a **learner-centred quality education**.

**Vinayagum Chinapah**

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Global Action Programme on Education for All  
UNESCO  
Paris, July 1997

## **ACRONYMS**

<b>ABC</b>	Assessment of Basic Competencies
<b>BLCs</b>	Basic Learning Competencies
<b>BRAC</b>	Bangladesh Rural Advancement Committee
<b>ECD</b>	Early Childhood Development
<b>EFA</b>	Education for All
<b>EMIS</b>	Educational Management Information System
<b>IAEP</b>	International Assessment of Educational Progress
<b>IEA</b>	International Association for the Evaluation of Educational Achievement
<b>IIEP</b>	International Institute for Educational Planning
<b>MLA</b>	Monitoring Learning Achievement
<b>OREALC</b>	Regional Office for Education in Latin America and the Caribbean
<b>SPSS</b>	Statistical Package for the Social Sciences
<b>TCDC</b>	Technical Cooperation Among Developing Countries
<b>UNDP</b>	United Nations Development Programme
<b>UNESCO</b>	United Nations Educational, Scientific and Cultural Organization
<b>UNICEF</b>	United Nations Children's Fund
<b>WCEFA</b>	World Conference on Education for All

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# **World Declaration on Education for All**

## **Article 4**

### **FOCUSING ON LEARNING ACQUISITION**

*Whether or not expanded educational opportunities will translate into meaningful development — for an individual or for society — depends ultimately on whether people actually learn as a result of those opportunities, i.e. whether they incorporate useful knowledge, reasoning ability, skills and values.*

*The focus of basic education must, therefore, be on actual learning acquisition and outcome, rather than exclusively upon enrolment, continued participation in organized programmes and completion of certification requirements. Active and participatory approaches are particularly valuable in assuring learning acquisition and allowing learners to reach their fullest potential. It is, therefore, necessary to define acceptable levels of learning acquisition for educational programmes and to improve and apply systems of assessing learning achievement.*

**World Conference on Education for All  
Jomtien, Thailand  
March 1990**

# Introduction

*The World Conference on Education for All in Jomtien, Thailand (March, 1990) is a landmark for the promotion of greater access and better quality in basic education worldwide. The achievement of an Education of Quality for All requires the focus on learning acquisition and outcome and not exclusively upon enrolment, continued participation in organized programme and completion of certification requirements.*

## ***Towards a monitoring project approach***

The Joint UNESCO-UNICEF Monitoring Project, launched in September 1992, has a specific and deliberate focus on learning achievement in basic education, as defined in Jomtien. Its principal goals are to provide policy makers and front-line implementors with the necessary conceptual and analytical tools and indicators to monitor the quality of their basic education programmes, in general and learning achievement, in particular.

The Monitoring Project approach, therefore, focuses on the development/strengthening of national capacities and involves a “critical mass of people” in order to monitor, on a continuous basis, the quality of basic education and to institutionalize a *monitoring process* which permits and encourages constant improvement. Furthermore, the project facilitates the development of cost-effective strategies to information gathering, processing, reporting and broad-based dissemination of findings, both nationally and internationally.

This *Handbook* is an outcome of the experiences and lessons learnt from the Monitoring Project from the first group of five pilot countries (**China, Jordan, Mali, Mauritius, and Morocco**). It is designed to outline the monitoring process with a special emphasis on basic knowledge, skills, competencies, and attitudes that are defined as the desired outcomes of basic education, while taking into consideration the learning

environments (home, community, school, and classroom) influencing these outcomes, regardless of the specific curriculum that has been followed. The *Handbook* is addressed to educators, trainers, planners, evaluators/researchers and policy-makers who wish to undertake activities aimed at monitoring an **Education of Quality for All**.

## ***Inter-agency cooperation***

A fine example of inter-agency co-operation, the Monitoring Project benefits from the participation of UNESCO and UNICEF. The central team at UNESCO Headquarters serves as think-tank for the project, providing technical expertise, developing training manuals, prototypes, and promoting exchanges between participating countries. The team is responsible for conducting training workshops in order to fine-tune the national design, instruments and analyses to be used by the national and sub-national project teams. Besides funding support to the project, i.e. the support to the Monitoring Project team at UNESCO and sizeable additional funds for in-country project execution, UNICEF participates through consultations with the government and the national task force in all phases of implementing this inter-agency project.

## ***National capacity building process***

The experiences of the first group of countries in conducting monitoring activities show the importance of broad-based mobilization of expertise at national and sub-national levels. Skilled human resources exist in almost all the participating countries, but they are not always adequately identified, mobilized and assisted.

The establishment of the national task force is a crucial step in national capacity building as the ultimate aim is, for each country's monitoring system, to be self-sufficient after two or three years.

By involving core trainers and peripheral trainees, the first group of five countries has succeeded in developing *a simple, feasible, and sustainable methodology* for monitoring learning

achievement as a result of the UNESCO missions and a series of international, national and sub-national training workshops. National task forces have identified representative samples of schools and pupils, conducted pilot testing of the instruments, carried out the main survey and analysed their data using SPSS-PC or other related data processing softwares.

## ***Educational indicators for monitoring***

Basic education refers to education intended to meet basic learning needs; it includes construction at the first or foundation level on which subsequent learning can be based. More precisely, basic education refers to education intended to develop basic learning skills (i.e. the “3Rs” as well as some basic life skills necessary for the children to survive, to improve the quality of their lives and to continue learning). Following this definition, and by making use of prototypes developed by the UNESCO team at Headquarters, the participating countries created their own core and country-specific indicators which covered the domains of literacy, numeracy and life skills. In addition, the learning environments were captured through questionnaires addressed to a representative sample of pupils and their parents, class teachers and school headmasters.

The Monitoring Project has a special and deliberate focus on minimum basic learning competencies (BLCs) in the domains of literacy, numeracy and life skills. BLCs represent the levels of learning in a particular subject comprising basic knowledge, understanding, skills, abilities, interests, attitudes and values which are considered minimum but essential for all pupils to acquire at the end of a particular standard or stage. They can be regarded as attainment targets below which learning competencies are not sustainable.

## ***Limits and recommendations***

The present *Handbook* does not claim to cover all aspects of the monitoring process in the participating first group of countries. It is important also to note that there is a wide and burgeoning literature, mapping different educational assessment and evaluation approaches, methodologies and experiences. A status report presenting different experiences

in monitoring and surveying learning achievement was done at the initial phase of the project (see Chinapah, V. 1992). The recent publication "Assessment in Transition - learning, monitoring and selection in international perspective" (Little, A and Wolf, A, 1996) may also be referred to for additional reference in this area of intervention.

This *Handbook* draws upon concrete experiences on the *why, the what, and the how* of the monitoring learning achievement process. It also clearly indicates how much more is needed to develop the **Monitoring Culture**. In addition, several training modules and training guides for sampling, instrument construction, data processing and data analysis are now available and may serve as supporting materials to the *Handbook* (see Annex I for available documents on the project). National reports will be published separately to complement this *Handbook* in order to present the process in detail in the design, implementation and reporting of the various phases of the Monitoring Project.

The major recommendations expressed during the International Workshop on the Monitoring Project held in Paris in May 1995 (see *Final Report, Monitoring Learning Achievement: Towards Capacity Building*, UNESCO, May 1995) are taken into account in the fine-tuning of this *Handbook*. Some of these are:

- It is important to situate how the methodology developed within the framework of the project can complement the routine process of collection and reporting of educational statistics and how it can contribute to building/strengthening educational management information system at national and sub-national levels.
- Reporting of results and findings need to reach the critical mass of stakeholders and should influence educational policy-making and reform processes.
- There is a need to strengthen policy analysis, to train stakeholders at different levels and to engage them in policy-dialogue.
- The national task force has to ensure that mechanisms are in place, in order to repeat the exercise on a regular basis and to institutionalize the monitoring process.

## **Organization of the Handbook**

The *Handbook* is divided into six main sections. In the first section, the groundwork for the launching of the Monitoring Project is presented in the form of its mandate, organizational structure, conceptual framework and coverage. The approach developed within the framework of the project is country-specific. With the primary objective of assisting countries to develop and/or strengthen their capacities for monitoring learning achievement, the project operates on a “critical mass approach” to national capacity building. At present, the experience from this first group of countries is being used through the Technical Cooperation among Developing Countries (TCDC) mechanism to launch and implement the Monitoring Project in some 20 additional countries. **It is only through the mobilization of endogenous human resource capacities that a system for monitoring learning achievement can remain sustainable.**

In the second section of the *Handbook*, the *Implementation Strategies* designed for the Monitoring Project are presented and discussed in view of the experiences from the first group of countries. Hopefully, this will continue serving as a guide for the conceptualization and operationalization of the project in other countries. It is, therefore, important to recognize and understand the nature and role of the national task force, the modalities for national capacity building and the adjustment of the overall project design to country-specific problems, needs and priorities.

The survey instruments (tests and questionnaires) are described in the third section, under *National Instruments*. The concept of basic learning competencies (BLCs) and learning environments are described and presented through concrete examples of the instruments —tests and questionnaires — from the first group of countries demonstrating the country-specific approach of this project (see also Annex II for a presentation of common core and country-specific items).

In the fourth section of the *Handbook*, some examples of how to design and implement a step-by-step strategy for *Data Processing and Data Analysis* are presented (i.e. from simple univariates to complex multivariates using path analysis with LISREL). A common analytical framework for the analysis and reporting of the data from the project is proposed.

The fifth section on *Findings and Implications for Policy-Making* examines the results of the survey undertaken in the first group of countries. These results — the analysis of differences in basic learning competencies and the factors influencing them — serve above all as examples of how to present and to interpret national findings to reach policies aiming at quality improvement in basic education.

In the sixth section *Lessons Learnt* from the first group of countries, a critical appraisal of the experience of the Monitoring Project is made. Again, it is intended to offer guidelines to other countries on how to develop and implement their own project and how to report and to disseminate the lessons learnt to both national and international audiences. Models for sampling, instruments development, data analysis, and reporting are suggested on the basis of the lessons learnt. Finally, the *Looking Ahead* section highlights the key aspects of the Monitoring Project and provides an update of activities carried out after the first group of five countries.

### Implementing the Monitoring Project in the five pilot countries

<b>Countries</b>	<b>Identification Mission</b>	<b>Project Document</b>	<b>Pilot Testing</b>	<b>Final Instrument</b>	<b>Data Collection</b>	<b>Data Analysis</b>	<b>National Reporting</b>
China	x	x	x	x	x	x	x
Jordan	x	x	x	x	x	x	x
Mali	x	x	x	x	x	x	x
Mauritius	x	x	x	x	x	x	x
Morocco	x	x	x	x	x	x	x

# 1. Following up to Jomtien

*Since the World Conference on Education for All (WCEFA), held in Jomtien, Thailand in March 1990, a wide range of new initiatives has been developed and adopted in pursuit of basic education for all children. Issues such as increased access to basic education, especially for girls and rural populations, have been approached with new vigour.*

## **WCEFA and project mandate**

It has been recognized, however, that quantitative improvement is not enough. Attention must also be paid to improving the **quality** of basic education for all. Increased access and enrolment is meaningless if not accompanied by improvements in the nature and quality of education.

Following the WCEFA, it became clear that appropriate systems of assessing learning achievement needed to be defined and developed, not only to measure what was actually being learned but also how well the system was working. What were the strengths and weaknesses in educational opportunity? How well were individual schools confronting the deficiencies? What were the factors influencing learning achievement?

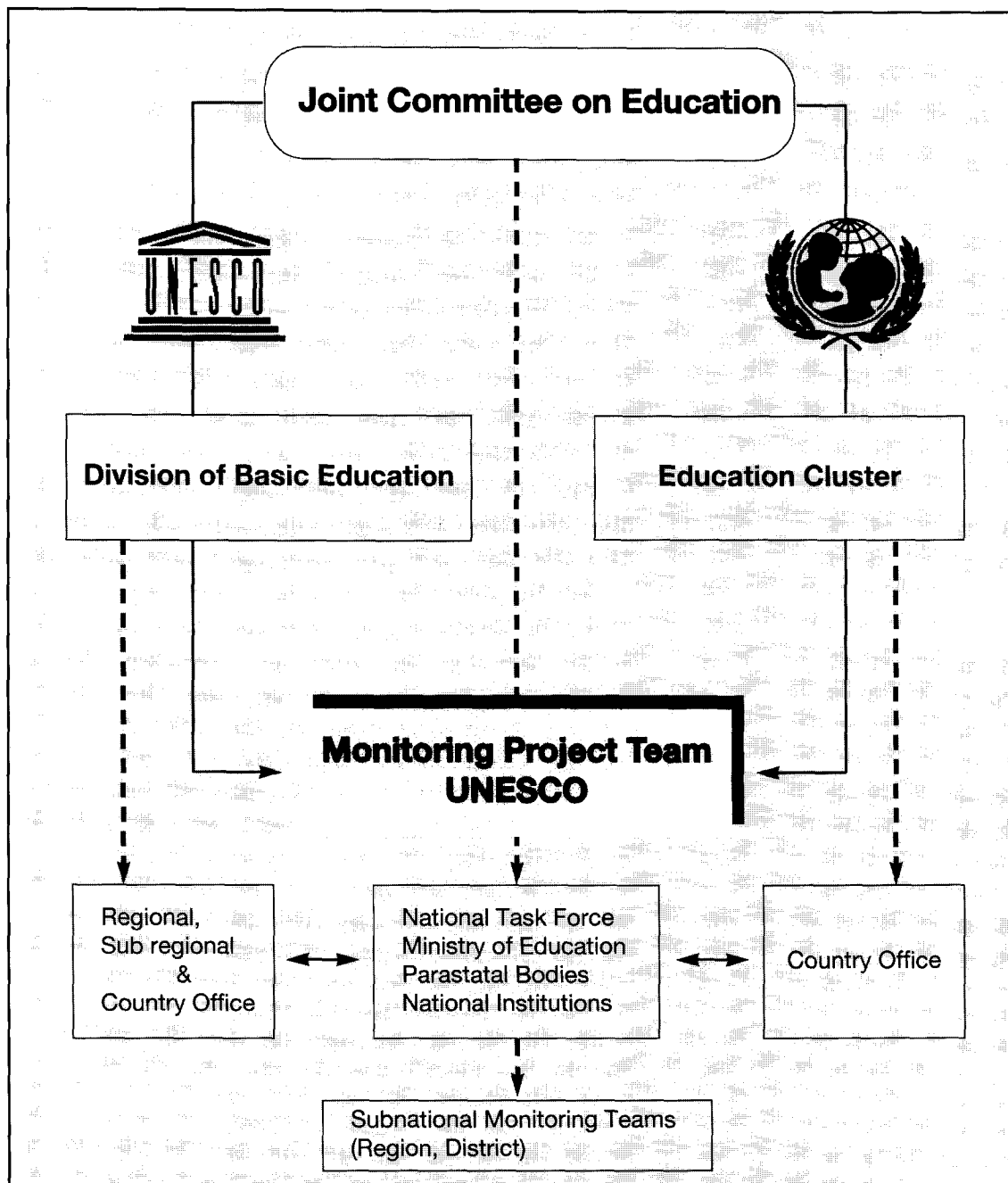
In the past, assessment served the purpose of providing information — be it basic baseline statistics or data to be used for selection purposes or for policy-making at local and national levels.

But for assessment to play a useful part in improving educational quality it must be **responsive** — that is, not only be able to provide feedback but also to help bring about changes based on it. Ideally, it must be flexible in nature and adaptable to individual contexts of schools, classrooms and communities.

*Increased access and enrolment is meaningless if not accompanied by improvements in the nature and quality of education.*



**Box 1. Organizational chart of the UNESCO-UNICEF Co-operative Programme for the Monitoring Project**



# **The Joint UNESCO-UNICEF Monitoring Project**

## **A solution-finding approach**

*Based on the “critical mass” approach, hundreds of trainers and policy-makers have been reached in the first two years of the project.*

The Monitoring Approach was developed in the framework of the **Joint UNESCO-UNICEF Project on Monitoring Education for All Goals: Focusing on Learning Achievement** to respond to these new educational priorities. Unlike the conventional approach to educational assessment, which is geared to locating the origin of the problem, the Monitoring Project approach is oriented to finding solutions, using country-specific national models.

The Monitoring Project began in September 1992 with the participation of five countries — China, Jordan, Mali, Mauritius and Morocco. Based on the “critical mass” approach, in which a core group is trained which in turn trains others, hundreds of trainers and policy-makers have been reached in the first two years of the project. In Jordan alone, for example, the “multiplier effect” in training has meant that a core group of 53 trainers has led to some 195 peripheral trainees being trained, and more than 20 national and subnational workshops have been held in the country.

## **Project objectives and modalities**

*The overriding aim was to assist countries in building national capacities, so that they could develop their own national instruments.*

The project sought to identify factors that influence learning achievement — at school, at home, in the community — and find ways to measure and define them. Through in-country identification missions, a number of workshops were held, including the International Workshop on Survey Methodology, held at UNESCO Headquarters in February 1993. The objectives of the Monitoring Project were fine-tuned, and the design and guidelines for the survey instruments were agreed upon through permanent dialogue between the national task forces of the countries and UNESCO, with UNICEF providing technical and financial assistance. The overriding aim, however, was to assist countries in building national capacities so that they could develop their own national monitoring instruments.

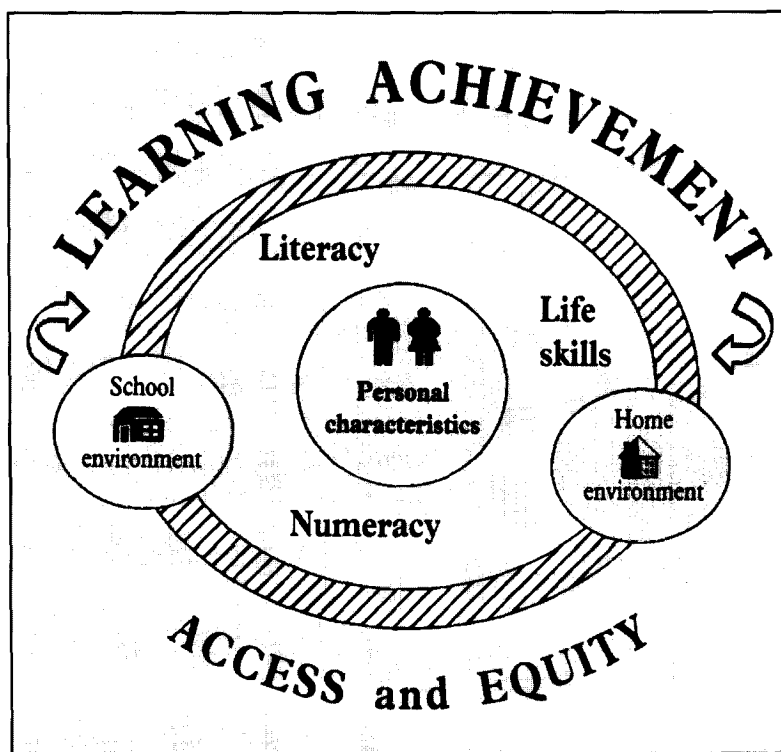
## Box 2. The "critical mass" approach to capacity building: The case of China

<b>April 1993</b>	<i>Design of monitoring instruments</i>	Involved were the director and staff members of the Department of Chinese Language, Mathematics and Science in the Primary School of People's Educational Press, and curriculum experts and teachers from Beijing Normal University, China National Institute for Educational Research, Shaxi Institute for Educational Research, and Jiansu, Jilin and Guizhou provinces .
	<i>Pilot study of the instruments</i>	Two schools were selected as representatives of the target population in a rural county in Beijing.
	<i>Plan of the project &amp; sampling framework</i>	The State Education Commission convened coordinators from eight selected provinces to discuss the plan of the project and decide on the sampling framework. Each province was asked to collect or organize their information on the target population and send it to China National Institute for Educational Research, Beijing.
<b>May 1993</b>	<i>Selection of counties</i>	Counties were randomly selected from the eight provinces. Each province was informed of the names of selected counties and the preparation of the sampling frame was begun.
	<i>Preparation and distribution of instruments</i>	Staff members from the Capital Teacher Training College and China National Institute for Educational Research took charge of printing, packing and delivering the instruments in Beijing.
	<i>Selection of schools</i>	Schools were selected from the counties according to the information provided by the county during a workshop held in Beijing (20 participants).
	<i>Training workshops at province level</i>	Training workshops were conducted at the provincial level; the director or deputy director of each province's Education Commission attended and spoke on the importance of the project (30-50 participants in each province).
<b>June 1993</b>	<i>Tests &amp; questionnaires</i>	Each province administered the tests and questionnaires (at least 4 teachers and 2 coordinators per school).
<b>July 1993</b>	<i>Entry of data</i>	Data entered in Capital Teacher Training College (40 students and 6 teachers).
<b>Aug. - Oct. 1993</b>	<i>Data cleaning &amp; preliminary analysis</i>	Cleaning of data and preliminary analysis at the China National Institute for Educational Research, Beijing (5 staff members).
<b>Oct. - Nov. 1993</b>	<i>Data analysis &amp; training workshop</i>	Data analysis and training workshop on how to analyse data (20 participants).
The total number of Grade IV students tested was 24,582. (In addition, 24,443 Grade VI students were tested).		

## ***What is being learnt and what factors influence learning achievement?***

Acquisition of basic learning competencies — life skills, literacy and numeracy — form the basis of Education for All (EFA) goals. However, other factors which influence whether people actually learn — from personal characteristics (of the pupils, parents and teachers), home and school environments to issues of access and equity — are also an important part of the picture.

### **Box 3. Overall conceptual framework for the Monitoring Project**



Life skills refer to the basic educational skills that human beings need for their survival and to develop their intellectual potential to improve the quality of their lives.

On the one hand, they include very concrete “functional” skills, concerning health and physical well-being, as well as everyday life. These range from simple rules of hygiene that the child learned at a very early age to appropriate behaviour in case of an accident or natural catastrophe.

Further, there are the more theoretical questions regarding the understanding of moral and civic duty, or testing the degree of autonomy the child has acquired in relation to the community or the nation.

## ***Indicators defined by the Monitoring Project***

The indicators cover three domains:

- *Learning achievement:*  
basic learning competencies of literacy, numeracy and life skills
- *Factors influencing learning achievement:*  
pupil characteristics and selected home background factors, the school setting and selected teaching/learning factors, the community environment and selected school/community-related factors
- *Access and equity:*  
factors of girls’ enrolment, admission and participation rates, drop-outs and repeaters, attendance rates, educational disparities, out-of-school children, enrolment of disabled children, etc.

## ***The Project: Yesterday, today, tomorrow***

### ***The pilot countries***

China

Jordan

Mali

Mauritius

Morocco

### ***Phase One***

The first group of five countries have all completed the different phases of the Monitoring Project (i.e. establishment of a national task force, finalization of the project document, instrument development, pilot testing, data collection and analysis, writing of the national report, and conducting broad-based national seminar).

## **Phase Two**

### **The next group of countries**

Lebanon  
Kuwait  
Mozambique  
Nigeria  
Oman  
Rodrigues, (Mauritius)  
Slovakia  
Sri Lanka  
Sudan  
Zanzibar, (Tanzania)

A second group of ten countries joined the project in 1994. The experience of the five pilot countries are optimally used in these countries. Some of them, for example, Lebanon, Kuwait, Mozambique, Nigeria, Oman, Rodrigues (Mauritius), Sri Lanka and Zanzibar (Tanzania) spent relatively less time and resources in successfully implementing the various activities of the project.

During Phase Two, attempts were made to widely disseminate the experience of the Monitoring Project. The regional workshop on Monitoring Learning Achievement held in July 1994 in Amman, Jordan is a case in point. The experience of Jordan served as example for launching the Monitoring Project in Oman and other countries of the region. In addition, for the first time, the project attempts to further develop the design and appropriate methodologies to monitor early childhood development (ECD). This is carried out in the young Slovak Republic. Similar projects will be launched in other countries using the Slovak experience.

### **Follow-up activities**

The experience of the first two phases of the project will be used to further develop and maintain Monitoring of Learning Achievement Programmes in basic education as a whole. It is expected that the project would expand to 30 additional countries by the year 2000.

Further, the results and findings of the project will be used to develop performance indicators to monitor the progress of Education for All Goals in other basic education programmes, namely early childhood development and non-formal education.

### **Suggestions for further reading**

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# 2. Implementation strategies

*The Monitoring Project is based on the "critical mass" approach to national capacity building. The overriding aim has been to develop methodologies that are above all simple, flexible, feasible and sustainable in the long term.*

A certain number of steps have been identified at the country and international levels in the implementation of the monitoring approach.

### **Box 4. Modalities and implementation strategies of the Monitoring Project**

<p style="text-align: center;"><b>Country level</b></p>	<ul style="list-style-type: none"> <li>Identification missions</li> <li>Creation of national task forces</li> <li>Preparation of national project documents</li> <li>Training in survey methodology and data analysis</li> <li>Establishment of a monitoring system for assessing the performance of basic education at national and subnational levels</li> </ul>
<p style="text-align: center;"><b>International level</b></p>	<ul style="list-style-type: none"> <li>Co-ordination and co-operation among different partners</li> <li>Technical assistance</li> <li>Resource mobilization: cost sharing</li> <li>Dissemination of results</li> <li>Promoting international and regional co-operation in this field</li> </ul>



## The “critical mass” approach to capacity building

The “critical mass” approach to monitoring depends on the “multiplier effect” to ensure that a potentially large number of trainers can be reached.

### Selection of the national task forces

An important step in implementing the “critical mass” approach is the selection of a national task force that will be in charge of co-ordinating all monitoring activities in the specific country. The national task force oversees the collection, analysis and reporting of data and is responsible for project budgeting, accountability and quality control.

Each country must select its national task force from among the most appropriate expertise and manpower available in that country.

#### Box 5. The national task forces of the five pilot countries

<b>Country</b>	<b>Project co-ordination</b>	<b>Task force members</b>
<i>China</i>	<ul style="list-style-type: none"> <li>- State Education Commission</li> <li>- Department of Basic Education</li> </ul>	<ul style="list-style-type: none"> <li>• China National Institute for Educational Research</li> <li>• Capital Teacher Training College</li> <li>• Curriculum and Teaching Material Research Institution of the People’s Education Press</li> <li>• Provincial and County Level Bureaus and Units for Educational Research</li> </ul>
<i>Jordan</i>	<ul style="list-style-type: none"> <li>- National Centre of Educational Research and Development</li> </ul>	<ul style="list-style-type: none"> <li>• Directorate of Curriculum Planning, Research and Statistics</li> <li>• Regional Directors</li> </ul>
<i>Mali</i>	<ul style="list-style-type: none"> <li>- Secrétariat d’état chargé de l’éducation de base</li> </ul>	<ul style="list-style-type: none"> <li>• Institut pédagogique de l’éducation</li> <li>• Directions régionales de l’éducation</li> <li>• Inspection de l’enseignement fondamental</li> </ul>
<i>Mauritius</i>	<ul style="list-style-type: none"> <li>- Mauritius Examination Syndicate</li> </ul>	<ul style="list-style-type: none"> <li>• Master Plan Nine-Year Schooling Sub-Task Force</li> <li>• Master Plan EMIS Sub-Task Force</li> <li>• Master Plan Rodrigues and Agalega Sub-Task Force</li> </ul>
<i>Morocco</i>	<ul style="list-style-type: none"> <li>- Direction de la Planification de l’enseignement fondamental</li> </ul>	<ul style="list-style-type: none"> <li>• Division des études et objectifs</li> <li>• Division des statistiques</li> <li>• Division de l’information et de l’orientation</li> <li>• Bureaux régionaux et provinciaux</li> </ul>

## Drafting the project document

Some sort of project document — quite simply, an implementation plan — must be drawn up before the monitoring activities can get under way. This is an important step in defining country-specific objectives beyond the broad objectives of monitoring EFA goals and ensures that surveys are designed to meet the country-specific context.

A project document should include:

- **a background** which defines the context of the country's educational system as well as other relevant factors (size, geography, development issues, etc.);
- **a project design** which includes the objectives and expected outcomes of the surveys and descriptions of the survey instruments and samples to be used;
- **a calendar** which is flexible, with target dates for each step of the project; and
- **a budget** which is feasible and flexible.

## Target population and sampling

Educational surveys are tools used to develop generalizations about the functioning of the educational system. The following reasons state why scientific sampling procedures should be used to determine target populations, as opposed to attempting to cover the whole population of schools and pupils:

- **reduced costs** associated with obtaining and analysing the data;
- **reduced requirements** for specialized personnel to conduct the field work;
- **greater speed** in most aspects of data manipulation and summarization; and
- **greater accuracy** due to the possibility of closer supervision of field work and data preparation.

For detailed information about sampling and sampling procedures, reference can be made to textbooks on social science research methodology. However, we will briefly present some important sampling considerations, which take into account issues of feasibility, representativeness, probability and external validity.

## Box 6. Sampling surveys: Rationale and execution

	<b>Problem</b>	<b>Possible Solution</b>
<b>Feasibility</b>	Limited resources (personnel, financial, administrative, time).	Make optimal use of available resources to reach objectives.
	A certain level of efficiency and accuracy to collect, process and analyse a wide range of survey data is required.	Need to focus on appropriate training for a limited number of personnel.
<b>Representativeness</b>	Need a sample plan that is sufficiently representative of the population to justify considering it as representative.	Take all grade IV pupils in primary schools, irrespective of age, sex, socio-economic background, location, type, size or quality of school.
	Need to select a sample of schools for which generalizations of the population of schools in the country (or region, district, etc.) can be made.	Select a random, stratified sample of schools which represents the population of schools of different location, types and quality.
	Need to select a random stratified sample of schools for which generalization of the populations of schools in similar regions can be made.	Select a random stratified sample of schools in a region which represents all types of schools in that region (state, private, urban, rural, big and small).
<b>Probability and external validity</b>	Need to choose an effective sample size to be sure that the findings from the sample do not differ by more than a specified amount (sampling error) from those that would be achieved from the entire target population.	An effective sample size of international standard for educational surveys is 400. This sample size ensures an approximately 95 percent confidence limit for sample estimates of population means, percentages and correlation coefficients.
	Need to establish a proportional stratified sample to increase sampling precision in sample estimates.	Educational surveys to provide estimates of population parameters through a combination of the information gathered from each strata of the same (ex. state/private; rural/urban; big/small).
	Need to have a cluster sample of pupils within selected schools.	Experience from large-scale educational surveys shows that a certain value for the coefficient of intraclass correlation ( $\rho_{ih}=0.2$ or $0.3$ ) provides reasonably accurate estimates of pupil homogeneity for achievement variables within schools.
	Need to have guaranteed sampling probability proportional to size (PPS), to have complete control over sample size (big vs. small schools and classes) and to ensure an "equal probability of selection method ("epsem").	The Lottery method for PPS selection of schools is done through the allocation of a number of tickets which is equal to the number of pupils in the defined target population.

Source: V. Chinapah and G. Miron, 1990.

## The sampling population

The more information we gather about a school system, the more accurate are the conclusions we can then draw from the results. In other words, the more stratified the sampling is, the smaller the margin of error will be. It is important to remember that the degree of stratification is far more important than the number of schools sampled.

The first step is to determine the sampling population (number of provinces, number of schools, etc.). The choice of survey populations is made through a process of stratification, aimed at a fair representation of demographic, geographic and socio-economic differences in a country.

One of the many strategies that can be followed in monitoring EFA goals is the structure and design chosen in the Moroccan study.

### *The case of Morocco*

The sampling population covered 10 provinces, chosen along scholastic (attendance and admission rates), demographic (urbanization rates) and geographic criteria.

**Table 2.1 Morocco: The sampling population for the Monitoring Project**

<i>Provinces</i>	<i>Attendance ratio %</i>	<i>Admission ratio %</i>	<i>Urbanization ratio %</i>	<i>Geographical nature of the area</i>
Marrakesh-Medina	80	76	38.08	Interior plains
Marrakesh-El Haouz	33	47		Upper Atlas
Settat	60	76	23.15	Interior plains Atlantic plateaus
El Fida	63	51	100	Atlantic plains
Temara	86	91	40.91	Atlantic coast
Chefchaouen	40	58	9.43	Rif, Prérif, Mediterranean coast
Fez Medina	82	95	67.40	Prérif, Middle Sebou
Sefrou	65	66		Middle Atlas, Middle Sebou
Taza	60	67	19.42	Rif, Prérif, Moulouya High Plateau
Ifrane	61	72	46.90	Middle Atlas

An analysis was then carried out to determine characteristics of each school, such as type of school (public/private; religious/secular), location (urban/rural) and school infrastructure (size of school, number of teachers, students and classrooms, sanitary conditions, etc.).

A further stratification was then made, and the schools were broken down into 14 categories.

Urban schools were divided into two categories, according to rate of utilization of school localities:

*Category 1:* rate of utilization = 1.5  
(i.e. 2 classrooms were used for 3 groups of students.)

*Category 2:* rate of utilization = 2  
(i.e. 1 classroom was used for 2 groups of pupils.)

Rural schools were broken down into 12 categories according to four variables:

- type of school (central or satellite)
- pedagogic structure (complete or incomplete)
- type of course (single or multiple)
- utilization rate (1.5 or 2)

Figure 2.1, which shows the different combinations of these categories, is a good example of stratification.

The sampling for urban schools included private as well as public schools. While few in number, this allowed for an additional comparison to be made between publicly/privately educated pupils. In rural schools the existence of a school canteen was added to the sampling design (Moroccan Technical Report, 1994).



**Table 2.2 Morocco: Sampling design and execution**

	<b>Category</b>	<b>Total number of schools</b>	<b>Weight of the category</b>	<b>Number of schools to be surveyed</b>
<b>URBAN</b>	1	1,193	56%	31
	2	925	44%	20
	<i>Total</i>	<i>2,118</i>	<i>100%</i>	<i>51</i>
<b>RURAL</b>	3	1,503	14.52%	12
	4	168	1.62%	2
	5	371	3.60%	3
	6	34	0.32%	3
	7	1,308	12.64%	12
	8	170	1.65%	2
	9	2,044	19.76%	15
	10	258	2.50%	3
	11	1,638	15.83%	13
	12	450	4.34%	4
	13	2,182	21.10%	20
	14	219	2.12%	3
	<i>Total</i>	<i>10,345</i>	<i>100.00%</i>	<i>92</i>

## ***Suggestions for further reading***

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# 3. National instruments

*For the first time in an international project of this kind, the mastery of “life skills” — problem-solving, social and “attitudinal” skills, in areas ranging from health and nutrition to road safety and civic responsibility — is considered as important as literacy or numeracy.*

## **Basic learning competencies (BLCs) tests**

A common core of basic competencies was measured by criterion-reference *tests*, while *questionnaires* were used to gather reliable information concerning key scholastic and environmental factors.

### **Construction of tests**

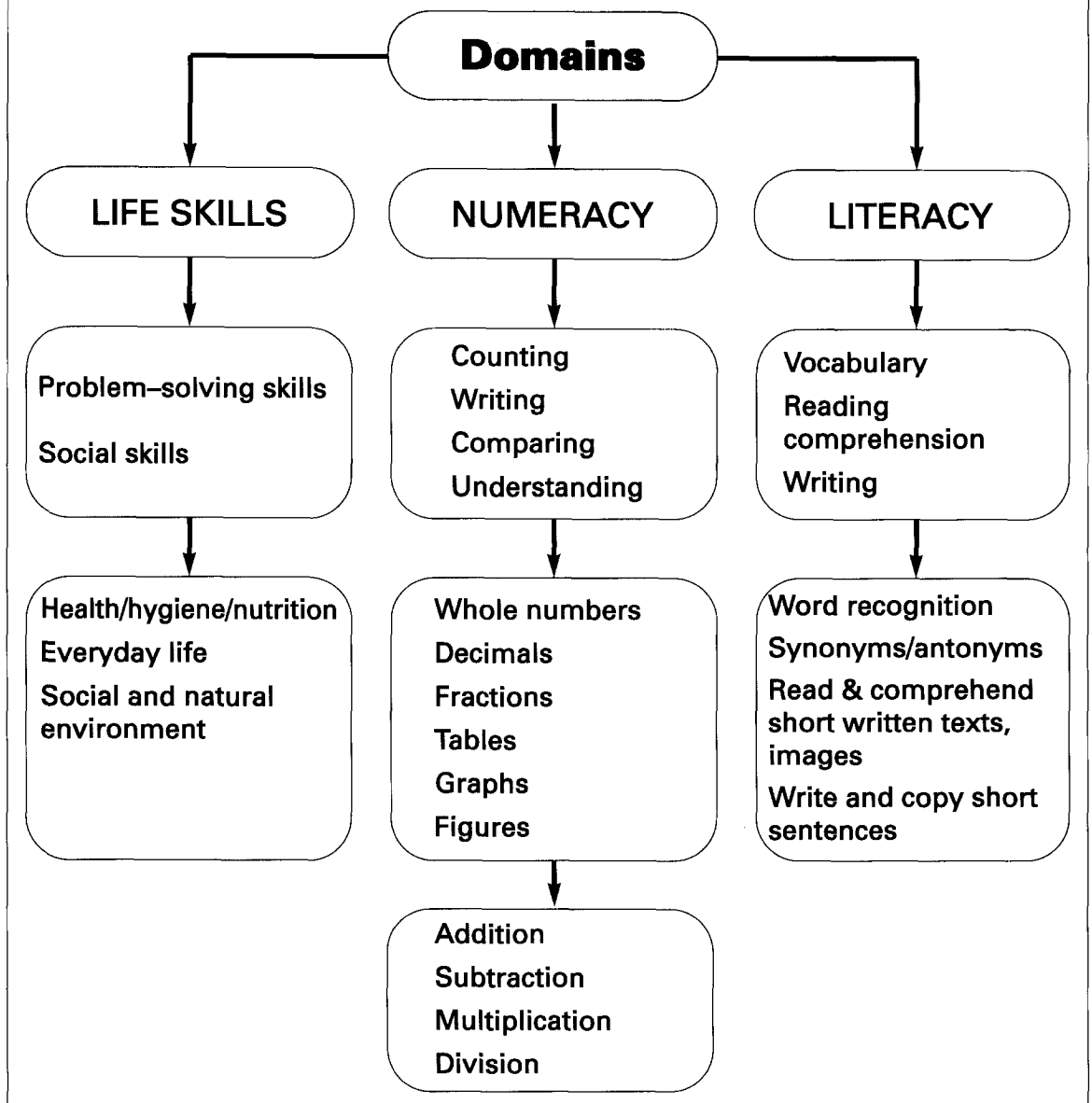
*Before a child can be expected to acquire reading or mathematical skills, he or she must have acquired at least a minimum degree of autonomy in everyday life.*

Based on the concept of basic learning competencies (BLCs) developed at the Intensive Workshop on Survey Methodology (UNESCO, 1993), the pilot countries were asked to prepare their own instruments for evaluating the learning achievement of primary school pupils.

The prototype questions developed by UNESCO experts served as a basis for the countries to develop their own tests, adapted to their particular socio-cultural contexts. What has emerged, therefore, is a common core of questions which all countries can more or less call upon, as well as a set of very specific questions, based on country-specific criteria. (figure 3.1)

Before a child can be expected to acquire reading or mathematical skills, he or she must have acquired at least a minimum degree of autonomy in everyday life. Problem-solving as well as social skills constitute such an autonomy.

## Common Core of Basic Learning Competencies (BLCs)



*Figure 3.1 Overall conceptual framework for the development of basic learning competencies*

## **Life skills**

Three major areas of basic life skills are investigated:

- health/hygiene/nutrition
- everyday life
- social and natural environment

Life skills vary according to the degree of development, culture, social needs and educational development of a particular country. However, certain life skills are common to different countries.

Besides the presentation of common-core test items, some country-specific criteria were used to address the major areas of life skills.

Examples are given below from the tests carried out in the pilot countries.

### **Health/hygiene/nutrition**

Questions on health deal with the physical condition of learners and cover the basic facts that the child is supposed to have learned concerning disease, nutrition and hygiene.

For example, the following question on vaccination:

*The doctor goes to the school to vaccinate the children.  
Why is it important to be vaccinated?*

- a. *to grow more quickly*
- b. *to avoid catching certain serious illnesses*
- c. *to be more intelligent*
- d. *to cure certain serious illnesses*

(Jordan)

**Box 7. Life skills test and content coverage: Mauritius grade IV pupils (9-year-olds)**

The life skills tested included basic knowledge, understanding skills, attitudes and values that 9-year-olds should have acquired and which would enable them to cope with the demands that different life situations and the educational system makes upon them.

**A. Awareness of Environment based on**

- Knowledge of the environment
  - Protection of the environment
  - Use of the environment
- A.1 Physical/Natural environment  
A.2 Social environment  
A.3 World of work — occupations, jobs, professions, trades, institutions

**B. Self-Preserving Skills**

- B.1 Health/Hygiene/Food habits  
B.2 First aid  
B.3 Road safety/Traffic rules  
B.4 Dangers within the environment

**C. Social Skills**

- C.1 Gender roles  
C.2 Civic sense  
C.3 Caring for others  
C.4 Participation in social service activities  
C.5 Positive social attitudes/Values

**D. Study Skills**

- D.1 Knowledge of learning resources  
D.2 Locating information/Material  
D.3 Using a children's dictionary and other reference material pertaining to 9-year-olds

**E. Manipulative Skills**

- E.1 Knowledge of use of household gadgets, tools, instruments  
E.2 Production of simple charts, models, etc...

The test items were of a multiple choice form with three options. Because of the difficulty in the language used, pictures were included to help children choose the right answers. Teachers were asked to translate the requirements of the questions in the mother tongue (Creole, Bhojpuri, etc.) to facilitate understanding.

Situations used were chosen according to the experience of 9-year-olds and what would appeal to them. The test was based on the children's knowledge of life skills, not on their functional use of them.

The test contained 30 items.  
Total Maximum Marks - 30  
Time - 40 mins

Children can also be asked if they know how to take medicine prescribed by a doctor or whom to see if ill:

*Ali is ill. Ali's mother must give him medicine. How should she go about this?*

- a. *she gives the amount prescribed by the doctor*
- b. *she gives Ali lots of medicine so that he gets better more quickly*
- c. *she gives Ali the same amount as she gave him last time when he was sick*
- d. *she gives him the same amount as a neighbour, who has the same illness as Ali.*

(Morocco)

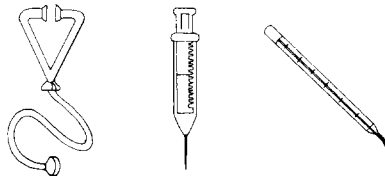
*If you have diarrhoea for one or many days, whom will you consult?*

- a. *a traditional healer*
- b. *a marabout*
- c. *a doctor*
- d. *I don't know*

(Mali)

Items can also be presented using pictures or symbols:

*Your little sister is ill, you touch her forehead and it is very hot. Which of the following instruments would you use to see if she has fever?*



(Mauritius)

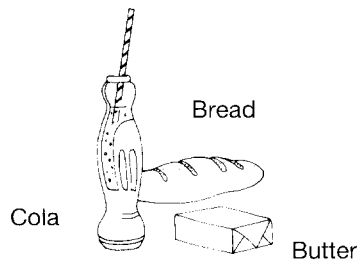
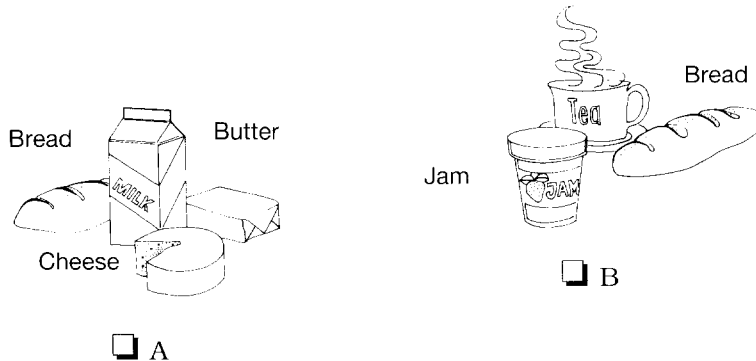
Concerning hygiene:

*Before eating, you must always:*

- a. wash your face       c. comb your hair  
 b. wash your hands       d. I don't know

(Mali)

To test their notions of well-balanced meals and good nutrition, children can, for example, be asked to choose between several kinds of breakfasts:



(Mauritius)

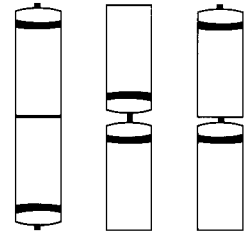
### Everyday life

These questions aim at measuring the degree of autonomy the child has reached in his/her everyday life, at home or in relation to the community or village.

Questions can refer to knowledge of practical skills relating to, for example, electricity:

Which is the right way to join two batteries when you change batteries for flashlights?

- A    B    C    D no idea

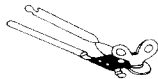


A   B   C

(China)

Or to cooking:

Your mother has asked you to open a tin of “petits pois”. Which of the following gadgets would you use?



A

B

C (Mauritius)

Questions concerning safety can be approached in a number of ways. For example:

You are walking with a friend. Suddenly a storm breaks out. What do you do?

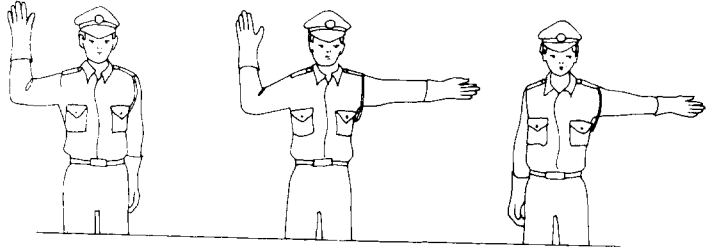
- a. you wait under a tree
- b. you go home
- c. you continue walking
- d. you avoid walking under electrical lines

(Jordan)



As for road safety:

*A group of pupils rush out when the bell rings in the evening. The policeman gives the stop signal. Which one of these signals tells you to cross the road?*



A

B

C

(Mauritius)

### **Social/natural environment**

These questions seek information on how the child lives in his/her home environment and surroundings.

The following three examples are good illustrations:

*To have a lot of millet, Ousmane's father:*

- a. *doesn't remove the weeds*
- b. *doesn't chase away the animals*
- c. *fertilizes his field*
- d. *I don't know*

(Mali)

*Is it right or not to put urine and dirty water into the river nearby?*

- a. *right. It is very convenient.*
- b. *wrong. It will pollute the river.*
- c. *right or wrong, neighbours do so, too.*
- d. *no idea.*

(China)

*Fires are a big danger for forests. Several forests disappear every year because of people's carelessness. How can we prevent forest fires?*

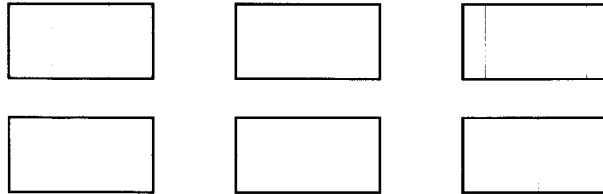
- a. *do not light a fire in the forest*
- b. *cut the dry branches from the trees in the forest*
- c. *do not build factories near forests*
- d. *people should not allowed to walk in forests*

(Jordan)

Countries are also interested in a broader definition of the word "environment", which covers the child's understanding of the social, political and geographical milieu.

For example, one of the prototype questions developed at the Intensive Workshop asks:

*Every country has its own flag. Circle your country's flag:*



*What colours is it?*

- a. *green, yellow and red*
- b. *blue, yellow and green*
- c. *red and black*
- d. *green and red*

(Prototype UNESCO)

Other questions refer to the child's behaviour towards others, as in the following example:

*You find a watch on the ground near school. What do you do?*

- a. *I give it to the teacher*
- b. *I keep it for myself*
- c. *I keep it to sell*
- d. *I don't know*

(Morocco)

## ***Literacy***

Items concerning reading skills fall into two general categories essential for acquiring further skills: reading/reading comprehension and writing/written expression.

### **Reading/reading comprehension**

This refers to the child's ability to understand the elements of a language — including the ability to organize these elements and understand a text.

This does not mean mechanical and passive learning. On the contrary, reading is associated with understanding words and ideas, and the structure of a sentence.

One way of measuring the degree of reading comprehension is to present a text, followed by closed (multiple choice or true/false) questions.

For example, instructions for taking vitamin tablets:

*Here is some information for taking vitamin tablets:*

#### DOSAGE

- Adults: 18 years and older: one tablet per day
- Children: 1 to 17 years: 1/2 tablet per day
- Each tablet contains vitamins A, B, C and D
- Made by LAPROPHAN, Casablanca, Morocco
- Date of manufacture: 1 June 1992
- Date for use: before 30 June 1995

*How many tablets per day should a person 18 years or older take?*

- a. half a tablet     b. one tablet     c. two tablets

(Morocco)

### **Writing/written expression**

This refers to writing skills which assume a certain level of language skills. Writing expression can be “guided” or “free”, depending on the degree of autonomy that is to be measured.

Interesting examples of “guided” writing exercises would be the following:

1. *Question: At what time do you do your homework?*

*Answer: \_\_\_\_\_*

2. *Question: What do you do when you come home from school?*

*Answer: \_\_\_\_\_*

3. *Question: What are the television programmes you like to watch?*

*Answer: \_\_\_\_\_*

4. *Question: At what time do you go to bed?*

*Answer: \_\_\_\_\_*

(Jordan)

And:

*Write a sentence about each picture, following the example given:*



***Les enfants jouent sur la plage***

(Mauritius)

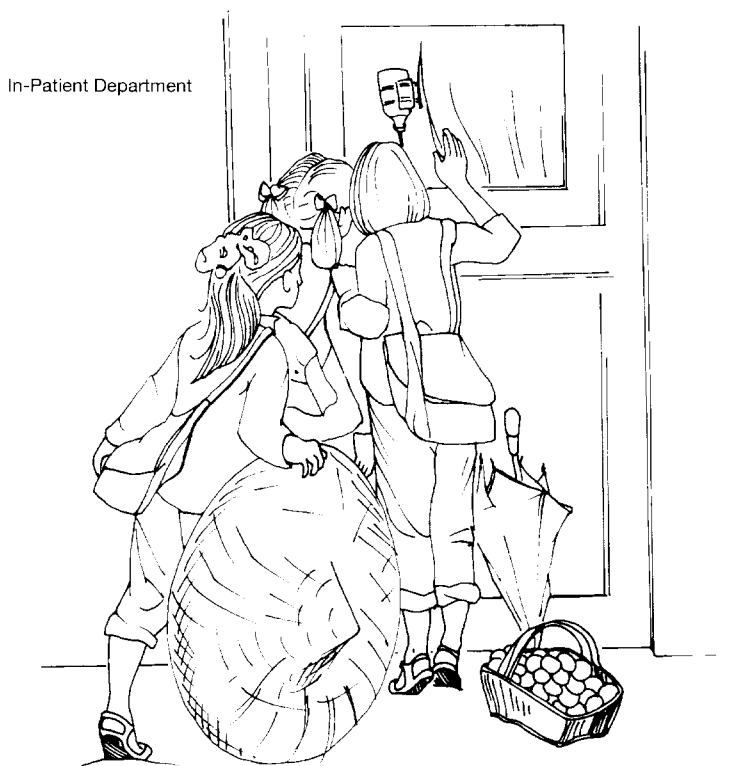
A good example of “free” expression would be the following:

*Look at the picture carefully.*

*What do you see and think?*

*Write what you see and think  
in a short passage.*

*The passage needs concrete content,  
smooth sentences, a main idea and  
orderliness. You may choose your title.*



(China, Grade VI)

The tools needed to master language skills belong to second category in this domain. These tools include vocabulary, grammar, syntax, spelling and pronunciation.

For example, the following questions on grammar (as they refer to specifically French grammatical points, i.e. conjugation) are left in French:

*Le verbe «trouver» est conjugué à plusieurs personnes. Mets une croix dans la case qui correspond à la troisième personne du pluriel (féminin) :*

- A                    .... avons trouvé
- B                    .... ont trouvé
- C                    .... avez trouvé
- D                    .... ai trouvé

(Morocco)

*Put the following masculine nouns into the feminine form:*

- Un ouvrier            Une .....
- Un musicien        Une .....
- Le tigre                La .....
- Un directeur        Une .....
- Un frère              Une .....
- Un oncle              Une .....

(Mali)

## **Numeracy**

This domain examines the child's ability to perform simple arithmetic as well as solve exercises. It is important because it reflects his/her capacity for logical thinking and abstraction, which is vital for everyday life.

In the pilot countries, the main areas covered by the tests are:

- . mathematical language
- . arithmetic
- . measurement
- . geometry
- . problem-solving

The following examples show how abstract ideas can be tested using tangible, concrete exercises.

Items can test the understanding of whole numbers, and the four arithmetic operations (addition, subtraction, multiplication and division):

Complete with the appropriate sign:  $<$ ,  $>$ ,  $=$

$$\begin{array}{rcl} 2,219 & . & 2,220 \\ 540 & . & 450 \\ 989 & . & 989 \end{array}$$

(Prototype UNESCO)

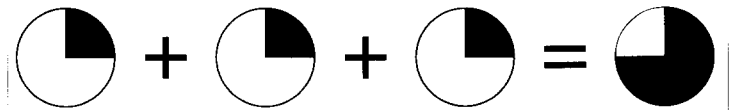
Do the following multiplication and check the correct response:  $173 \times 52 =$  \_\_\_\_\_

- a. 8,996
- b. 5,856
- c. 225
- d. 121

(Morocco)

Further questions can test the understanding of decimals and fractions, including proportions and percentages.

Which formula uses fraction, addition or multiplication correctly to represent the diagram below?



- A.  $1/4 + 1/4 + 1/4$
- B.  $1/3 \times 4$
- C.  $1/3 \times 3$
- D.  $1/3 + 1/3 + 1/3$

(China, grade VI)

Or:

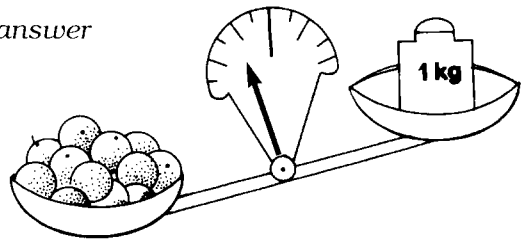
The closest fraction to  $12/17$  would be:

- a.  $6/9$                        c.  $4/6$   
 b.  $2/3$                        d.  $1/6$

(Jordan)

Other questions test understanding of different units of measurement, and the ability to work with them. For example:

Check the correct answer

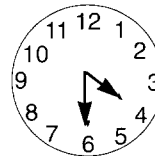
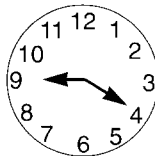


The oranges weigh:

- a. 1 kg  
 b. more than 1 kg  
 c. less than 1 kg  
 d. I don't know

(Mali)

What is the time on each of the clockfaces?



Answer: \_\_\_\_\_

Answer: \_\_\_\_\_

(Mauritius)



If  $1\text{ m} = 10\text{ dm}$  then  $3\text{ dm} = \underline{\hspace{1cm}}\text{ m}$

(check the correct answer)

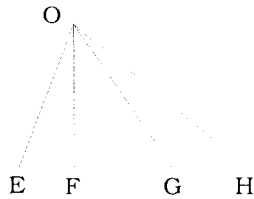
- a. 30    b. 3    c.  $3/10$     d.  $10/3$

(Jordan)

Geometry can be tested through a number of different questions. For example:

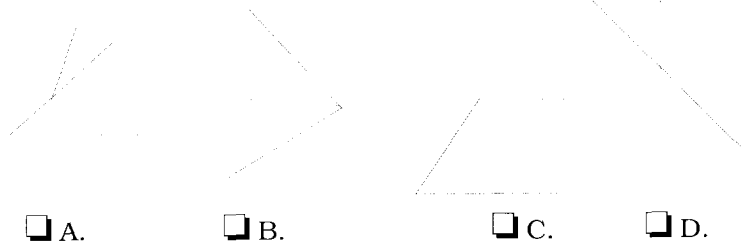
Which is the shortest line?

- A. OE    B. OF    C. OG    D. OH



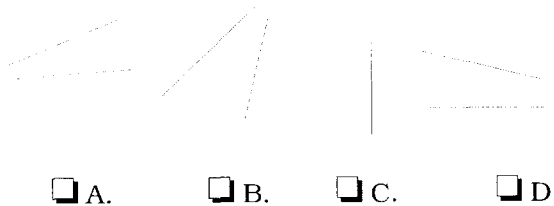
(China)

Which figure shows two adjacent angles?



(Jordan)

Which two lines are parallel?



(China)

Ahmed is ill. He went to the doctor. The doctor prescribed aspirin.

Ahmed must take 3 aspirins per day: 1 in the morning, one at lunchtime and one in the evening, for 6 days. What is the total number of aspirins Ahmed will take?

Answer: \_\_\_\_\_

Each packet contains 5 aspirins. How many packets of aspirin should Ahmed buy from the pharmacy?

Answer: \_\_\_\_\_

(Morocco)

To buy vegetables, mother gives the shopkeeper one 500 franc note and three 100 franc coins.

How much did she spend in all?

(Mali)

AUGUST 1993						
SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31				

(i) How many days are there in August?

Answer: \_\_\_\_\_

(ii) What day was 11th August?

Answer: \_\_\_\_\_

(iii) How many Saturdays were there in August 1993?

Answer: \_\_\_\_\_

(Mauritius)

## **Common Core of Factors Influencing Learning Achievement**

<b>Pupil</b>	<b>Parent</b>	<b>Class teacher</b>	<b>School</b>
Personal and school related characteristics	Home/child characteristics	Personal/professional characteristics	Personal/professional characteristics of school personnel
Out-of-school activities	Socio-economic profile	Class characteristics	School/teacher description
Health and nutrition	Home linguistic educational environment	Remuneration/economic profile	Facilities and services
Access to school needs	Commitment to educational activities/parental educational support	Work load/school practices	Head teacher job description
Attitudes/opinions about school	Opinions/aspirations	Opinions/attitudes	Opinions

**Figure 3.2 Overall framework for the development of pupil, parent, class teacher and school questionnaires**

## **Survey questionnaires**

### **Construction of questionnaires**

The sets of questionnaires are designed to gather information describing the school and home learning environments relevant to the performance of the target group (grade IV, for example). They are primarily descriptive and factual in nature.

The environment is divided into four fields of study – home, personal, school and classroom – all of which influence learning achievement.

The goal of the questionnaires is to gather concrete facts. Since many factors (age, sex, profession, etc.) are relevant to all countries, some of the material presented as examples may be used with little or no changes. In some cases, questions need to be modified and adapted for cultural differences.

#### **Box 8. Questionnaire development for the Monitoring Project**

Four sets of questionnaires are suggested:

Pupil questionnaire:	questions on personal, home and school environment, answered by the pupil
Parent questionnaire:	questions on parent's background and home learning environment (including attitudes about education)
Class teacher questionnaire:	questions on teacher's qualifications, experience and attitudes
School questionnaire:	often answered by headmaster, questions on school setting, facilities and policies

In selecting variables for questionnaires:

- questionnaires should be kept as short as possible, while assuring that the necessary information is gathered;
- only those variables that cannot be collected more easily and accurately using other sources of information (existing school statistics, teacher and pupil records, administrative data) should be included; and
- relevance to the country's specific context and needs should always be borne in mind.

## ***Pupil questionnaire***

The pupil questionnaire deals with information regarding personal and sometimes family characteristics, past and present school-related factors, and attitudes and opinions about school.

### **Box 9. Key pupil, home, school and community characteristics and environmental factors**

Examples of relevant areas for questions:

*Pupil's characteristics:* age, sex, health, nutrition, height, weight, socio-economic background, cultural-linguistic status

*School setting:* teaching/learning conditions (availability of textbooks, school facilities, class size, budget per pupil)

*Home environment:* number of books in the home, attitude of parents towards education

*Community environment:* school/community relationships, parent-teacher associations.

Typical questions involving personal characteristics include:

*Whom does the child live with?*

- father and mother*       *only father*  
 *only mother*       *does not live with parents*

(Jordan)

*What mode of transport does the family have?*

- animal*       *cart*       *tractor*  
 *bicycle*       *motorcycle*       *car*

(Morocco)

From the pupil's point of view, information about school factors can be gathered in ways such as:

*What is the distance between your home and school?*

- less than 500 metres*
- 500–1000 metres*
- 1000–2000 metres*
- more than 2000 metres*

(China)

*Do you go home at lunchtime?*

- yes*       *no*

*If no:*

- I eat at the school canteen*
- I bring lunch from home*
- I eat at someone's house*
- I don't eat anything*

(Mali)

Motivation, attitudes and opinions about school target facts about approaches to learning and the school system in general. An example:

*Do you read books other than schoolbooks:*

- almost every day*
- once or twice a week*
- once or twice a month*
- I don't read*

(Jordan)

*Which subject do you find the most difficult?*

- English*
- French*
- Mathematics*
- EVS*

(Mauritius)

## ***Parent questionnaire***

The parent questionnaire also asks general and factual questions about the home environment. Information regarding personal and family characteristics can be easily gathered in a number of ways.

For example:

*What is your relationship with this student?*

- mother*  *father*  *other*

(Jordan)

Another general area covered in the parent questionnaire is the family socio-economic status.

*Is your house:*

- owned and occupied by the family?*  
 *owned by family and partly rented?*  
 *supplied rent-free*  
 *other*

*Does the house have the following amenities?*

	<i>yes</i>	<i>no</i>
<i>running water</i>	—	—
<i>electric supply</i>	—	—
<i>car</i>	—	—
<i>telephone</i>	—	—
<i>refrigerator</i>	—	—
<i>TV</i>	—	—
<i>video</i>	—	—
<i>electric shower</i>	—	—
<i>water heater</i>	—	—
<i>garden/kitchen garden</i>	—	—

(Mauritius)

The parent questionnaire may also include items regarding parental commitment, to and interest in, educational activities. For example:

*What steps do you take to deal with academic problems of your child?*

---

*How often do you attend PTA meetings?*

*never \_\_\_\_ sometimes \_\_\_\_ regularly \_\_\_\_*

*Do you ever discuss your child's problems with his/her teacher or head teacher?*

*yes \_\_\_\_ no \_\_\_\_ no need \_\_\_\_*

(Mauritius)

### **Class teacher questionnaire**

Two main areas are covered in the class teacher questionnaire — the teacher and his/her class. Information about the teacher would include personal and professional characteristics (age, sex, professional experience/training, remuneration, workload) and, in some cases, personal opinions.

*Please state the number of hours you spend at school in a typical school week on the following activities:*

\_\_\_ *preparing lessons*

\_\_\_ *checking pupils' homework*

\_\_\_ *helping pupils*

(China)

*Teaching experience*

*up to 5 years*

*5 to 10 years*

*10 to 15 years*

*15 to 20 years*

*more than 20 years*

(Mauritius)



The class teacher questionnaire also includes questions regarding the class itself (furniture in the classroom, teaching aids, class characteristics and class practices). For example:

*What is the situation regarding availability of textbooks for pupils?*

- none has textbooks*
- 20 % have textbooks*
- 21–60 % have textbooks*
- 61–80 % have textbooks*
- all pupils have textbooks*

(China)

*How much time do you spend on the following activities (percentage)?*

<b>Activity</b>	<b>Arabic</b>	<b>Maths</b>	<b>Science</b>
Checking homework			
Reviewing previous lessons			
Presenting new lesson			
Exercises and problems			
Class activities			
Group activities			
Individual work			
Other (please explain)			
	100%	100%	100%

(Jordan)

## School questionnaire

The school questionnaire is often the longest, as it seeks data from the school learning environment as a whole. The school questionnaire may include questions describing characteristics of the school and its personnel (location, age, type of building, staff professional qualifications and experience, size of classes, etc.). For example:

*How many teachers are there in your school?*

<b>Category</b>	<b>Number of Teachers</b>	
	<i>Male</i>	<i>Female</i>
<i>A. Full-time teachers</i>		
<i>B. Part-time teachers</i>		
<i>C. State-paid teachers (Gong Ban)</i>		
<i>D. Community-paid teachers (Min Ban)</i>		
<i>E. Teachers who meet State-prescribed qualifications</i>		
<i>F. Teachers who do not meet State-prescribed qualifications</i>		

(China)

*Type of school/institution:*

- Public*
- Medersa*
- Private*
- Literacy centre*

(Mali)

A description of school facilities and services can include questions such as:

*Is there a blackboard in good condition in the classroom?*

Yes  No

*How many pupils do not have places to sit in the classroom?*

*Does the teacher have a desk? Yes  No*

*Does the teacher have a chair? Yes  No*

(Mali)

	adequate	partly adequate	inadequate
A. Number of classrooms			
B. Teaching or non-teaching rooms			
C. Student desk			
D. Student bench			
E. School garden			
F. School clinic			
G. Drinking water facilities			
H. Toilet			
I. Electricity			
J. Heating facilities			
K. Proper ventilation			

(China)

*Does the school offer transport facilities (school bus) for the pupils?*

Yes  No

(Morocco)

Another category in the school questionnaire includes opinions and job description of the head teacher.

*How much time do you devote to school administration?*

- up to 20%     21–30%     31–40%  
 41–60%     61–80%     81–100%

*How much time do you devote to meetings outside of school?*

- up to 20%     21–30%     31–40%  
 41–60%     61–80%     81–100%

(China)

*In addition to your teaching activities, do you have other activities in the community (youth groups, sports, cultural, political, religious)?*

- Yes     No

(Mali)

*What is your degree of satisfaction with the ventilation, lighting and cleanliness of the classrooms?*

	<b>very high</b>	<b>high</b>	<b>poor</b>	<b>very poor</b>
ventilation				
lighting				
cleanliness				

(Jordan)

*Some people say that it is important to maintain strict discipline in the classroom, while others think that giving pupils a sense of autonomy and initiative is more important.*

*Which of the following statements do you agree with to ensure the best quality of teaching?*

- Strict discipline must be maintained in the classroom.*
- Pupils must be given sufficient chance for initiative and autonomy.*

(Mali)

*How many hours per week do you devote to the following activities:*

	no. of hours
• keeping up files	
• official visits outside the school	
• teaching classes for absent teachers	
• teaching classes in my area of specialization	
• meeting with parents	
• activities aimed at improving teaching quality	
• activities aimed at improving the curriculum	
• other (give details)	

(Jordan)

Certain financial aspects of school administration and services also can be addressed. These include:

*Teacher's monthly salary* .....

*Amount paid in kind* .....

*Amount paid in cash* .....

(Mali)

*How much money did your school spend during the last school year on each of the following items?*

	From government	From other source
A. Teachers' salaries		
B. Salaries for non-teaching personnel		
C. Pupils' textbooks		
D. Teachers' manuals/guides		
E. Other teaching/learning materials		
F. Library books		
G. Stationery		
H. Maintenance		
J. Others (please specify)		

(China)

*For which of the following did your school receive aids/grants/subsidies?*

- Support material*
- Materials, equipment and furniture*
- Construction of room*
- Land*
- Services (cleaning ...)*
- Others (please specify)*
- No support*

(Jordan)

The school questionnaire may also include items concerning the teachers' mobility.

For example:

*i) State the approximate percentage of teachers transferred:*

*(a) to your school every year \_\_\_\_\_ per cent*

*(b) from your school every year \_\_\_\_\_ per cent*

*ii) These transfers mostly involve teachers teaching at:*

*Standard I level*

*Standard II level*

*Standard III level*

*Standard IV level*

*Standard V level*

*Standard VI level*

(Mauritius)

## **Suggestions for further reading**

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# 4. Data processing and analysis

*Methods in statistical analysis are rigorous. This section introduces the use of a specific statistical software package "SPSS" (Statistical Package for Social Science) and describes the task of processing the data collected and the analytical procedures. Path analysis using LISREL is also introduced.*

In an educational environment, information is needed at three levels:

- decision-making and planning
- control
- operations

Any information, designed to serve as a tool to administrators in operating, controlling and decision-making, has two main features:

- A data acquisition and storage system to maintain orderly records on variables, important to the decision-making process, and a convenient recall system to make information derived from the file accessible to decision-makers.
- A logical structure to identify which variables are to be maintained in the file, the computations to be made on these variables, and how the results of these computations are to be used in the decision-making process.

More and more developing countries are using micro-computers for handling information.

There are now computer programs that allow users to develop their own problem-solving methods best suited to the management analysis of a given problem.

SPSS (Statistical Package for the Social Sciences) is one such program designed for statistical analysis.

## **SPSS**

*SPSS provides necessary tools, such as: complete data entry facility, processing, analysis and reporting facilities.*

SPSS is a statistical and report package designed for the interactive environment of the personal computer.

The user communicates with SPSS through a command language, which consists of English-like statements, using the SPSS command vocabulary and syntax.

It is possible to gather data through SPSS or other software packages, just as it is possible (and even useful) to integrate the results of statistical analyses in graphic representation software packages other than SPSS.

It is therefore imperative to have an integrated, user-friendly computerized environment in order to best benefit from the available resources provided in the programme choices.

The benefits of such an environment stimulate a greater autonomy in the choice of the software (and its usage) and, in turn, provide a higher quality result since the efforts can be turned to the contents of the analysis.

Data collection and analysis are done according to a very carefully designed development strategy outlined in the stages of survey analysis. (figure 4.1)

### **Input stage**

#### **Questionnaire**

The first step in the stage of the survey analysis is the preparation of a questionnaire that is specific to the requirements of the country and the objectives set for the survey.

#### **Data collection**

The national task force does the data collection in the field.

#### **Preparation of the code book**

The next step is to facilitate data using the code book. Elements include:

- the establishment of variable names, label names and values for each type of data;
- the definition of missing values for each type of data; and
- the design of a data entry screen to be used in a user friendly way.



## **Data validation**

It is possible to reduce errors at the time of data entry by setting up rules (or defining ranges) on the data to be entered. For instance:

- The data of variable PSEX can only be «b» «B» «g» «G»
- The data of variable PAGE must be between 6 and 15

## **Data entry**

This is the actual step where data is entered, using the SPSS data entry facility or using another data base entry facility.

To get the most out of SPSS and other available softwares, a general analytical framework for national reporting of basic learning competencies was developed to facilitate the analysis and interpretation of the results of this project.

## **Analytical framework**

LEVEL OF ANALYSIS	TYPE OF ANALYSIS	LITERACY + NUMERACY + LIFE SKILLS												
NATIONAL, REGIONAL OR PROVINCIAL	Univariate (e.g. Frequencies)													
	DISTRICT SCHOOL RURAL/URBAN	Bivariate (e.g. Correlations)	LITERACY				NUMERACY				LIFE SKILLS			
SCHOOL TYPE GENDER AGE SES OTHER FACTORS	Multivariate (e.g. Regression, Path Analysis)	LITERACY (DOMAIN)				NUMERACY (DOMAIN)				LIFE SKILLS (DOMAIN)				
		1	2	3	4	1	2	3	4	1	2	3		

**Figure 4.2 Analytical framework for national reporting of basic learning competencies**

## Processing stage

### *Data transformation*

During the analysis of data, it is easier to refer to a variable numerically. Therefore, data may need to be “transformed”:

The code of PSEX «b» «B» «g» or «G» will become

1 ==> «b» or «B»

2 ==> «g» or «G»

Transformation functions include 'IF', 'RECODE', and 'COMPUTE' commands.

### *Data analysis*

References can be made to standard statistical and research methods books.

The SPSS command file is the means to perform all analyses and reporting functions.

#### *Example of a command file:*

```
GET          /FILE 'C:\SPSSPC\filename'.
* FREQUENCIES  /VARIABLES PHNP.
**GRAPH       /PIE PHNP.
* MEANS       /TABLES SCORMOY BY PAGE.
**GRAPH       /BAR MEAN (SCORMOY) BY PAGE.
* CROSSTABS  /TABLES=TQMATHS BY SXV.
**GRAPH       /LINE COUNT BY TQMATHS BY SXV.
* CORRELATIONS /VARIABLES PAGE NFGS PHNP EF4.
* REGRESSION /VARIABLES SCORMOY PAGE NFGS PHNP
              EF4 /DEPENDENT SCORMOY /METHOD
              ENTER.
```

Note: \*= Process commands, \*\*=Output commands

The definitions of the variables used in the command file:

PHNP	Father's education level
TQMATHS	Pupil's numeracy score
SXV	Pupil's sex
SCORMOY	Pupil's average score of the three tests
PAGE	Pupil's age bracket
NFGS	Number of siblings of school age
EF4	Number of years spent in 4th grade

**Figure 4.3 SPSS data analysis procedures: The Moroccan example**

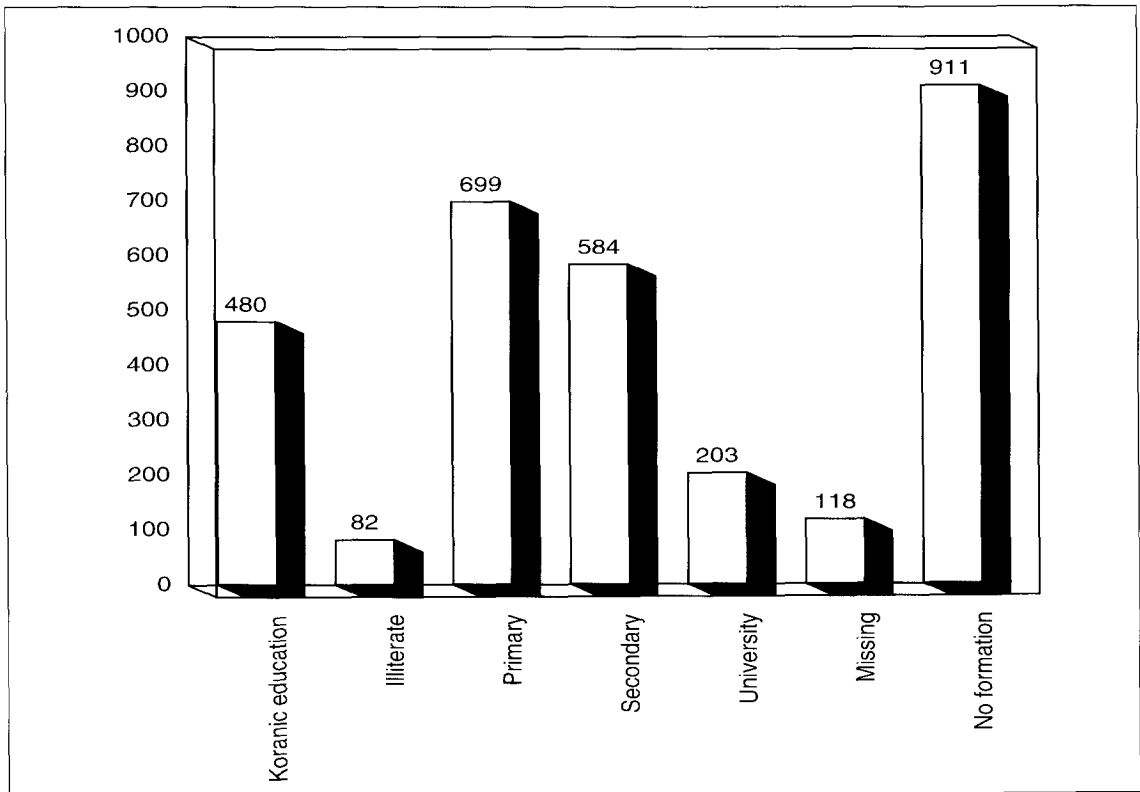
## Output stage

Reporting is done in the form of tables or graphs within SPSS with the possibility of using SPSS graphics or linking to Harvard Graphics.

The first step in data analysis is to chart the distribution of the information collected under various forms: frequencies, cross-tabulations and calculation of the basic statistical parameters, such as, the mean, mode, median, variance, standard deviation, etc.

The distribution is done first with one variable (univariate), then with more than one variable (bivariate and multivariate) with the help of different process commands:

### 1. Frequencies (univariate distribution)



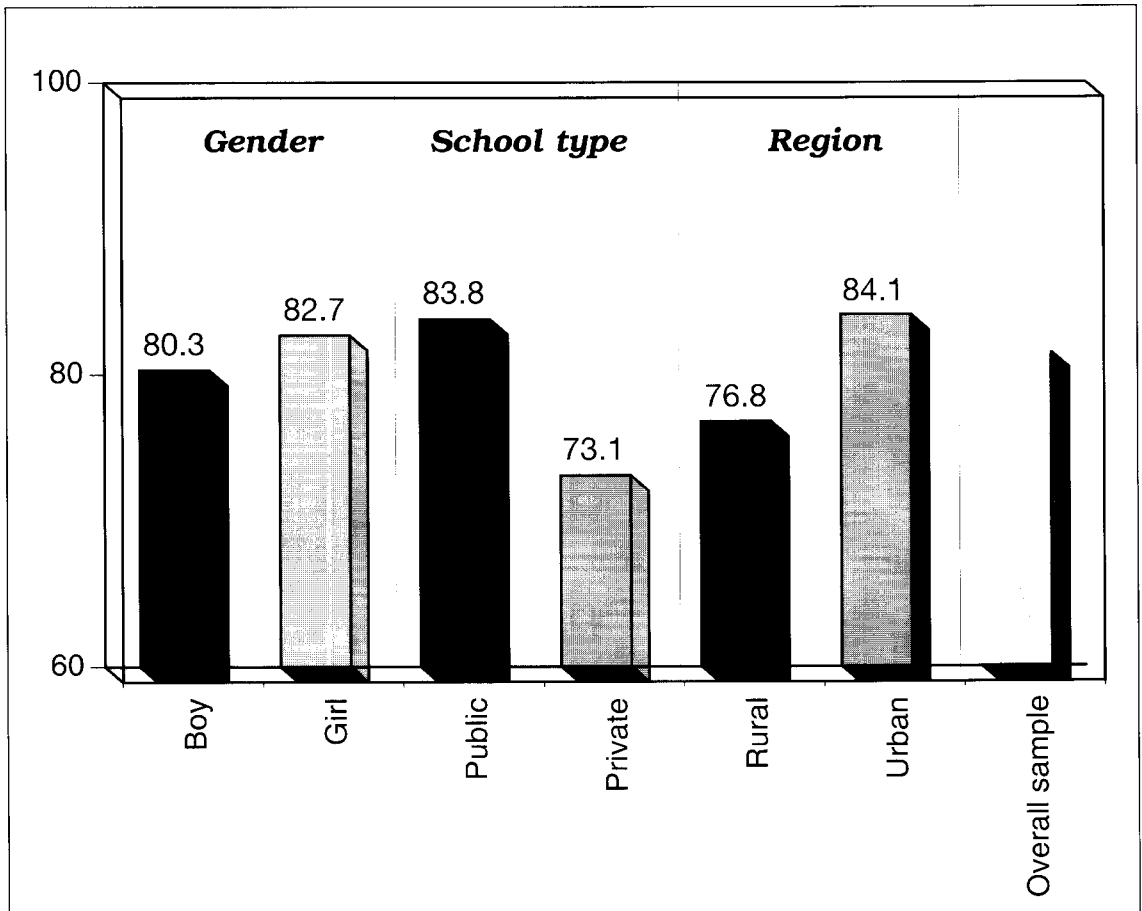
**Figure 4.4** Frequency distribution: A graphical presentation

## 2. Presentation of mean score and measures of variation

The mean is the average score often used to represent measures of central tendency.

The variance is the measure of the dispersion of the data about the mean of an interval-level variable. One of the purposes of this type of measures is to assess how accurately and significantly an average represents a set of data.

The standard deviation is another measure of dispersion.



**Figure 4.5 Mean scores' distribution: A graphical presentation**



### 3. Cross-tabulation

This is a joint frequency distribution of cases according to two or more classified variables:

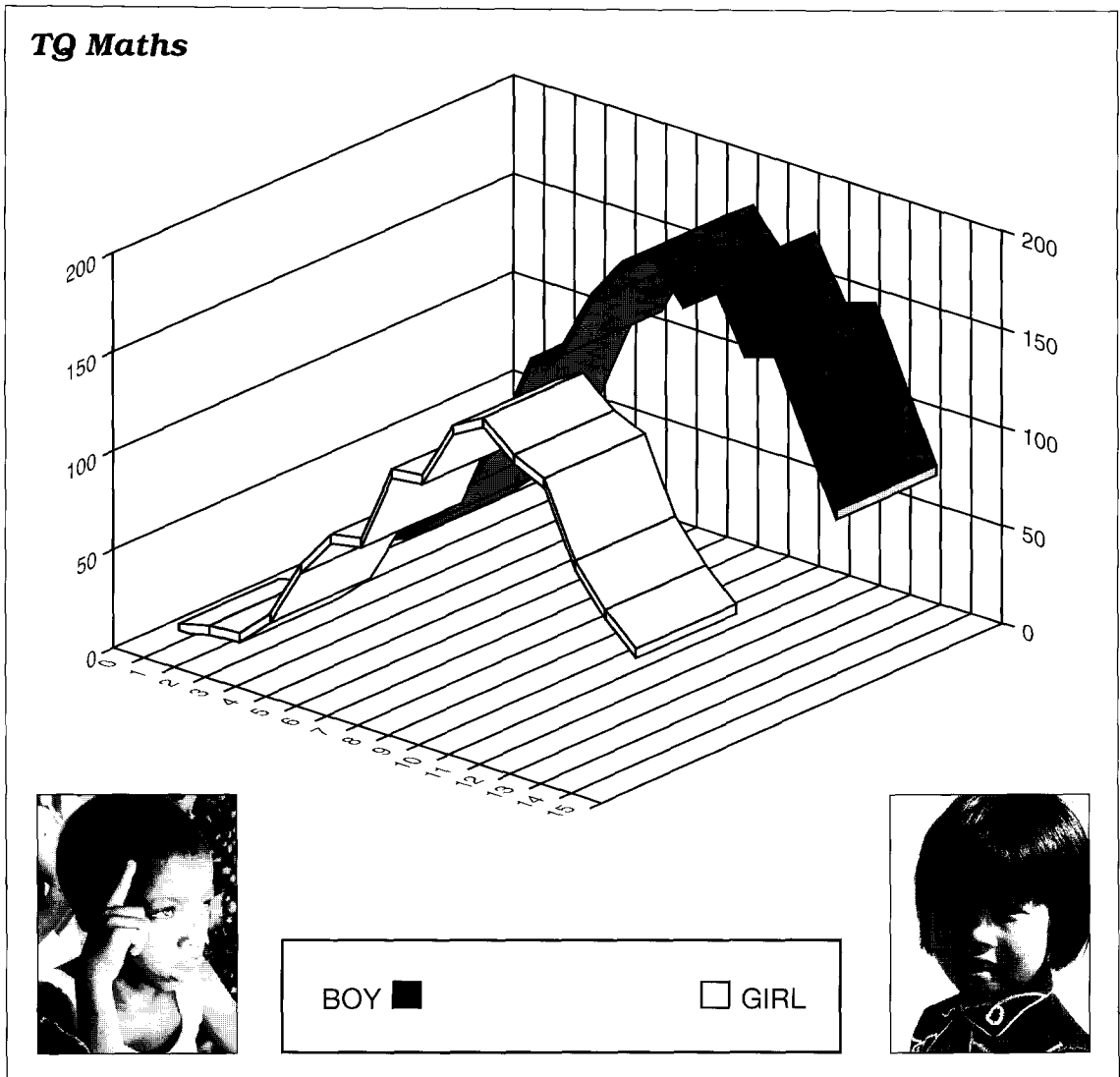


Figure 4.6 Cross-tabulation results: A graphical presentation

#### **4. Identifying the correlation between variables in the correlation analysis**

Simple correlation determines the link between two variables, given as a coefficient spreading between -1 and 1:

-1 is the perfect negative correlation

1 is the perfect positive correlation

0 is non significant

The correlation coefficient indicates the degree to which variation (or change) in one variable is related to variation (or change) in another.

**Table 4.1 Mauritius: Intercorrelations among the BLCs tests**

<b>Tests</b>	<b>Literacy (English)</b>	<b>Literacy (French)</b>	<b>Numeracy</b>	<b>Life Skills</b>
Literacy (English)	1.00			
Literacy (French)	0.84	1.00		
Numeracy	0.82	0.85	1.00	
Life Skills	0.70	0.70	0.67	1.00

**Monitoring Project: Mauritius**

## 5. Multivariate analysis

This is a general term used for a group of advanced statistical analyses, the most common ones being:

- Factor analysis,
- Regression analysis,
- Path analysis.

### Factor analysis

Factor analysis is used to identify unities and commonalities among different variables, forming a factor or a number of factors. It is often used to reduce the multiplicity of tests and measures into common underlying constructs, or the so-called latent variable.

In figure 4.7, the factor or latent variable “STUBACK” from the Moroccan Project is measured by four different variables:

- (1) number of years in pre-school (EMP);
- (2) father’s basic education level (PHNP);
- (3) mother’s basic education level (PHNM); and
- (4) family’s assistance with homework (AMF).

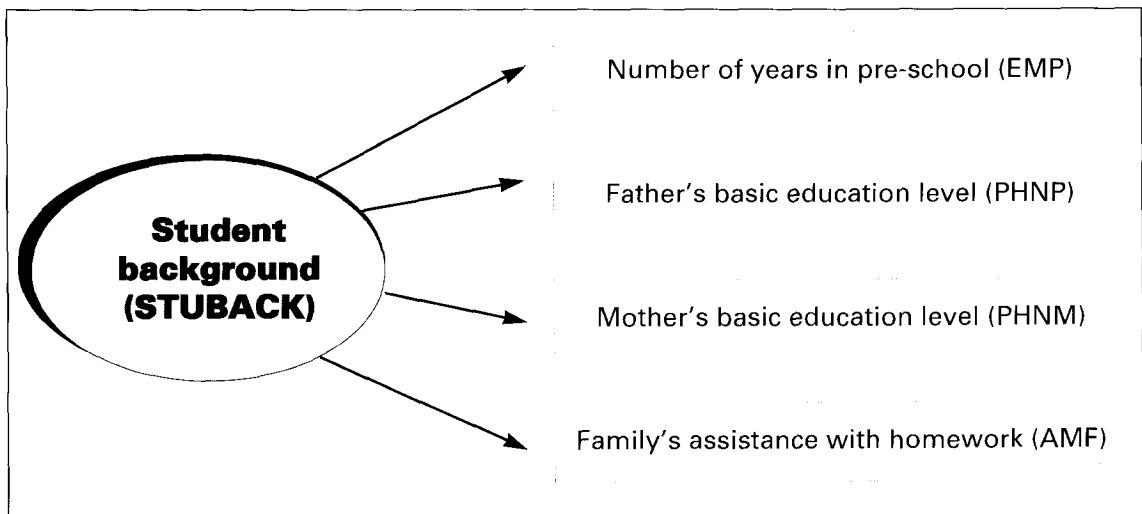
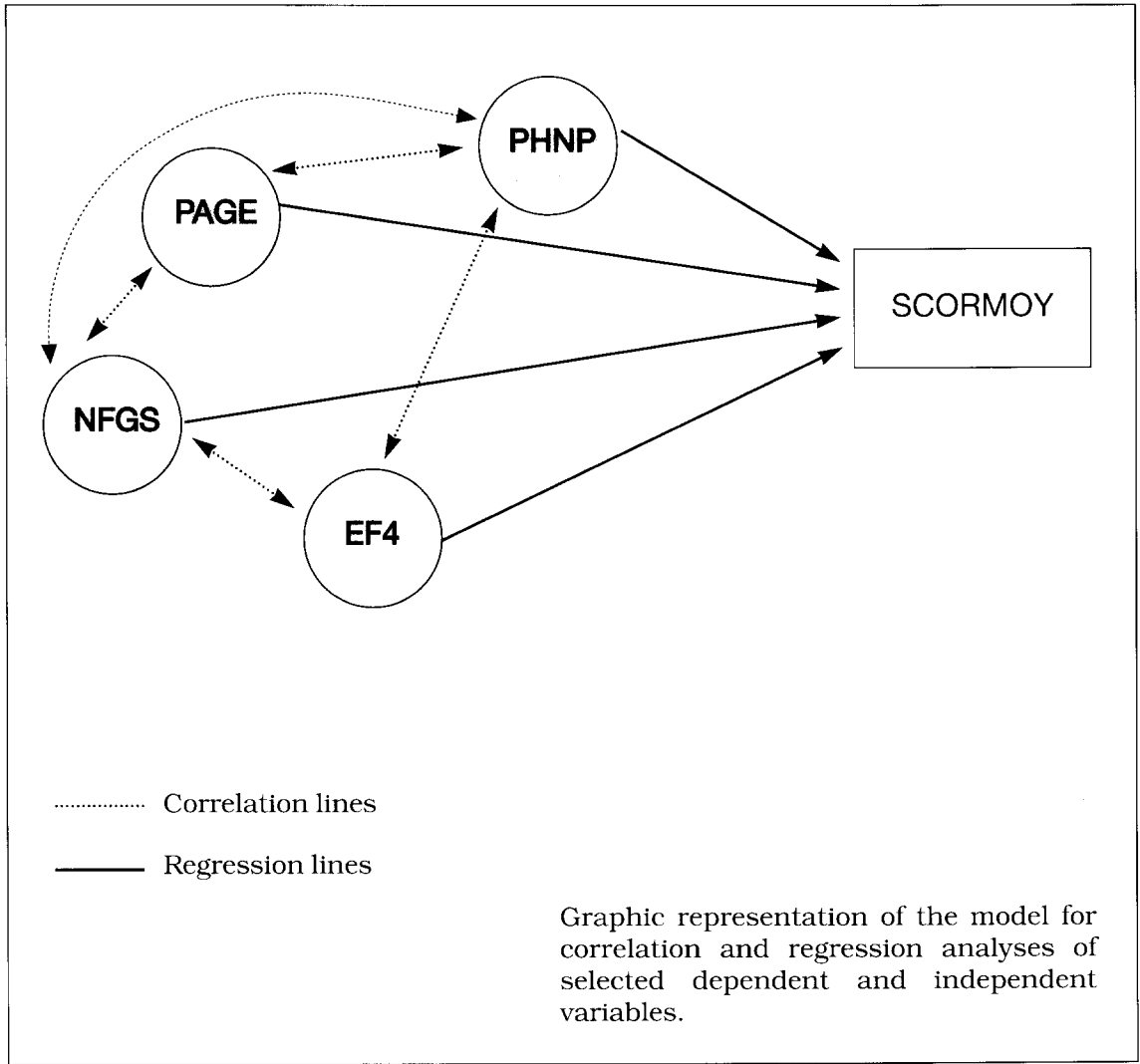


Figure 4.7 Morocco: Factor analysis model

### Regression analysis

This is the analysis of the relationships between dependent (criterion) and independent (predictor) variables. It leads to a more complex analysis of the effects among these variables as shown in the figure below:



**Figure 4.8 Morocco: Regression analysis model**

## **Path analysis: LISREL**

*The path analysis allows to compare the indirect and total causal effects of the predictor variables as mediated by corresponding intervening variables in the simplified LISREL model*

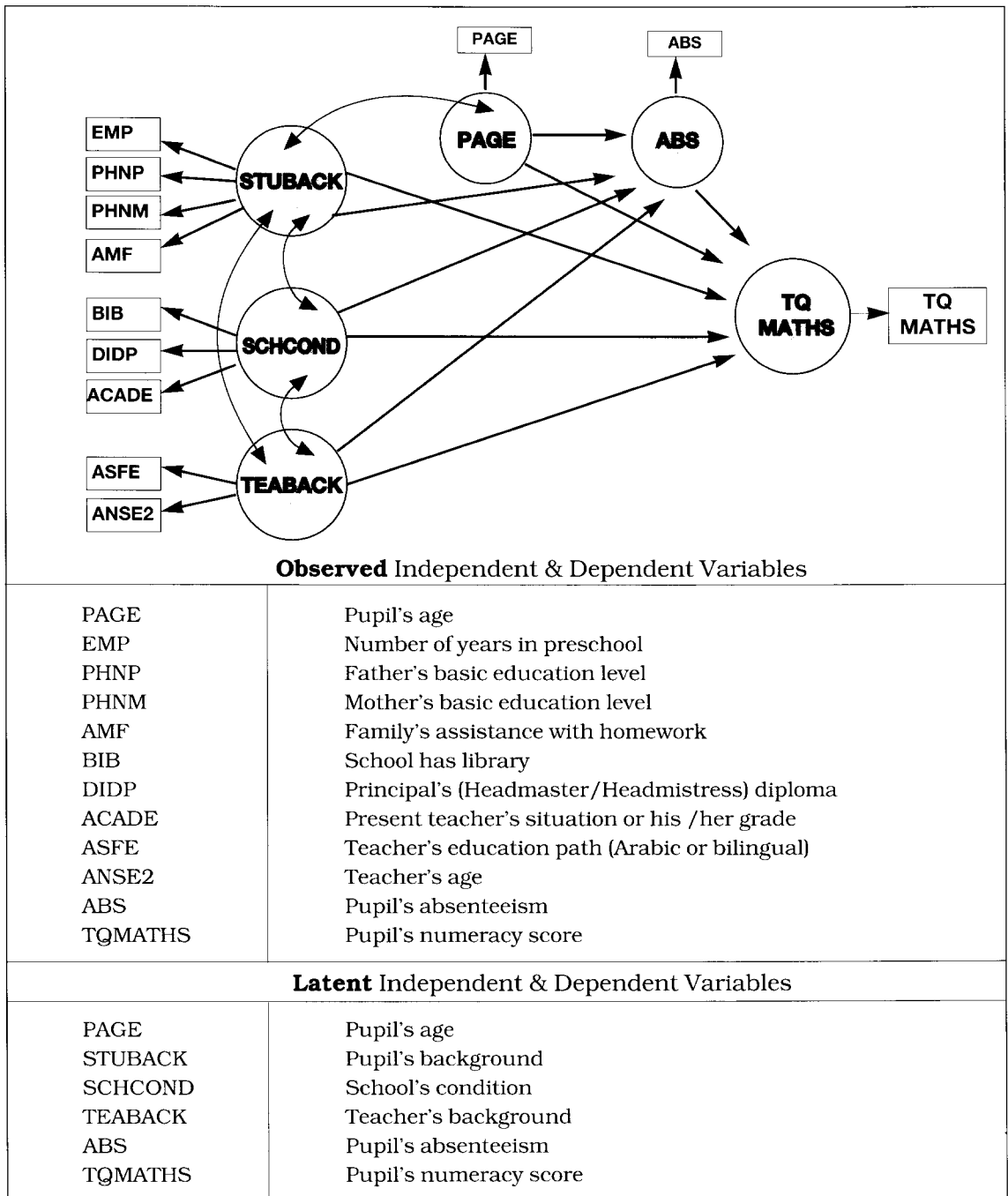
When human beings (children and adults) are at the centre of any investigation or inquiry, great attention needs to be given to the complexity of the problem under study. In education and other social sciences investigation, the multiplicity of factors directly or indirectly affecting human beings can be better explained by the application of path analysis. Path analysis is considered today as the most powerful and robust analytical technique in the social and natural sciences.

The most useful and accessible techniques of statistical analysis are those that estimate and test linear relationships among variables. Typically, the investigator wants to determine the coefficients of simultaneous linear equations, relating the dependent variables to the independent or predictor variables. When the independent variables are measured without error, multivariate least-squares or maximum-likelihood regression techniques serve this purpose very well. But when the independent variables are measured with error, the 'errors-in-variables' problem arises and the estimates of the regression coefficients are biased.

### LISREL Modelling

The statistical method used to examine the effects of predictor variables is a linear structural equation model for latent variables: the LISREL model. The LISREL method makes it possible to estimate the relative influence of the variables.

The latent variables in the model are made up of several predictor variables using factor analysis. For example, in Figure 4.9 the latent variable in the measurement part of the model (STUBACK) is made up of the four predictor variables (EMP, PHNP, PHNM and AMF).



**Figure 4.9 Morocco: Path analysis LISREL model**

A full LISREL model usually consists of two parts, e.g. the measurement model and the structural equation model. In the measurement model, the relationships between latent variables and their indicators are specified. In the structural equation model, the relationships among the latent variables are specified. In the LISREL model variables are arranged in a causal order so that variables earlier in the sequence are assumed to influence variables later in the sequence, but later variables do not influence earlier variables. Causal relationships between variables are represented by single-headed arrows. Variables assumed to be correlated but not causally related are linked by a curved, double headed arrow.

### ***Suggestions for further reading***

- Borhnstedt G.W. & Knoke D. (1994) *Statistics for Social Data Analysis*. Third Edition. F.E. Peacock Publishers, Inc, Illinois, United States
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- Dane F. C. (1990) *Research Methods*. Brooks/Cole Publishing Company, California
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- Jöreskog K.G. & Sörbom D. (1989) *LISREL 7. A Guide to the Program and its Applications*. Second edition. SPSS Publication, Chicago, United States
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- Martin M.O., & Mullis I.V.S . (1996) *Third International Mathematics and Science Study- Quality Assurance in Data Collection*. IEA TIMSS, Boston College, Massachusetts, United States
- Nie H.H. et al. (1975) *SPSS Statistical Package for the Social Sciences*. Second Edition. McGraw-Hill, New York
- Patton M.Q. (1990) *Qualitative Evaluation & Research Methods*. Sage Publications, United States
- SPSS (1993) *SPSS for Windows - Base System User's Guide Release 6.0*. SPSS Inc, United States
- SPSS (1993) *SPSS LISREL 7 and PRELIS*. SPSS Inc, United States
- UNESCO (1993) *SPSS:PC+: A Self-Guide Instructions Module* (English and French). Studies and Working Document No. 6. UNESCO, Paris
- Vari P. ed (1997) *Are We Similar in Math and Science? A Study of Grade 8 in Nine Central and Eastern European Countries*. IEA TIMSS, Hungary



# 5. Findings and implications for policy-making

*Much attention has been given in this Handbook to the process of monitoring activities. The importance of national capacity building and of designing instruments that are feasible, flexible and sustainable, has been stressed repeatedly. It must not be forgotten, however, that the ultimate aim of any monitoring activity is to improve the basic education offered. Proper and in-depth analysis of the results of the survey's findings and how they can be interpreted to influence national education policy are crucial to this end.*

## **Improving the quality of education**

*We must analyse and interpret the findings to try to identify trends and to understand why these trends are happening, in order to recognize their implications for policy-making.*

Many studies on education systems in developing countries show the urgent need for these countries to increase the internal efficiency of their primary education system, which is, the foundation of children's future learning acquisition. A decline in the quality of primary education has resulted not only because of general financial constraints but also the inability to provide a place in school to the ever-increasing numbers of school-age children.

Monitoring has a dual function – diagnostic as well as therapeutic. It is not enough to just point at the flaws in the system; monitoring must ultimately lead to an improvement in the quality of the education offered.

The Monitoring Project approach represents a **learner-centred, school-based approach**. An analysis of the results of this project can be approached in several ways. On the one hand, information in absolute terms – scores in basic learning skills – that indicates what has been learned, can be acquired. On the other hand, the findings must be analysed and interpreted so that trends can be identified. It is even more important to understand why these trends are happening in order to recognize their implications for policy-making.

## Within-country differences

Based on the results obtained from the reports of the five national studies, some findings have been chosen here to examine within-country differences in BLCs.

**Table 5.1 China, Jordan, Mali, Mauritius and Morocco: Within-country differences in BLCs by region, gender and school-type**

Basic Learning Competencies (BLCs by Domains)	China	Jordan	Mali	Mauritius	Morocco
<b>LIFE SKILLS</b>					
Grade IV					
<i>Mean Point-Score Differences</i>					
Urban vs Rural	0.54	2.0	3.21	-7.3	15.36
Girls vs Boys	0.60	10.0	0.92	2.4	4.62
Private vs Public	0.49	7.0	-0.37	-10.4	13.15
<b>LITERACY</b>					
Grade IV					
<i>Mean Point-Score Differences</i>					
Urban vs Rural	2.43	7.29	3.60	6.8 (1) 14.5(**) (2)	18.36
Girls vs Boys	(*)	6.71	-0.13	5.1 4.4 (**)	7.24
Private vs Public	-0.56	20.94	4.19	-6.8 -7.4 (**)	19.25
<b>NUMERACY</b>					
Grade IV					
<i>Mean Point-Score Differences</i>					
Urban vs Rural	2.94	4.68	2.34	10.5	13.63
Girls vs Boys	(*)	1.46	-1.66	0.9	1.45
Private vs Public	1.15	14.62	4.15	-13.0	19.84
(*)	Not analysed				
(**)	In Mauritius, BLCs results in Literacy are in two languages (1) English (2) French.				
(***)	In Mali, BLCs results are for pupils at the beginning of GRADE V.				

A number of trends emerge from these findings broken down by region-location (urban/rural), gender (girls/boys) and type of school (private/public). Mean point score differences are used to account for between-group disparities. This analytical approach captures both in-country and between country disparities in pupils' learning achievement.

## **School location**

Pupils in rural schools have received lower scores on achievement tests. This can be explained by a number of factors, including lower parental income and educational levels, poorer school infrastructure and facilities, poorly-trained and less experienced teachers and lower expectations on the part of teachers and parents.

Table 5.1 confirms this general trend. In China and Mali, urban schoolchildren do slightly better than rural schoolchildren. In Jordan, significant differences are noted between urban and rural children's achievement in literacy and numeracy. Marked regional differences can be observed in all three domains in Morocco, where urban children do significantly better than rural children. A similar trend is observed in Mauritius with the exception that rural children outperformed urban children in the life skills test.

**The implications for policy-making are obvious. Ways must be found to improve the quality of education offered in the rural schools.**

## **Gender differences**

In studies throughout the world, in developing as well as developed countries, girls tend to do better than boys in the earlier grades, especially in literacy skills. Later on, for any number of socio-economic reasons – decreasing expectations, early marriage and pregnancy, work outside the home taking precedence – girls' performance begins to lag (Elley, 1992).

Table 5.1 confirms this trend. In almost every case, the mean test scores were equal or higher for girls than boys. Consistent results are observed across the five countries in

the life skills domain. In Jordan, Mauritius and Morocco, girls outperformed boys in all BLCs domains. In Mali, however, boys did slightly better than girls in literacy and numeracy, while the opposite trend is observed in the life skills domain. In China, data pertaining to gender differences were only analysed in the life skills domain. There is a slight and non-significant difference between boys and girls.

**The question of the success or failure of girls in schools has become an increasingly important policy issue in all countries. Improved access to schooling for girls is one factor which has become a priority of Education for All programmes. Other areas covering health, demography and religion must be also considered in this context.**

## **Type of school**

Private schools have traditionally produced higher-achieving pupils. School facilities are usually better, teachers are better trained (and often better paid) and family educational background is usually higher. At the basic education level in most countries, private schools tend to draw children from families with relatively higher socio-economic levels, and from urban or semi-urban areas.

Similar results can be observed in Table 5.1, where in almost all cases, privately-schooled children scored better. In Jordan and Morocco, privately-schooled children outperformed public school children in all three domains. In Mali, however, pupils from public schools did better than pupils from private schools in the life skills domain. In China, the differences were not significant in literacy and numeracy, but performance in life skills was somewhat higher. Interestingly, the opposite trend was found in Mauritius, where public school children scored better in all three domains.

**It is clear that imbalances between school facilities, teacher training, pay (and motivation) and other related factors in public and private schools must be addressed.**

## ***The national studies***

We shall now look carefully at samples of analyses and results from the five national studies and their implications for policy-making. The main purpose here is to implement the step-by-step analytical framework developed in this project and presented earlier in Section 4. Likewise, it is important to emphasize again the holistic approach adopted in all phases of this project, at the levels of data processing, analysis and reporting. The perspective on how data can be analysed and presented to the different clientele groups of educators, planners, evaluators, practitioners and policy-makers is reflected in this section. We begin with simple (univariate) analyses and end with the more complex and sophisticated types of analyses of school survey data (path analysis using LISREL).

### **A. Analysing the performance of children in different learning domains and subdomains: The cases of China and Mali**

Examples from China and Mali will be used to illustrate the importance of analysing different learning domains and subdomains and their implications for policy-making.

#### ***China***

##### **Life skills**

The Chinese life skills test reflects the everyday life of primary school pupils. It includes questions on health and nutrition, safety, work and everyday life situations. The results of the performance in these life skills domains are presented in the table below:

**Table 5.2 China: Grade IV pupils' performance in BLCs life skills subdomains**

	Health and nutrition	Safety	Labour	Everyday life
Mean %	75.7	68.3	60.1	71.7
Standard Deviation	20.3	28.4	24.0	20.0

The results indicate that pupils have better knowledge or experiences in the subdomains of health and nutrition, safety and everyday life than in the labour subdomain. More detailed analysis of the data shows the following:

- (1) Pupil's performance on items not taught in classroom, such as sterilizing fruits, boiling eggs, brushing teeth, and crossing the road, is very low. The score on items related to skills that the pupil has never experienced is even lower.
- (2) Although some life skills have been taught and/or experienced, performance is still lower than might be expected, which indicates that pupils are not being properly instructed in this domain. A typical example would be the correct way of brushing one's teeth.
- (3) On the whole, there is no clear gender difference in life skills. Some differences in certain specific fields exist however. For example, irrespective of school location and type, boys perform better than girls in electrical engineering, while girls perform better than boys in the right way of brushing teeth or in diagnosing fever.
- (4) The results indicate that the development of pupils' life skills is closely related to regional differences.

**Possibilities for life skills training should be offered at an early childhood stage.**

**The life skills of the one-child family are generally poor for various reasons.**

**Life skills education should match the demands arising from the country's economic, scientific and technological development.**

**Programmes of life skills education should be included in the basic education curriculum in China.**

**The Monitoring Project in China contributed to the development of the basic knowledge of life skills in the Chinese context. Among other things, it was used to develop the concept of life skills and help formulate decisions on which basic life skills the pupils should master.**

## Literacy

The Chinese literacy test is composed of three subdomains: (i) basic reading knowledge and skills — reading Chinese characters, knowing the Chinese phonetic system, and understanding words and knowing expressions; (ii) reading comprehension — understanding passages and reading habits; and (iii) composition — writing a simple essay.

*Learning to read Chinese characters:* There are thousands of characters in the Chinese vocabulary, among which, about 2,500 are frequently used and must be mastered.

*Knowing Chinese phonetic system:* the pronunciation of characters must be learnt and memorized by pupils.

*Understanding of words and expressions:* pupils should understand the meaning of a word and correctly use it in oral and written forms.

**Table 5.3 China: Grade IV pupils' performance in BLCs literacy subdomains**

	average rate
Basic reading knowledge & skills	84.1
Reading comprehension	66.1
Composition	66.7

The results indicate that most pupils have acquired solid basic knowledge and language proficiency skills. The teaching of basic knowledge and the training of basic skills have taken root in China and have yielded positive results.

The pupils' scores in the subdomains of reading comprehension and composition are not satisfactory, however, as only two-thirds of the pupils appear to have mastered the basic competencies. The reading and writing abilities of the children are far from meeting the requirements of the syllabus.

**Institutions concerned should re-examine the syllabus and make the appropriate adjustments. A “minimum standard for learning Chinese” should be worked out according to the syllabus and should serve as a guide for teaching and monitoring.**

**The People’s Education Press should pay more attention to this problem and consider the reading ability of pupils in the design and development of textbooks.**

**In this context, the regional differences must also be considered.**

### **Numeracy**

The numeracy test for Grade IV is designed to measure such subdomains as numbers and calculation, basic geometry, basic statistics, magnitude and calculation, and application.

In Table 5.4, the numeracy results of the overall sample of Grade IV pupils by subdomains are given.

**Table 5.4 China: Grade IV pupils’ performance in BLCs numeracy subdomains**

	Whole tests (60 items)	Numbers and Calculation (43 items)	Basic Geometry (8 items)	Basic Statistics (1 item)	Magnitude and Calculation (2 items)	Application (6 items)
Mean Score	54.6	39.5	7.0	0.8	1.78	5.44
% of BLCs	90.9	91.8	87.8	79.6	89.0	90.60

The results show that a great majority of pupils have mastered the basic skills in the numbers and calculation subdomains. Further analysis indicates that pupils’ performance on items of calculation is higher than that on items related to concepts of numbers. The eight items in basic geometry tests are designed to measure pupils’ understanding of the concept of parallel lines and angles, using a ruler to measure the length and width of a square (rectangle), and the calculation of their areas. The results indicate that although the average percentage score in geometry is lower than that of numbers and calculation, it



is still satisfactory. The weakest performance level was found in the basic statistics.

Detailed analysis of the performance of pupils in mental calculation, pen calculation and simplified calculation was also made. The more detailed analysis of the data shows the following:

- (1) The majority of pupils (96 percent) succeed in mental calculation, which is particularly emphasized in China in the lower grades.
- (2) The results from the study show that the ability in calculation is rather high, but the ability to apply knowledge to practical problems is low. This reflects the shortcomings of the conventional educational practice that "puts emphasis on knowledge but neglects practical skills".
- (3) There is no significant difference in performance among pupils attending different types of schools. In these schools, most pupils master the BLCs of mathematics. In terms of pass rate, pupils attending urban schools performed better than their county school and rural school counterparts. The exception worth mentioning is that pupils in county non-educational administrative schools perform as well as pupils in urban schools. Pupils in big cities have the highest scores whereas those in mountainous areas have the lowest.
- (4) The pupils' average scores in calculation are the highest compared to scores in reasoned thinking, space perception and problem solving. This indicates that much emphasis has been placed on training in calculation.

**To reach the goal of nine-year compulsory education in China, emphasis should be given to rural education, especially in poor and less-developed areas.**

**A state-specified minimum level of learning achievement appears to be necessary to improve mathematics teaching in primary schools. It will help teachers teach and others monitor learning outcomes.**

**The national syllabus of mathematics teaching is too general and does not include detailed BLC standards for various numeracy subdomains.**

## **Mali**

To complement the application of the analytical approach used above to examine performance in different learning domains and subdomains in China, some examples will be used from the Monitoring Project in Mali. These examples illustrate the importance of between-school type analysis of learning domains and subdomains and their implications for policy-making.

### **Between school-type analysis of different learning subdomains**

The efforts made to design appropriate survey sampling procedures in education *cum* social science evaluation studies are, very often, neither optimally reflected in the analysis of the data collected nor sufficiently examined during the presentation of the results for policy-makers, educators and other such groups. We have chosen examples from the project in Mali to discuss the learning achievement results by subdomains and their implications for policy-making. The classical school-type dichotomy (public versus private schools) is overcome by considering the additional subcategories of schools in Mali, namely, the "medersas" and the "basic schools". The "medersas" are private religious schools with Arabic as the medium of instruction and where children are also taught the core primary school curriculum. The "basic schools" are fee-paying private schools with different modes of financing and are community-based, i.e. "village school" in the rural areas and "neighbourhood school" in towns and semi urban areas.

The different characteristics of the population served by these four types of schools and their influence on pupils' learning achievement can only be identified by a between-school type analytical approach. As mentioned earlier, in Mali the performance of children in private schools is much higher than those in public schools, with the exception of the life skills domain. Global scores without sufficient in-depth analysis of different subdomains, however, may hide important deviations between different types of schools.

For comparative purposes, the scores are standardized with a mean of 100 and a standard deviation of 15 (Z-score). The results by school type across the different learning subdomains are given in Table 5.5.

**Table 5.5 Mali: Between school-type differences in different BLCs subdomains**

	Public	Private	Medersa	Basic School
<b>Life Skills</b>				
Health	100.4	100.6	98.0	99.3
Practical Skills	99.5	104.6	94.4	100.9
Civil Life	99.5	102.8	99.7	99.9
<b>Literacy (French)</b>				
Vocabulary	98.4	103.6	91.8	108.0
Comprehension of Phrases	100.4	98.8	98.3	100.3
Grammar	98.7	96.4	103.0	106.7
Conjugation	97.8	96.6	106.6	107.5
Comprehension of Texts	99.0	103.6	95.0	103.6
Dictation	98.3	99.9	97.8	107.9
<b>Numeracy (Maths)</b>				
Arithmetic	100.0	102.4	94.4	101.4
Metric Systems	97.5	103.9	99.4	106.2
Time	96.8	101.3	105.6	107.3
Geometry	100.7	99.2	90.6	104.1
Problem-Solving	97.9	99.2	114.1	99.3

### **Life skills**

The results from the analysis of performance in the domain of life skills continue to be surprising. For example, differences are not that marked between pupils from different types of schools (with the exception of the differences in the results of practical knowledge between pupils in medersas and those in other types of schools). The highest performance is observed among pupils from private schools and the lowest ones among pupils from medersas.

### **Literacy (French)**

Pupils from basic schools have the highest performance scores in all subdomains of literacy, followed by pupils from private schools. The poorest performance is observed among pupils attending medersas except in grammar and conjugation. In the latter case, this can be partly explained by the fact that Arabic is the medium of instruction in medersas. This can also be confirmed by the very poor results of pupils from medersas in vocabulary and text comprehension.

A similar tendency is observed in dictation with marked differences between pupils from basic schools and pupils from the other types of schools. The results in dictation confirm those obtained in other countries where teaching and learning are carried out in a language other than that of the pupils' mother tongue.

**Monitoring the BLCs of pupils will require different types of analysis in order to bridge the learning gaps between different groups of children. For example, in the earlier section where the results are presented and are aggregated along private and public schools only, public school children tend to do better than private school children in the life skills domain. By comparing the aggregated data with the disaggregated data (Table 5.1 as compared with Table 5.5) quite different trends are observed. The more in-depth the analysis, the better is the information base for designing quality improvement strategies geared towards the teaching-learning processes.**

## **Numeracy (Maths)**

In the subdomains of numeracy, different tendencies are observed. Pupils from medersas outperform all the other pupils in the basic problem solving skills, namely, addition, subtraction, multiplication and division, while the opposite is observed in geometry and arithmetic. Public school children still perform less well in most subdomains. As was the case in literacy, the second best results are obtained from pupils attending private schools.

**A global policy for literacy improvement and mother tongue education is not always enough. Likewise, improvement in numeracy and life skills can only be optimally reached with more in-depth analysis of between-school variations and their effects on different learning domains and subdomains. These are salient features derived from the application of the analytical approach on the Malian survey data.**

**The analytical approach used to monitor BLCs clearly indicates: (1) the need and importance of differential content-wise and teaching-wise strategies; (2) the importance of tailor-made measures in order to cater to the differential needs of children attending different types of schools; and (3) the further need to critically examine performance across different learning subdomains.**

**The implications of marked learning differences at the level of learning subdomains between pupils attending different types of schools, are to be addressed on a continuous basis. Child-centred teaching-learning strategies will remain perpetual dreams as long as the information base for monitoring is inadequate, crude and incomprehensive.**

**Education planners, curriculum and textbooks developers, and other education-related agents need to consider in their various capacities these policy implications. Only then can appropriate and relevant corrective measures be designed for each targeted group in order to bring about genuine quality improvement in basic education.**

## B. Analysing differences in school and home environments and their relationships with learning achievement: The cases of Jordan and Mauritius

### *Jordan*

In addition to in-depth analysis of BLCs scores and their significance regarding gender, school location, age and type of school, Jordan has also looked closely at the pupil, parent and school questionnaires, and analysed their correlation with BLCs (Arabic, mathematics and science) scores. In some cases, policy implications are made apparent and a few examples are given below:

*Does pupil's mother/father live in the same house as the pupil?*

No significant difference between Grade 4 achievement in Arabic or science was found for pupils whose mother lived at home, but a significant difference was found in mathematics. No explanation was given, but it was suggested that this might be due to differences in socio-economic status of families. There was no significant difference in any domain, whether the father lived in the house or not.

**Table 5.6 Jordan: Influence of parental place of residence on achievement in BLCs**

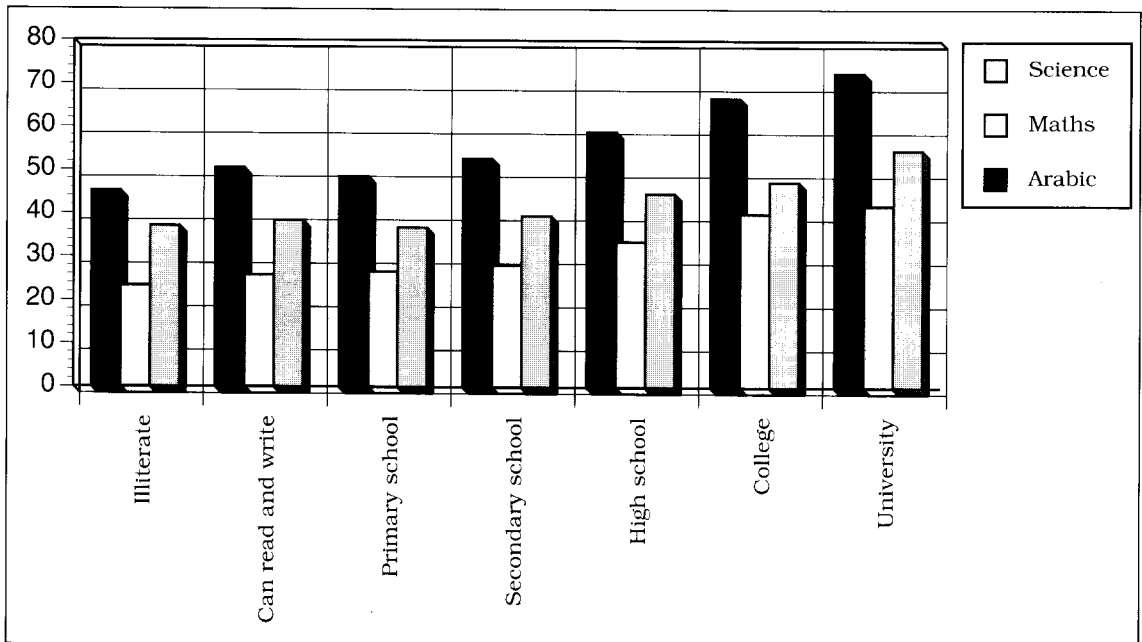
	Arabic		Maths		Science	
	Mother	Father	Mother	Father	Mother	Father
Lives in same house	54.91	54.96	30.29	30.32	41.81	41.88
Does not live in same house	52.05	53.34	25.00	28.68	42.01	41.10

In countries with a high divorce rate, high female mortality rate and large numbers of single parents, correlation with school failure has been high. Given the relative stability, however, of the Jordanian family (98 percent of the fourth graders had a mother at home), this was not considered a major contemporary problem in Jordan.

*What is the father's education level?*

The father's education level correlated significantly with all three subjects.

In almost all research, parental education has been found to be highly correlated with student achievement. Parental education encompasses much more than the fact that the father completed a particular level of schooling. It is also a strong indicator of such factors as reading habits in the home, presence of a library, student and parental aspirations for further schooling and entering a profession, parental assistance to the school, parental income, ability to afford private schooling, smaller family size and other factors that give children of better educated parents a wide range of advantages.



**Figure 5.1 Jordan: Influence of father's education on achievement in BLCs**

The policy implications mentioned in this context include:

- **literacy programmes and literacy crusades for adults;**
- **radio and television programmes to educate parents on child-rearing, nutrition, health and how to teach their children;**
- **greater parental involvement in the schools through parent-teacher councils and local school boards;**

- **closer connections between the school and the home, through telephone calls, home visits and invitations to parents to visit and assist in the classroom;**
- **expansion or development of extension courses for completion of secondary education through distance learning;**
- **efforts to make curricular development relate more closely to communities, through making each school a community centre for adult education, recreation and parental education; and**
- **redesign of education in Jordan to better meet the future occupational needs of the country.**

*Number of hours the pupil helps at home*

On all three achievement tests, pupils who help one hour or less at home achieved significantly higher levels than those who helped two or more hours.

**Table 5.7 Jordan: Influence on achievement in BLCs of time spent on home duties**

<b>Number of hours</b>	<b>Arabic</b>	<b>Maths</b>	<b>Science</b>
One	58.91	32.71	44.38
Two or more	50.83	27.76	40.00

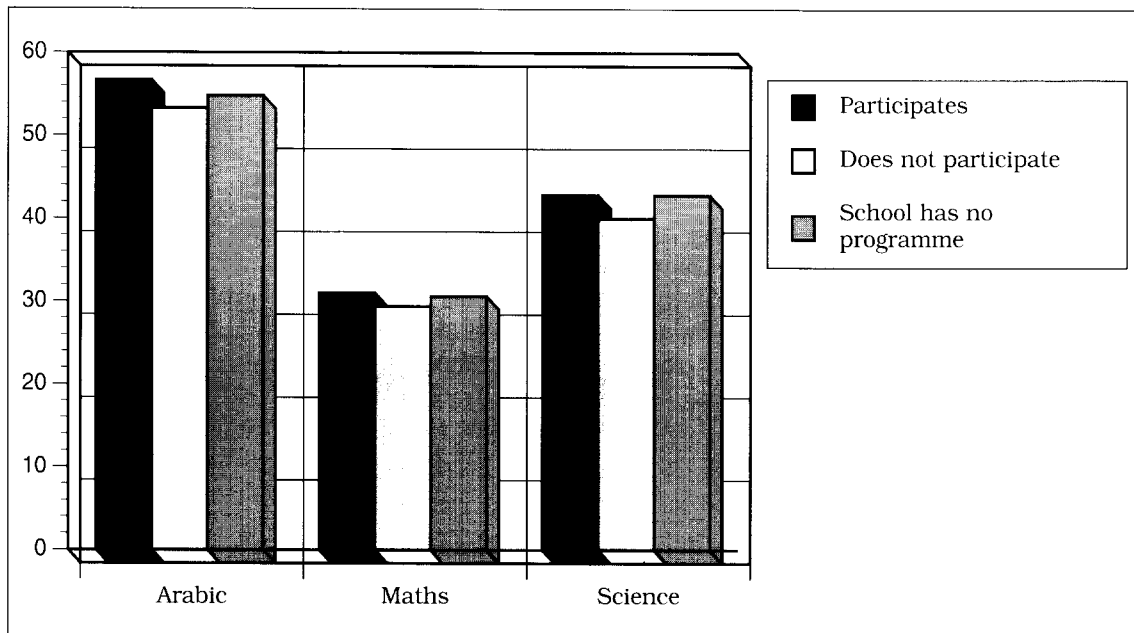
On the surface, the data appears to make a strong case for limiting the amount of work children are asked to do around the house. A more likely explanation is that there is a high correlation between pupils from wealthier homes not having to do as many chores around the house. Social class and educational level of parents are the more likely correlates on this item.

In countries without strict child labour laws, where children work to support their families, or in many wealthier nations where young people work to earn money for cars, clothing and entertainment, working has been shown to have a negative effect on school achievement. These factors do not appear to be at work in Jordan however.



*Do parents normally involve themselves in school activities?*

Forty two percent of 4th grade parents indicated that they participate in school activities and 21 percent indicated that there were no activities in which to participate. In all cases, there is a correlation between parental participation in school activities and high achievement.



**Figure 5.2 Jordan: Influence of parental involvement in school activities on achievement in BLCs**

These findings correlate closely with research in other countries which suggests that parental involvement in the school and in the education of their children is one of the most important causes of higher student achievement. It should be noted however, that results on this item could be an indication of socio-economic class, as parents may be willing to participate in school activities but unable to do so because they cannot afford much in terms of time or money.

**The policy implications here would be to encourage the participation of parents through the creation of parent-teacher associations, local education boards, etc.**

## **Mauritius**

Generally, are education policies national by nature. Often, and in most educational and non-educational environments, marked differences among children are not sufficiently considered in educational policy-making. Although “positive discriminatory measures”, “remedial education” and so on are pronounced, the targeted groups are not always systematically identified and services not always rendered to them. Different education policies, therefore, should be addressed and implemented according to pupils because of different home and school learning environments.

In the Monitoring Project in Mauritius, schools were sampled and categorized by, among other things, level of scholastic performance. This is used as a proxy outcome variable for differential school learning environments and was measured by individual school performance profiles at the end of the primary schooling examination, Grade VI (i.e. Certificate of Primary Education – CPE) over the past three years. The results for the three categories of schools in the Monitoring Project are shown in the following table.

**Table 5.8 Mauritius: Performance in BLCs by school achieving category**

TEST	SCHOOL CATEGORY		
	Low Achieving 10 schools	Average Achieving 33 schools	High Achieving 9 schools
Literacy (English)	62.0	85.3	95.9
Literacy (French)	40.1	72.0	90.8
Numeracy	39.5	74.9	89.5
Life Skills	64.7	83.6	90.1

### **School effects on learning achievement**

There are marked differences by school categories in all domains of BLCs in Mauritius. In literacy and life skills, the differences between the three school categories are somewhat smaller. It seems that the individual school profiles for scholastic performance at the Grade IV level are reproduced throughout the system. Performance in the three categories of schools, therefore, seems to be a function of the characteristics of those schools.

**The results clearly show the impact of the school environment on learning. Monitoring learning achievement should be institutionalized for all grades of primary schooling in Mauritius. With a permanent system for monitoring learning achievement, the quality of education can be enhanced at the appropriate time, thus avoiding cumulative wastages and inefficiencies on the one hand, and promoting learner-centred education on the other.**

### **Home effects on learning achievement**

The importance of the home environment on the learning achievement of children has not been adequately analysed in school survey studies. Policy-makers, very often, are keen to know only about the importance of school inputs on learning outcomes and neglect the role played by the child's home environment. The relationship of some selected home background variables on basic learning competencies for Grade IV pupils in Mauritius in the domains of: (1) literacy (English), (2) literacy (French), (3) numeracy, and (4) life skills are given in Table 5.9.

With the exception of the life skills' domain, the general tendencies found worldwide are confirmed in the Monitoring Project in Mauritius. Differences in learning outcomes are strongly associated with differences in the level of the socio-economic status, parental educational and professional backgrounds, family size and family income of Mauritian children. In other words, children from better-off families outperform children from poorer home environments. It is important to note that children with married parents

**Table 5.9 Mauritius: Correlation coefficients between achievement in BLCs and selected home background variables**

Variable	Test Scores			
	Literacy (English)	Literacy (French)	Numeracy	Life Skills
<b>FAMILY FACTORS</b>				
<i>Socio-economic status</i>				
Low	.51(-)	.51(-)	.51(-)	.45(-)
Average	.30(+)	.29(+)	.28(+)	.22(+)
High	.43(+)	.44(+)	.46(+)	.43(+)
<i>Professions</i>				
Manual	.37(-)	.43(-)	.40(-)	.29(-)
Professional	.51(+)	.50(+)	.50(+)	.44(+)
<i>Family size</i>				
Small	.22(+)	.20(+)	.18(+)	.22(+)
Large	.37(-)	.33(-)	.36(-)	.30(-)
<i>Qualifications</i>				
Primary	.50(-)	.50(-)	.49(-)	.43(-)
Secondary	.40(+)	.40(+)	.39(+)	.32(+)
Higher	.37(+)	.37(+)	.34(+)	.33(+)
<i>Income</i>				
Low	.44(-)	.46(-)	.47(-)	.38(-)
Average	.38(+)	.36(+)	.37(+)	.33(+)
High	.42(+)	.42(+)	.41(+)	.41(+)
<i>Marital status</i>				
Married	.30(+)	.29(+)	.32(+)	.25(+)
Divorced	.36(-)	.29(-)	.37(-)	.25(-)
Single	.15(-)	.21(-)	.15(-)	.18(-)

outperformed children with divorced and/or single parents. This implies that the family plays a vital role in the learning outcomes of children.

**Quality improvement in basic education cannot be solved solely through improvement at the school or in the classroom. The home environment plays an equally important role.**

**The analytical procedure used in the Monitoring Project in Mauritius, namely, separate analyses by categories of schools and categories of home background variables, illustrates how disaggregation of data can help better understanding of:**

- (a) the types and strengths of the relationships that home and school variables have on different learning domains; and**
- (b) the necessity to design differential but appropriate policy decisions for different groups in one and the same country.**

**The findings of the Monitoring Project in Mauritius can be used to revise the curriculum and to make operational, appropriate and relevant instructional material and teaching methods in Mauritian primary schools.**

## C. Analysing different factors influencing learning achievement: Morocco

In Morocco, striking progress has been made in improving access to primary education. Primary school enrolment rates and promotion to the second cycle of basic education have increased considerably over the past several years.

As one of the five pilot countries to participate in the Joint UNESCO-UNICEF Monitoring Project, Moroccan authorities are now equipped with a wide range of relevant data on learning achievement, which can be used in local and national level policy- and decision-making.

Using these results as an example, we can see in what ways the test and questionnaire results can be analysed, with the ultimate aim of **improving what pupils actually learn**.

### *Achievement related*

Two groups of factors were considered significant in the analysis of Morocco's test results in Maths (TQ MATHS), Arabic (TQ ARABES) and Life-Skills (TQ CONGS) on the total tests (SCORMOY) – the first is linked to the socio-familial environment of the child, and is external to the school, while the second deals exclusively with the school environment.

The second group is especially important in that it deals with elements that are within the scope of decision-makers.

The variables chosen for the study included:

#### 1. pupil-related (VE)

PROV = location (province) of school

PAGE = pupil's age

ABS = absence

DUDV1 = time needed to get to school

EMP = number of years in pre-school

PHNP = father's education

PHNM = mother's education

AMF = family helps pupil with homework

#### 2. school-related (VS)

SAL = number of classrooms

CANB = school has canteen, type B

BIB = school has library

DEP = storeroom for teaching materials

DIPD = headmaster's education (degree received)  
ASFE = teacher's option: bilingual or monolingual  
ACADE = teacher's present situation or grade  
ANSE2 = teacher's age

The equations below show the impact of pupil-related variables (VE) and school-related variables (VS) on learning achievement (in this case, numeracy, Arabic, life skills and total score):

Numeracy =  $f(VE, VS)$   
Arabic =  $f(VE, VS)$   
Life skills =  $f(VE, VS)$   
Mean total score =  $f(VE, VS)$

To analyse the link between the variables used in the study and learning acquisition, we have used multiple regression.

### ***Analysis of the impact of selected variables on pupil's achievement***

The policy implications of our analysis of Table 5.10 reach far beyond the local school authorities and even the ministries. The role of the home environment is stressed in many areas, and a very strong message to the parents emerges: **The more support and help the child is given at home, the better his or her chances of scholastic success.**

*rural/urban (PROV):*

There seems to be a correlation between the location of the school and learning achievement in the domain of life skills but not in the other domains.

**The differences in scores noted from province to province suggest that inequalities in the quality of education offered varies throughout the country.**

*pupil's age (PAGE):*

The results here show a negative correlation with age; in other words, the older pupils scored lower in all domains, while pupils under 10 had the best scores.

**Table 5.10 Morocco: Unique effects of selected pupil and school-related variables on achievement in BLCs**

	TQ MATHS		TQ ARABES		TQ CONGS		SCORMOY	
	r	$\beta$	r	$\beta$	r	$\beta$	r	$\beta$
PROV	.00 ns	-.14	.00 ns	-.19	.10	-.06	.04 ns	-.16
PAGE	-.24	-.09	-.28	-.11	-.21	-.05	-.28	-.10
ABS	.20	.12	.21	.10	.24	.12	.25	.13
DUDV1	-.16	-.08	-.18	-.09	-.21	-.09	-.21	-.10
EMP	.31	.10	.29	.11	.29	.07	.34	.11
PHNP	.27	.05	.32	.05	.28	.05	.34	.06
PHNM	.23	.00 ns	.30	.07	.25	.03 ns	.30	.04 ns
AMF	.14	.03 ns	.17	.03	.22	.09	.20	.05
SAL	.28	.17	.31	.20	.37	.27	.36	.24
CANB	-.10	.00 ns	-.09	.04	-.02 ns	.08	-.08	.05
BIB	.19	.03 ns	.14	.02 ns	.21	.03 ns	.20	.03
DEP	.26	.17	.40	.23	.37	.19	.39	.23
DIPD	.12	-.04 ns	.11	-.08	.10	-.02 ns	.13	-.06
ASFE	.15	.05	.12	.01 ns	.13	.09	.15	.05
ACADE	.27	.16	.25	.18	.21	.13	.28	.19
ANSE2	.11	-.02 ns	.16	-.07	.07 ns	-.11	.13	-.07
Variance Explained	24%		32%		30%		37%	

$\beta$  is significant at  $P < .05$ , (ns = non significant)



**The implication here is that pupils who are in the “right” grade for their age will have the highest achievement. A number of social factors – history of past failure, greater responsibility outside school, etc. – can be identified as the cause. Grade repeating is neither academically sound nor cost-effective.**

*absence (ABS):*

Regular attendance is an important factor in getting the most out of education. Learning acquisition is very often the product of repeated exercises over a period of hours, days, or even months. A child who is often absent from school will find it more difficult to assimilate the information the teacher is trying to impart.

Analysis of the Moroccan results confirm that absence has a significant impact on learning acquisition. Those pupils who are never absent obtained the best results in all domains.

**These results suggest that parents and school authorities must seek to identify the causes of repeated absence and work together to combat them.**

*time spent getting to school (DUDV1):*

In many developing countries, children must travel several kilometres to get to school.

The Moroccan results show a negative correlation between the amount of time needed to get to school and learning acquisition.

**Depending on the economic conditions of the country, the following measures could be taken to help children get to school: improving the organization of school transport, especially in urban centres, and building more schools in rural areas.**

*number of years spent in pre-school education (EMP):*

Studies in many countries have found that children who have received some pre-school education do better at

school. The results of this study confirms this, in all domains.

**These results strongly suggest that supporting pre-school education (providing sufficient financial resources) will lead to an improvement in the efficiency of primary schools and the quality of basic education.**

*father's and mother's education (PHNP and PHNM):*

The Moroccan results show a significant positive correlation between father's education and pupil's performance in all domains. On the other hand, except for a slight correlation in Arabic, the mother's education level does not seem to affect the child's score.

It should be kept in mind that the father's education level, in Morocco as elsewhere, determines — and is determined by — the family's social class.

**It can be hoped that each new generation of educated individuals will lead to improvements in learning levels of succeeding generations.**

*family helps with homework (AMF):*

Those pupils who receive help at home scored significantly higher in all domains under consideration.

**It would seem from these results that family help is indispensable in helping the school reach its objectives, and that efforts should be made to encourage such assistance outside the school.**

*number of classrooms used (SAL):*

In many developing countries, where overcrowding and multiple grades are common, the number of classrooms is an important factor in learning acquisition.

In the present study, it is not surprising that there is a positive correlation between the number of classrooms and learning achievement.

**One obvious solution is building more schools. Many governments, however, already faced with enormous financial difficulties, cannot afford to do so. In this**

**case, a more effective solution would be to maximize the utilization of classrooms; that is, to use the room for several functions, with the ultimate aim of reaching more children.**

*school has a canteen, type B (CANB):*

Children's ability to do well at school is in part determined by how well they eat. In many countries, where the school is far away, it is impossible to go home for meals.

In Morocco, there are two types of school canteens - type A, where pupils receive a full day's meals, and type B, where they receive only half a day's nourishment.

The results of the study show a negative correlation between the existence of type B canteens and learning acquisition. This could be explained by the fact that the children are still hungry.

**In this case, either type B canteens should be discontinued or further help should be requested from local communities to improve them.**

*school has a library (BIB):*

The existence of a school library shows the determination of school authorities to encourage pupils to help themselves, by complementing the education they receive in class.

In the Moroccan study, a slight, although non-significant, correlation exists between the existence of a school library and learning achievement in the three domains.

**Of course, it is not the mere existence of books in a library that will help children learn. Teachers should stress the importance of the efficient use of the books and actively encourage the use of the library.**

*headmaster's diploma (DIPD):*

Results of the present study show that the best school performance came from schools where the headmaster had obtained a university degree.

These results suggest that university teacher training information should include some technical information in how to manage a school.

**Increasing the standards required of teachers is a first step to improving general levels of learning achievement. This would, of course, involve improving teacher training as well as taking a closer look at teachers' status (including salary levels).**

*teacher's age (ANSE2):*

The notion of teacher's age encompasses the extent of their teaching experience.

The sampling in the Moroccan study covered teachers ranging in age from 26 to over 50. The results show that pupils of young teachers, between 26 and 30, and those over 45 had the best scores.

**These results suggest that a teacher's efficiency is not "linear". Young teachers, at the beginning of their careers, have the advantage of greater motivation, while the older ones certainly benefit from their years of experience.**

### ***Selection of predictor variables and LISREL modelling: the case of Morocco***

A great amount of data related to factors that theoretically and conceptually are of importance for variation in pupil's scholastic performance have been collected through the Monitoring Project in the five pilot countries. After having applied the step-by-step analytical strategy to treat samples of these data, we shall conclude this section using path analysis with LISREL in order to examine differential causal effects (direct, indirect and total) of some predictor variables on different learning domains (life skills, numeracy and Arabic), and their implications for policy-making. The data from the project in Morocco are used to serve this purpose.

The results from factor analysis (Section 4) are used to capture the home and school environments of learning and three major factors are retained in the LISREL modelling, namely:

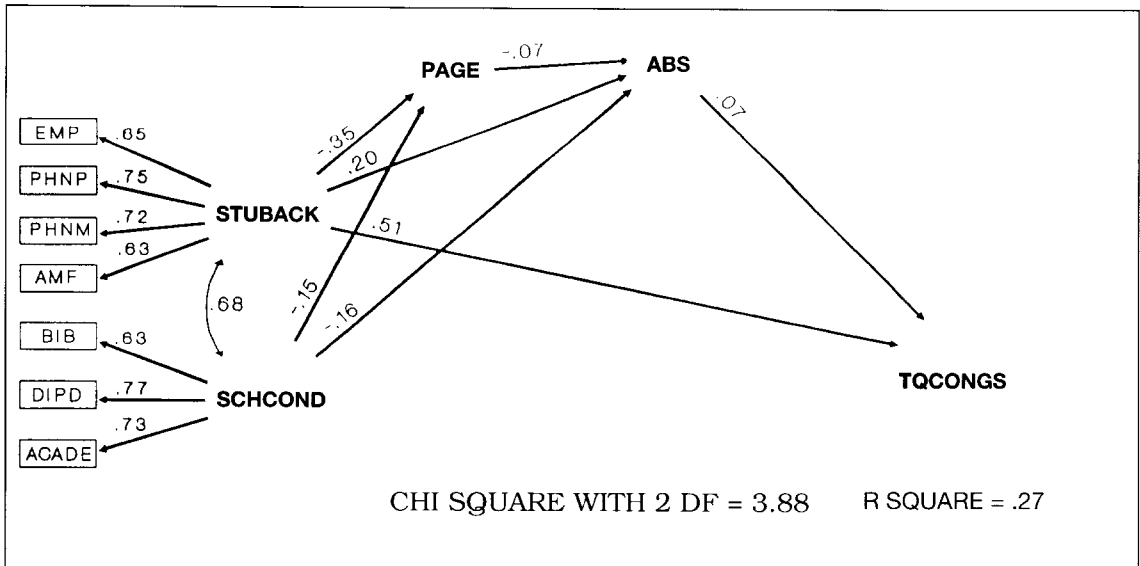
- (1) **STUBACK**: number of years in pre-school; father's education; mother's education; family helps pupil with homework
- (2) **SCHCOND**: school has library; headmaster's education; teacher's present situation or grade
- (3) **TEABACK**: teacher's educational option; teacher's age

In addition, two single predictor variables accounting for the personal characteristics of pupils are included in the path analysis model, namely, (1) **PAGE**: Pupil's age and (2) **ABS**: Pupil's absenteeism. The main criteria variables are those referring to learning achievement: (1) **TQCONGS**: Pupil's life skills' score; (2) **TQMATHS**: Pupil's numeracy score; and (3) **TQARABES**: Pupil's Arabic score.

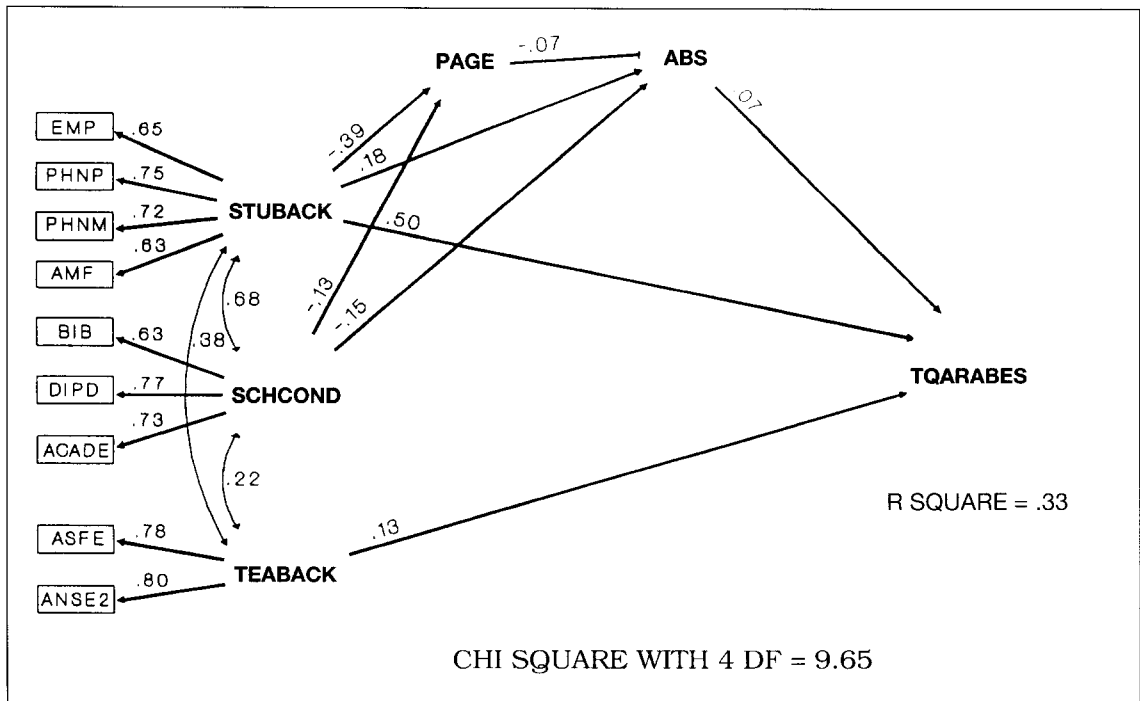
### ***Differential effects on learning achievement***

The three path diagrams in Figures 5.3, 5.4, 5.5, serve to complement the previous analysis where the unique importance of certain factors on pupil's learning achievement were examined. The direct, indirect and total path coefficients in Table 5.11 allow us to take into consideration the interactions among the different variables in the path model and their cumulative effects. It is important to note that we are using here only samples of predictor variables, but in all three path models more than 25 % of the variance in learning achievement are explained by these selected variables. We can therefore use these results to present and discuss some major trends related to pupil's learning achievement in Morocco, on both conceptual and empirical grounds.

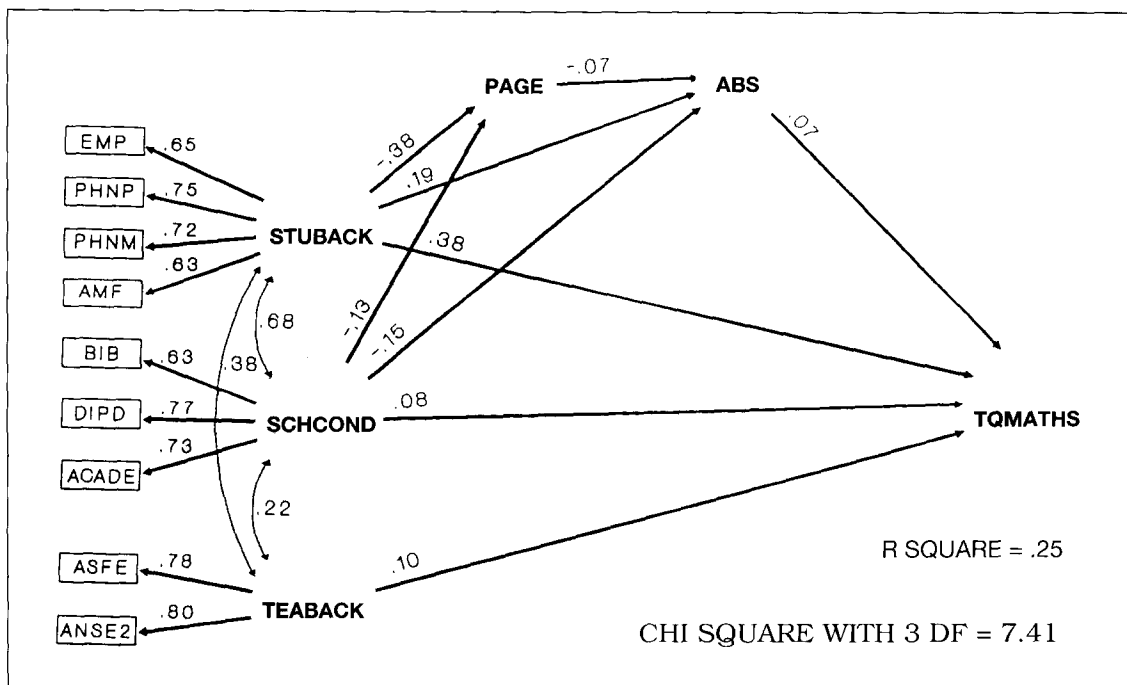
First, factors influencing learning achievement behave differently in the three path models. Second, the home background factor (STUBACK) is the most powerful predictor of all three learning domains. Third, the school condition factor (SCHCOND), as well as the teacher background factor (TEABACK) have significant



**Figure 5.3 Morocco: Path diagrams on factors influencing achievement in life skills**



**Figure 5.4 Morocco: Path diagrams on factors influencing achievement in literacy**



**Figure 5.5 Morocco: Path diagrams on factors influencing achievement in numeracy**

**Table 5.11 Morocco: Direct, indirect and total effects on achievement in BLCs**

Predictors	TQCONGS			TQMATHS			TQARABES		
	Direct effects	Indirect effects	Total effects	Direct effects	Indirect effects	Total effects	Direct effects	Indirect effects	Total effects
STUBACK	.51	.01	.52	.38	.02	.40	.50	.01	.51
SCHCOND	-	-.01	-.01	.08	-.01	.07	-	-.01	-.01
TEABACK				.10	-	.10	.13	-	.13
PAGE	-	-.01	-.01	-	-.01	-.01	-	-.01	-.01
ABS	.07	-	.07	.07	-	.07	.07	-	.07
Explained Variance ( $R^2$ )	0.27			0.25			0.33		

All effects are statistically significant

direct effects on the numeracy (TQMATHS) and Arabic (TQARABES) learning domains but not on life skills (TQCONGS). It is important to note here that the life skills domains, important and vital as they may seem, are not sufficiently integrated into the school curriculum and school learning environment, nor adequately implemented in the teaching–learning processes and classroom environment. Finally, pupil’s absenteeism (ABS) has a consistent impact on learning achievement irrespective of domains, whereas the influence of pupil’s age (PAGE) is not direct but mediated through pupil’s absenteeism.

Altogether, this sample of findings clearly indicates that there are different impacts of the home, school and personal factors on different domains of learning. The path analysis used here clearly shows the importance of understanding the behaviour of these factors as well as their differential effects on pupils’ performance in the different learning domains.

**The importance of the home environment on pupil’s learning achievement must not be neglected.**

**Parents play an active role, and the more the family is associated with the roles and functions of educational institutions, the more profitable it will be for the direct clientele, namely, teachers and pupils. For example, parental involvement may help reduce learning deficiencies partly due to pupils’ absenteeism.**

**The school curriculum as well as the teaching–learning processes need to be learner–centred. Here again, much work is needed in order to integrate and facilitate the teaching and learning of basic life skills.**

This sample of findings indicates that school and personal factors clearly influence learning achievement. Results from the pilot countries and their interpretation by a variety of methods, have led to the identification of a number of trends.

Differences in learning achievement, as measured by the tests of BLCs developed by each country, have been observed, for example, across gender, between public and private schools, and from region to region as well as between rural and urban schools.

Powerful analytic tools are needed to analyse the interrelationships between these factors — from simple, univariate analysis to complex, multivariate path analysis using LISREL.

Identifying the differences is only one stage of the process,



however. The major focus must be **learner-centred**, as clearly demonstrated in the analytical strategy being employed in this *Handbook*. For each problem there are any number of alternative solutions, depending on the desired result as well as the resources available. The ultimate aim is, and must remain, to improve the quality of education being offered.

### **Suggestions for further reading**

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# 6. Lessons learnt from the pilot countries

*The experiences of the five pilot countries, participating in the Joint UNESCO-UNICEF Monitoring Project, have illustrated the particularities of the approach developed specifically for the project. The very nature of the approach — flexible, feasible and country-specific — means that the more varied the results, the more successful the project's initial phases have been.*

It has been emphasized throughout this *Handbook* that the overriding aim of the project is to assist countries in building national capacities, leading to self-sufficiency and sustainability in the design, implementation and analysis of national basic education monitoring projects. The project's strategy is clientele-based, and stresses flexibility, openness and the opportunity to correct weaknesses at every step.

## ***National capacity building***

The success of the “critical mass” approach, in which a core group of people is trained which trains others who, in turn, train others, has been demonstrated by the initial phases of the project.

**Table 6.1 Results of the “critical mass” approach and strategies for ensuring a “multiplier effect” in national capacity building**

	No. of National Workshops	No. of Core Trainers	No. of Subnational Workshops	No. of Peripheral Trainees
China	7	114	22	6645
Jordan	5	53	18	195
Mali	3	12	3	64
Mauritius	3	38	8	52
Morocco	8	37	9	103

Successful capacity building, however, should not be judged simply in terms of the number of people reached. Rather, it should be seen in terms of the efficiency in the use of available capacity. Nor is the multiplier effect limited to activities within countries. Jordan, for example, had been able to advise and assist Oman in setting up its national programme. Likewise, China was able to assist Sri Lanka in launching its project. Moreover, in addition to direct assistance, each and every country now interested in joining the project benefits from all the previous national experiences.

## ***The Monitoring Project approach***

The approach developed for this project differs, in many ways, from the conventional approaches to monitoring and evaluating the quality of education.

### **Box 10. Educational evaluation surveys: Conventional approach versus Monitoring Project approach**

<b>Conventional Approach</b>	<b>Monitoring Project Approach</b>
Seeks origin of problem	Solution-oriented
<b>Evaluation</b>	<b>Monitoring</b>
Norm-referenced	Criterion-referenced
Cross-national	In-country
One-shot, complex, time-consuming	Continuous, simple and replicable
Costly	Cost-effective
Agency & academic-oriented	Policy and learner-centered
Research to publish	Monitoring to improve
Results/findings-oriented	Process-oriented
Cross-country priority	Within-country priority
International rankings	National/subnational/school-based
<b>Dependency</b>	<b>Capacity building</b>
International design	Country design
Centre-periphery approach	Participatory approach
International fora	Intensive in-country training
International experts	Critical mass of core trainers
North-South-North	North-South-South (TCDC)

## **National task force**

Identifying and setting up the national task force in each of the participating countries is a crucial element in capacity building. Its composition depends entirely on the available expertise in a country: the appropriate people must be identified in areas from curriculum analysis to instrument development to the diverse aspects of data collection and analysis to administration and report writing.

## **Project design**

*Project design, instrument construction, data collection and analysis, and national report writing have been entirely adapted to the country's particular background and needs.*

Careful attention has been paid to the cultural context of the participating country at every stage and in every aspect of the monitoring process. Project design, instrument construction, data collection and analysis, and national report writing have been entirely adapted to the country's particular background and needs. We have seen, for example, that Mauritius, a multilingual society, has included both English and French literacy tests.

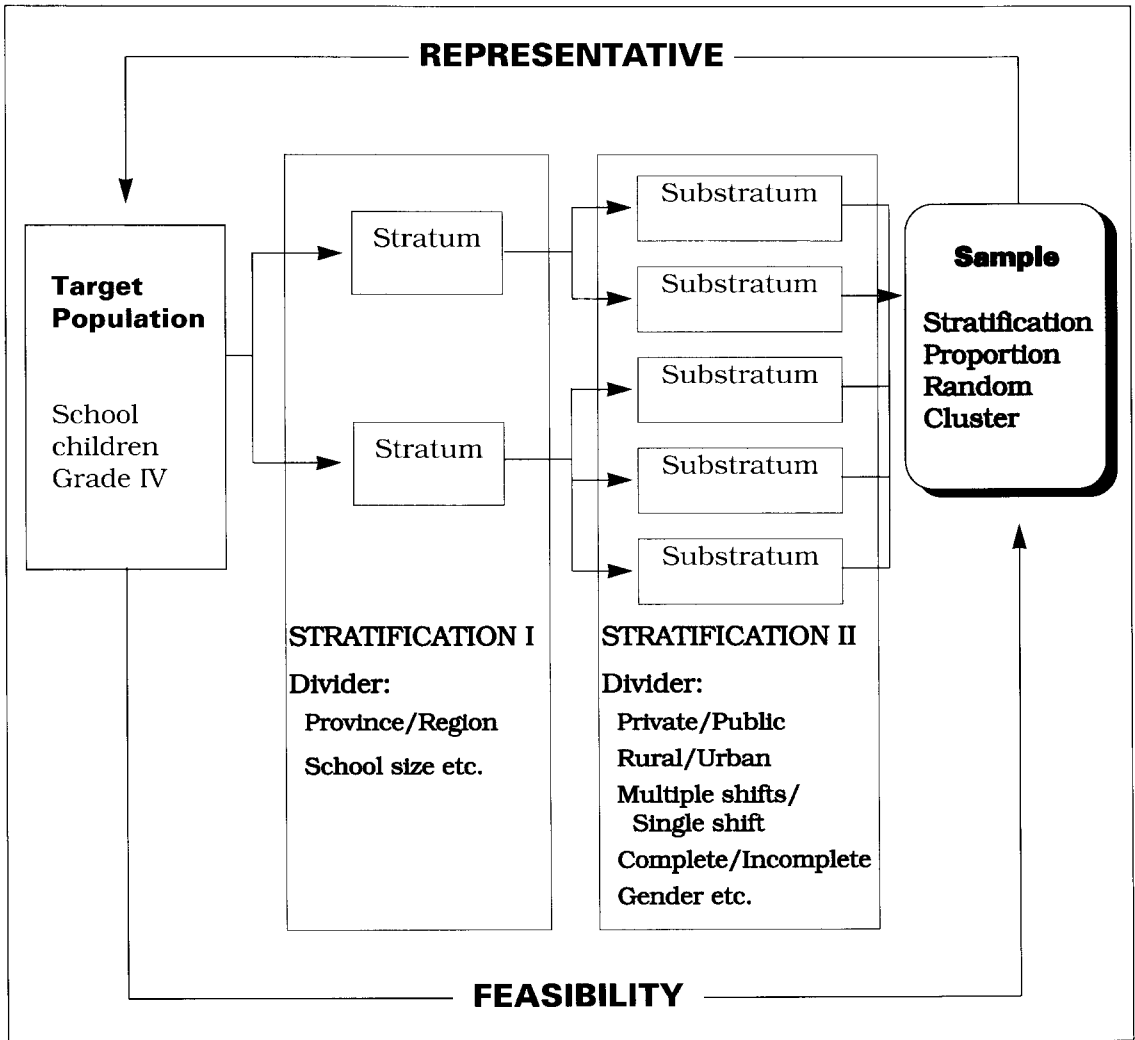
Even the objectives of the project vary from country to country. While the Monitoring Project originally suggested focusing on primary-school (Grade IV) pupils, some of the pilot countries have expanded or modified the target group. China has added the consideration of regional differences within different provinces, while Jordan has included Grade VIII pupils and has looked at science as well as numeracy and language skills. Non-formal education, which is particularly important in Mali, has been included in that country's project. The recently-launched project in Slovakia concentrates on early childhood development and learning achievement at Grade I and Grade IV.

## **Sampling**

In order to draw meaningful conclusions from the results of the project, it is essential that the samples are representative. Once again, there is no absolute rule — the monitoring approach stresses the fact that the selection of representative samples depends on a number of factors which vary from country to country, based on the feasibility (practical and financial) of carrying out the project activities.

Also, the appropriateness of the sample population is not judged by the number of pupils or schools reached but by the efficient and careful use of available resources.

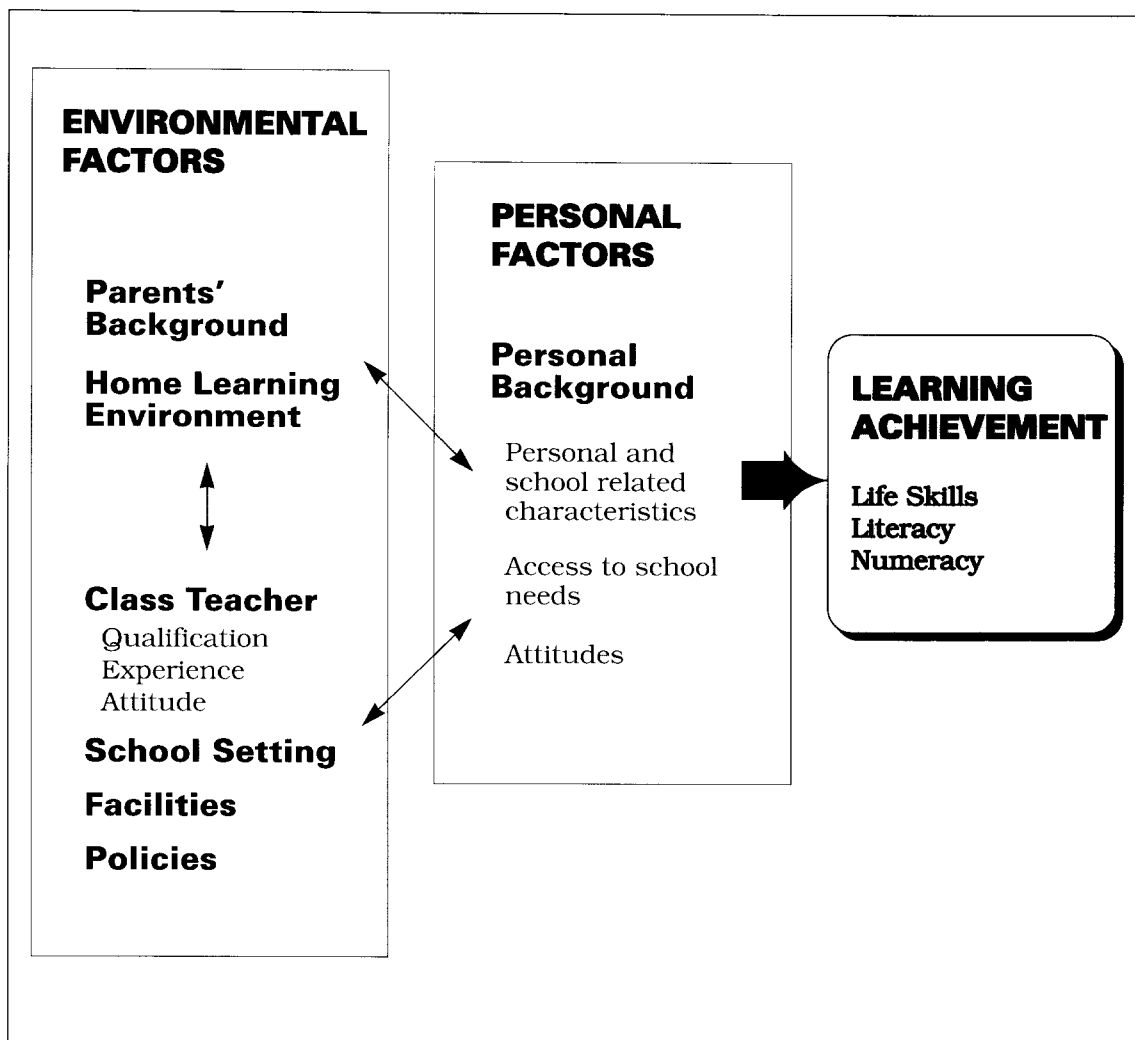
Figure 6.1 illustrates the stratification process, through which the target population is reduced to a representative sample.



**Figure 6.1** A sampling model for monitoring learning achievement

## ***National instruments: Commonalities and uniqueness***

The prototype instruments, developed by UNESCO, served as a basis for the national task forces in the pilot countries to promote the development of their own national instruments.



***Figure 6.2 A conceptual model for monitoring learning achievement***

## Tests and questionnaires

A brief comparison is presented of the test and of the questionnaire items being used by the pilot countries. It is hoped that looking at and comparing what the five countries have considered important will help other countries in the construction of their own national instruments.

Inspired by the prototype suggested by UNESCO for the construction of tests and questionnaires, two types of questions can be identified — the first is part of a “common core” of questions asked by at least two countries, and the second is specific to the national context of only one country (see Annex II for more details).

### Tests

*It is a good idea to include as many illustrations and figures in the test to make the test pleasant to take and, therefore, to keep the pupil's attention.*

The instructions and questions for the tests must be as clear as possible, and should be numbered. It is advisable to give one or more examples for different types of questions to be sure the pupil understands what is expected of him/her.

In addition, the person administering the test can, of course, repeat the instructions and ask if everyone understands.

Except for a few cases — notably, “free” writing expression — the questions on the pilot countries' tests were “closed”, that is, either multiple choice or true/false. Marking and coding these kinds of questions is much easier and quicker, and leaves less room for error.

Finally, it is a good idea to include as many illustrations and figures in the test as possible to make it pleasant to take and, therefore, to keep the pupil's attention.

### Life skills

It is in this domain that the distinction between “common” and “specific” is perhaps most significant. Questions are closely linked to a country's geography, climate, demography and political system, with the particular problems that each of these factors brings out. This is true, for example, for health-related questions — diseases, such as malaria are more prevalent in some countries than in others — and questions about natural



disasters, such as cyclones or earthquakes, which affect certain countries more than others. Some countries might be more concerned about and sensitive to environmental issues, and would give them greater attention. The originality of the problems considered important by certain countries, and the relative attention paid to them, is what makes this domain so interesting.

### *Health, hygiene, nutrition*

The common core questions related to:

- prevention against infectious and contagious diseases and appropriate care for these diseases;
- understanding what medicines are used for treating these diseases and where they can be obtained;
- rules regarding basic health and hygiene, such as the harmful effects of smoking, habits such as washing your hands before a meal, brushing your teeth regularly and walking slowly after running; and
- basic rules of nutrition, relating to the consumption of milk and water, the importance of a good breakfast every day, the need for a balanced diet, washing fruits before eating them and chewing well before swallowing.

*The originality of the problems considered important by certain countries, and the relative attention paid to them, is what makes this domain so interesting.*

China stressed the precautions to be taken before practicing a sport, including the importance of warming up. A question on how far from the eyes to hold a book when reading was also included. As for nutrition, the importance of eating fresh meat and respecting the expiration date of foods were considered.

In Morocco, it was important to find out whether children can understand medical prescription.

Jordan included questions on the harmful effects of tea and coffee, the advantages of breastfeeding and the consequences of large families.

### *Everyday life*

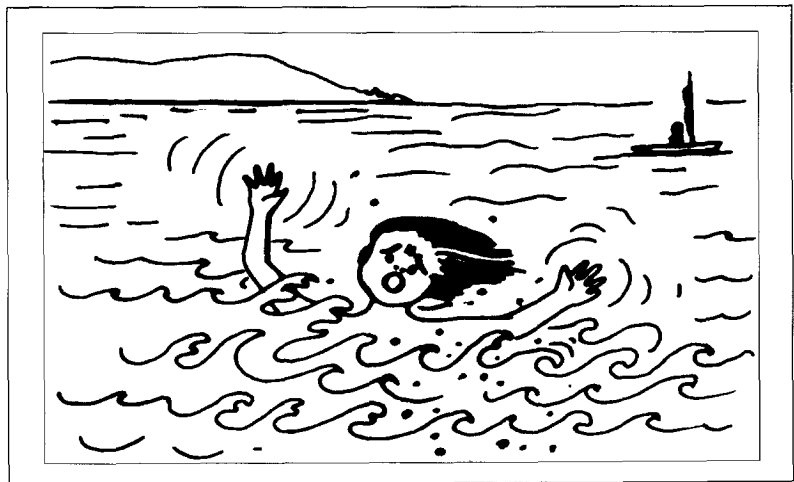
The common core questions related to:

- first aid for wounds (such as cutting a finger, a bleeding nose, a snakebite, or having a dangerous liquid come in contact with the eyes);

- what to do if you're caught in a storm or an earthquake;
- what to do if a stranger approaches you and asks you to follow him;
- respecting road signs and traffic lights; and
- key aspects of everyday life, such as gardening and cooking.

China asked a number of questions about accidents, especially as related to electrical accidents, or what should be done if you break your arm, or if oil catches fire in the kitchen. The Chinese tests appear to be especially concerned with a child's autonomy — many questions were included on subjects such as changing light bulbs or batteries, choosing the right tools, and how to turn a screw or hand-wash clothes.

Mauritius included quite a few items on domestic accidents, asking the child to distinguish between bottles of kerosene and lemonade with no labels, or what you do if you see exposed electrical wires. A number of questions also related to behaviour vis-à-vis other people -- for example, what you should do if your brother places a plastic bag on his head, or if a schoolmate gets injured during a football match. Questions on natural dangers, such as cyclones, water safety were also prominent in the Mauritius tests. Other questions referred to what kind of clothes to wear in summer and where to look if you don't know how to spell a word.



**Figure 6.3 Mauritius: Test on natural dangers**

### *Social and natural environment*

In this field, common questions related to the following problems:

- harvests and protection against insects; forest fires; and the protection of animals;
- what to do if you find a valuable object;
- spatial sense (reading a map, understanding the position of the sun); and
- pupils' understanding of their own country (head of state, neighbouring countries, national flag).

China included several questions on protecting the environment, especially concerning young trees and polluted rivers.

Jordan raised some practical issues on matters such as raising cattle, protection against harmful insects and chickens laying eggs. Pupils were asked how many weeks there are in a year, what is the boiling point of water, and what are the consequences of a year with no rain. Questions on the country were also included: the day of independence, the national currency, the forces of law and order, the climate and geography of different regions.

Mali asked one question about the efficient use of wood in cooking and another on the importance of sending girls to school.

The Mauritius tests paid much attention to plant life, public cleanliness and the protection of property (from public facilities to school materials). Another question asked how to treat a classmate who stutters.

### **Literacy**

It is more difficult to generalize from country to country the literacy tests because the learning process is highly culture-specific — different languages call for different linguistic skills. For example, Arabic and Chinese are considered essentially oral languages, and tests in these languages would perhaps focus less on grammar and spelling than other languages such as French or English.

In some countries, more than one language is widely used. For this reason, Mauritius administered two literacy tests to each pupil — one in French, which is also an important language, and another in English, the official language.

As explained earlier, tests in the literacy domain fell under two main categories — reading comprehension and writing/written expression.

To test *reading skills and reading comprehension*, all countries presented a text (taking the form of a paragraph, a letter, a medicine bottle notice or a poster) and then asked multiple choice questions about the content.

At the simplest level, *writing skills* were tested by asking the pupil to copy sentences. In other cases, the pupil was asked to write brief answers to questions about a text, to tell a story from a cartoon or to write a caption for a picture (Figure 6.3).

Some countries chose to test comprehension using questions other than multiple choice. For example, Jordan gave a number of sentences and asked the pupil to put them in the proper order to best reflect the meaning of a given text. In another exercise, they were asked to choose a title for a text from among several offered.

The Chinese test asked pupils to find the sentence that best expressed the main idea from within a given text. To test writing skills, China asked pupils to tell about something they had recently learned or to write an advertisement.

Three types of common exercises were used to test *vocabulary* asking pupils to use given words to complete a sentence, to identify synonyms and antonyms, and to identify words that belong to the same family. In regard to *grammar*, common questions related to gender of words (when it applies), agreement of plural and singular words, conjugation of verbs or matching pronouns to conjugated words. To test *syntax*, pupils were asked to construct a sentence using given words. Dictation was usually used to test *spelling*.

To test vocabulary, Morocco asked pupils to match words with pictures, and for grammar, asked them to identify the present participle and to recognize irregular verbs.

Mali included questions on agreement of adjectives and nouns.

EXPRESSION ECRITE \*

Raconte ce que tu vois sur ces images en respectant l'enchaînement des événements

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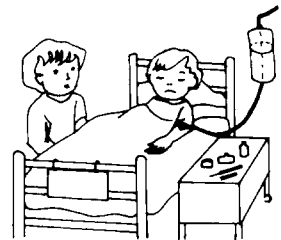


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\* WRITTEN EXPRESSION  
(Write what you see in each picture)

Figure 6.4 Morocco: An example of the writing skills' test item

## **Numeracy**

These tests differ considerably from the literacy tests. They are less culture-specific (except, of course, in questions dealing with topics such as national currency).

Two types of questions are used: those that are straightforward and arithmetical and those that test the ability to apply mathematical notions in problem-solving.

At the simplest level, questions on *arithmetic* were asked by all countries, requiring the pupils to perform basic operations of addition, subtraction, multiplication and division. Also there were common questions on *mathematic language* related to placing numbers in increasing or decreasing order, understanding decimals and writing numbers given in figures and in words. All countries asked some questions on *units of measurement*, covering units of length, weight and volume as well as the ability to tell time. Various questions on *geometry* concerned the understanding of angles or computing the surface of a figure. Common *problem-solving* exercises included money calculations when shopping and understanding a table of temperatures or rainfall.

The highest specificity came up under geometry and problem-solving. For example, China asked about the scale of a map, while Mali asked the pupil to read weight from a scale. China also questioned the perimeter of a figure, the volume of a solid and the understanding of a circle, and included problems relating to different types of calculation, including speed, distance, average size, age and the opening hour of a store. Mauritius included questions on reading a calendar and calculating from a table. Morocco included two questions on the dosage of a medicine.

## **Questionnaires**

One of the greatest strengths of the questionnaires used in the Monitoring Project was the segmentation of information, obtained through the use of four (or more) different questionnaires. However, information gathered from a number of different sources is more accurate and reliable. Combining sources — that is, joining two or more questionnaires together or asking the same person to fill out more than one — will necessarily reduce input.

Questionnaires that are too long are time-consuming, tiring and difficult to manage. Remember, a large quantity of questions does not assure better quality answers. Questions can often be combined or simplified to reduce the number of items.

In this analysis, as in the above, “core items” are those asked by two or more countries on their questionnaires. “Country-specific items” are those chosen by only one country.

### **Pupil questionnaire**

The core items fell under the following broad categories:

- personal characteristics, such as age, sex and number of classes repeated;
- access to school needs and extracurricular educational activities;
- nutrition level;
- parental commitment to education (interest, help, encouragement);
- pupil’s attitudes towards school; and
- pupil’s opinions about the teacher and teaching methods.

Each country was encouraged to adapt the prototype questionnaires as much as possible. The country-specific items which appeared on these questionnaires included questions on home and school study conditions, the amount or nature of student interaction in the classroom and special teaching methods for exceptional pupils (slow or gifted). Other questions covered pupils’ general health, handicaps, disabilities, and occupational and educational desires.

### **Parent questionnaire**

Core items on this questionnaire included questions on:

- home characteristics (including the number of people living at home, brothers and sisters, child’s responsible party);
- educational environment at home (parents’ and other children’s education level, availability of books);
- language used at home and literacy levels;
- family commitment to education;
- family’s socio-economic status;
- family’s educational desires and opinions.

*Examples from the pilot countries should only serve as a guide in the elaboration of a country’s own instrument*

Individual countries asked about who helps the pupil with homework, the pupil's role in supplementing family income and the position of the child in the family. The issue of family socio-economic status was approached from different perspectives, including questions on the parent's work situation, house size and ownership status and the family's income level.

### **Class teacher questionnaire**

Core items to be answered by teachers included:

- personal and professional characteristics, such as sex, age, education level, and teacher training and experience;
- teacher's workload and remuneration; and
- classroom characteristics.

Country-specific questions covered other characteristics about the teacher and the classroom, and asked about the teacher's degree of satisfaction with teaching.

### **School questionnaire**

As stated earlier, the school questionnaire was often answered by the headmaster. Core items included questions about:

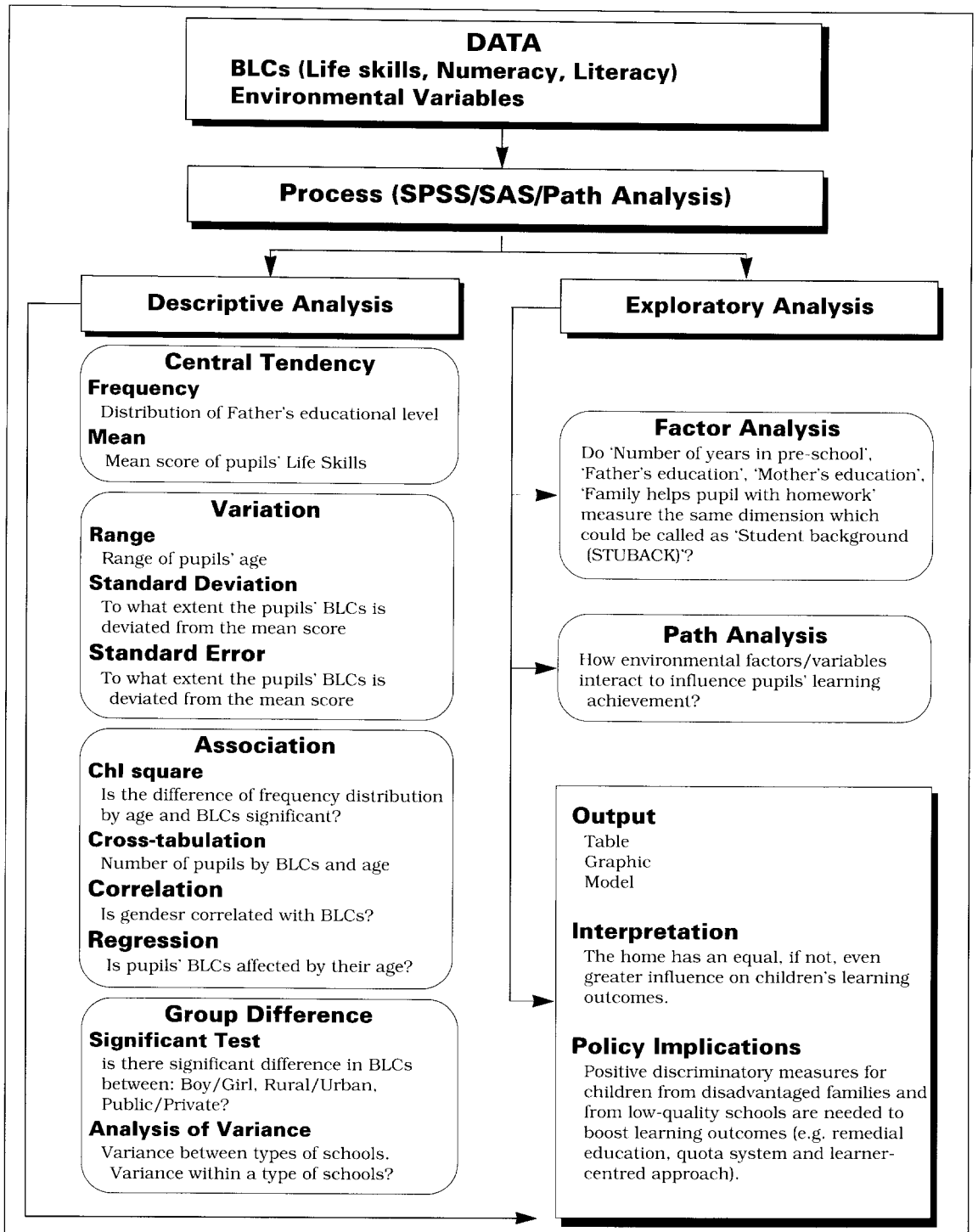
- teaching staff;
- opinions regarding such issues as training and hiring practices, and evaluation of the efficiency of the school infrastructure; and
- financial aspects of school administration (budgets, salaries, sources of school revenue).

## ***Data collection and analysis***

Once the tests and questionnaires have been designed and a representative sample population identified, the data collection and analysis must be carried out according to carefully-designed outlines. Section Four of this *Handbook* examined in detail the different types of statistical analysis that can be applied, from simple univariate analysis to complex path analysis, with LISREL.

Ultimately, it is the interpretation of the data and the implications for policy-making that are the strengths of the monitoring approach. Selected examples of the different ways that data could be analysed and used were presented in Section Five of this *Handbook*.





**Figure 6.5 An analytical model for monitoring learning achievement**

## ***Findings and implications***

The ultimate aim of this project is to provide policy-makers with the necessary analytical tools to raise the quality of education delivered. The analysis of the data collected through the Monitoring Project and the interpretation of the findings are important as they enable the identification of country-specific educational needs and priorities.

On a national level, samples of the methods of analysis used have been chosen to demonstrate the analytical process developed in the project. The step-by-step analytical process begins with univariate distribution and the calculation of basic statistical parameters, then continues with bivariate and multivariate analyses and ends with path analysis using LISREL. Samples of the results of the analysis have also been cited to exemplify how this information can be interpreted to highlight national needs and priorities for quality improvement in basic education.

Some of the data obtained from the national studies have been chosen to examine within-country differences in BLCs. Several educational trends emerge in common to all five pilot countries and confirm pre-established educational hypotheses.

### **China, Jordan, Mali, Mauritius, Morocco**

These trends are:

- **pupils in urban schools perform better than pupils in rural schools;**
- **in the lower grades, girls perform better than boys, but later on, due to diverse cultural and socio-economic issues, the performance of girls begins to decline; and**
- **in general, pupils from private schools perform much better than pupils attending public schools.**

Some examples from China and Mali have been chosen for the first stage of the analytical process (i.e. the calculation

of averages, mean scores, and univariate distribution). For this purpose, the performance of children in different learning domains and subdomains is examined. The Chinese results indicate the need to develop a "minimum standard for learning Chinese", the need to improve reading skills, and the imperative importance of integrating programmes on life skills in the curriculum of basic education, especially in rural areas. In Mali, the between-school type analyses of the subdomains of learning achievement confirm the need and importance of differential content-wise and teaching-wise strategies for pupils attending various types of schools.

### **China, Mali**

**The learner-centred approach should be the primary step towards ensuring quality improvement in basic education.**

For Jordan and Mauritius, the differences in the school and home environments and their relationships with pupils' learning achievement are selected. The policy implications in the case of Jordan are, among other things, the need for adult literacy programmes and the expansion of distance learning opportunities. The general tendency found worldwide — that children from higher income families outperform children from poorer families — was reflected in the examples chosen from the results of the Mauritian data. Schools were sampled and categorized, in addition to conventional strata, by the level of scholastic performance of pupils. This was used as a proxy outcome variable for different school learning environments, which were measured by the schools' performance on the Certificate of Primary Education (CPE) examination over the past three years.

### **Jordan, Mauritius**

**There is the need for continuous monitoring of learning achievement, through which the education needs of different groups of pupils can be properly identified and adequately addressed.**

The examples from Morocco serve to demonstrate the use of path analysis. They illustrate how data collected through the tests and questionnaires could be optimally analysed through path analysis with LISREL, with the ultimate aim of improving what pupils actually learn. Differential effects (direct, indirect and total) on learning achievement are taken into consideration.

## **Morocco**

The three path models clearly indicate that factors influencing learning achievement behave differently; however, the home environment stands out as the most powerful predictor of pupils' achievement in the three learning domains.

More specifically, the effects of parental involvement on pupils' learning achievement should be properly considered. Further, the analysis showed that supporting pre-school education will lead to the improvement of the quality of basic education as a whole.

**Monitoring educational quality on a permanent basis would therefore require different implementation modalities for sustainable capacity building. However, a coherent strategy is needed where the conceptual, methodological and analytical approaches would serve as built-in mechanisms, geared towards an understanding of relevant and pertinent policy issues, needs and priorities.**

# Looking ahead

*This Handbook is a product highlighting the lessons learned during the first phase of the Monitoring Project. The success of the project is largely due to its country-specific approach, where a national task force has been set up and given the responsibility of coordinating all project activities within the country.*

It is this group that oversees the design and administration of the surveys, as well as the collection, analysis and reporting of data. Perhaps the most significant role of national task forces is to select and train local personnel to participate in the collection and analysis of data throughout the country, thus, putting into play the multiplier effect. This "critical mass" approach to national capacity building is, and will continue to be, one of the Monitoring Project's major success factors.

Through the Technical Cooperation Among Developing Countries (TCDC) mechanism, which is incorporated into Phase Two, the experiences of the five pilot countries are being used to design and implement the project in 13 additional countries. In Rodrigues (Mauritius), Nigeria, Oman, Slovakia and Sri Lanka, less time and resources have been used to successfully implement the various activities of the project.

Further, this project stands to exemplify its flexibility and feasibility by responding to each country's priorities for monitoring the quality of basic education. For example, in addition to Grade IV pupils, the targeted groups in some countries included adults attending non-formal adult literacy programmes (Mali), Grade VI pupils (China), Grade VI and Grade VIII pupils (Jordan), and Grade I, Grade IV, and Grade VI pupils in Slovakia. Likewise, the BLCs tests consisted of both English and French (Mauritius); Science (China and Jordan); Arabic, French, and Bambara (Mali).

In Slovakia, school-readiness tests were developed to assess the basic skills, values and attitudes of children entering Grade I.

The project also stands to exemplify interagency cooperation envisaged at Jomtien in March 1990. UNESCO remains the project's "think-tank", providing technical expertise, conducting training courses, designing and pre-testing software, and promoting exchanges between participating countries. Apart from funding the project team and the in-country activities, UNICEF continues to monitor all phases of the project at the international and country levels. In some countries, the follow-up activities of the project are supported by the World Bank (China, Jordan, and Morocco) and UNDP (Mauritius).

The experience of the Monitoring Project will be used to design appropriate mechanisms for monitoring early childhood and non-formal education programmes. By the year 2000, some 50 countries will have benefitted from this project. Other bilateral and multilateral agencies will be invited to ensure the follow-up activities of this project worldwide.

*The publication of this Handbook as well as the dissemination of all the national reports of the participating countries will contribute to the reinforcement of a **Monitoring Culture** for an **Education of Quality for All**. This Handbook may hopefully be of help to other countries wishing to develop and/or strengthen their educational monitoring system. The already acquired experiences around the world (e.g. the UNICEF-ABC Methodology in Asia, the UNESCO IIEP Project in Southern Africa, the UNESCO-OREALC surveys in Latin America, the IEA Third International Mathematics and Science Study, the IAEP International Project, the OECD Education Indicators Project and many others) should be optimally used to facilitate the building and strengthening of the monitoring process for quality improvement in education worldwide.*

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## Instruments: Tests and questionnaires

BASIC LEARNING COMPETENCIES  
LITERACY

DOMAINS	COUNTRIES						
	CHINA		JORDAN	MALI	MAURITIUS		MOROCCO
<i>Reading/Comprehension</i>	1	2			3	4	
- Reading passage with multiple-choice questions	+	+	-	+	+	-	+
- Medicine bottle with multiple-choice questions	-	-	-	-	-	-	+
- Poster asking for information in answer to multiple choice questions	-	-	-	-	+	+	-
- Reading passage with true/false questions	-	-	-	-	-	+	-
- Finding the sentence that best expresses the main idea of a reading passage	+	-	-	-	-	-	-
- Rearranging elements from a reading passage	-	-	+	-	-	-	-
<i>Writing/Written expression</i>							
<i>Writing</i>							
- Copying a sentence	-	-	-	+	-	-	+
- Dictation	+	+	-	+	-	-	-
<i>Guided written expression</i>							
- Answering in sentence-form questions on a reading passage	-	-	-	+	-	-	-
- Expressing the main idea of a reading passage in sentence-form	+	+	-	-	-	-	-
- Completing sentences using information in a reading passage	-	-	-	-	+	-	-
- Completing sentences using information provided	-	-	-	-	+	-	-
- Answering questions about oneself	-	-	+	-	+	+	-
- Providing a title for a reading passage	-	-	+	-	-	-	-
- Writing a short passage using several given sentences	-	-	+	-	-	-	-
<i>Free written expression</i>							
- Telling what one has learned recently	+	-	-	-	-	-	-
- Writing an advertisement	-	+	-	-	-	-	-
- Writing a caption for a picture or cartoon	-	-	-	-	+	-	+
- Writing something about a picture	-	+	-	-	-	-	-
- Writing a letter to Santa Claus	-	-	-	-	-	+	-

Key: + = Included

- = Not included in the specific country questionnaire.

1 = Grade 4

2 = Grade 6

3 = French Language

4 = English Language

## BASIC LEARNING COMPETENCIES

### LITERACY (continued)

DOMAINS (SKILLS)	COUNTRIES						
	CHINA		JORDAN	MALI	MAURITIUS		MOROCCO
	1	2			3	4	
<i>Vocabulary</i>							
- Completing a reading passage using given words	-	-	+	+	-	-	-
- Finding synonyms/antonyms of given words	-	-	+	+	-	-	+
- Determining the meaning of words according to their context	+	+	-	-	-	-	-
- Completing families of words	-	-	-	-	+	-	-
- Identifying a word from its definition	-	-	-	-	+	-	+
- Defining a word	-	-	+	-	-	-	-
- Linking groups of words according to their meaning	-	-	-	-	+	-	-
<i>Grammar</i>							
- Agreement of word gender	-	-	+	+	-	-	-
- Putting words from singular to plural and vice versa	-	-	+	-	-	-	+
- Agreement of adjectives and nouns	-	-	-	+	-	-	-
- Identifying parts of grammar in a sentence	-	-	+	-	-	-	+
- Conjugation of verbs	-	-	+	+	-	-	+
- Identifying pronouns from given verbs	-	-	+	-	-	-	+
- Identifying irregular verbs	-	-	-	-	-	-	+
- Identifying present participle	-	-	-	-	-	-	+
- Understanding declensions	-	-	+	-	-	-	-
- Understanding conjunctions in subordinate clauses	-	-	+	-	-	-	-
- Understanding co-ordinating pronouns	-	-	+	-	-	-	-
- Understanding negatives	-	-	+	-	-	-	-
<i>Syntax</i>							
- Building a sentence from given words	-	-	+	+	-	-	-
- Punctuation	-	-	+	-	-	-	-
<i>Spelling</i>							
- Dictation	+	+	+	+	-	-	-
<i>Pronunciation</i>							
- Understanding rules specific to oral languages	+	+	+	-	-	-	-

**Key: + = Included**

**- = Not-included in the specific country questionnaire.**

1 = Grade 4

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# BASIC LEARNING COMPETENCIES

## NUMERACY

DOMAINS	COUNTRIES				
	CHINA	JORDAN	MALI	MAURITIUS	MOROCCO
<i>Mathematical language</i>					
- Rearranging numbers in ascending/descending order	+	+	-	-	+
- Writing numbers (in figures) in words	+	-	-	+	-
- Identifying units of a number	+	+	+	-	-
- Simplifying a decimal	+	-	-	-	-
- Identifying even/odd numbers	-	+	-	-	-
- Reading aloud long numbers	+	+	-	-	-
- Forming the smallest number possible from four given figures	-	+	-	-	-
<i>Arithmetic</i>					
- Performing simple arithmetic (+, -, x, :)	+	+	+	+	+
- Performing arithmetic from information contained in a table	-	-	-	+	+
- Performing arithmetic using fractions	+	+	-	+	-
- Equations	+	+	-	-	-
- Factoring	+	+	-	-	-
- Multiplying a number by 10, 100, ...	+	+	-	-	-
- Common denominators	-	+	-	-	-
- Changing from fractions to decimals	+	+	-	-	-
- Logic	+	+	+	-	-
<i>Measurements</i>					
- Reading weight on a scale	-	-	+	-	-
- Reading the time from a clock	+	-	+	+	-
- Reading and estimating length	-	+	-	-	-
- Converting units of length	-	+	+	+	+
- Converting units of weight	+	-	-	+	-
- Converting units of volume	-	-	-	-	+
- Converting units of time	-	-	+	-	-
- Measurement of surface	+	-	-	-	-
- Understanding scale on a map	+	-	-	-	-
<i>Geometry</i>					
- Understanding of different geometric figures	+	-	-	-	-
- Understanding of methods of constructing figures (parallel, perpendicular)	+	+	-	-	-
- Understanding and calculating angles	+	+	+	-	-
- Understanding symmetrical axes	-	-	-	+	-
- Calculating the perimeter of a figure	+	-	-	-	-
- Calculating the surface of a figure	+	+	-	-	-
- Calculating the volume of a solid figure	+	-	-	-	-
- Understanding the characteristics of a Circle	+	-	-	-	-

**Key:** + = Included

- = Not-included in the specific country questionnaire.

## BASIC LEARNING COMPETENCIES

### NUMERACY (continued)

DOMAINS	COUNTRIES				
	CHINA	JORDAN	MALI	MAURITIUS	MOROCCO
<i>Problem-solving</i>					
- Understanding and calculating from a weather chart	+	-	-	-	+
- Understanding a calendar	+	-	-	+	-
- Calculating correct change from a shopping trip	+	-	+	+	-
- Calculating amounts using examples from real life (food, construction materials, etc.)	+	+	+	-	-
- Calculating medicine dosage	-	-	-	-	+
- Calculating time in relation to speed	+	-	-	-	-
- Calculating the time spent doing something	+	-	-	-	-
- Calculating distance travelled	+	-	-	-	-
- Calculating average size of a group of children	+	-	-	-	-
- Calculating the number of participants in a contest/race	+	-	-	-	-
- Calculating the father's age from the child's age	+	-	-	-	-
- Calculating opening hours of a store	+	-	-	-	-
- Calculating the number of pages read in a book	-	-	-	-	+
- Calculating proportions in relation to percentages	+	-	-	-	-

**Key:** + = Included

- = Not-included in the specific country questionnaire.

# BASIC LEARNING COMPETENCIES

## LIFE SKILLS

### Health

CATEGORIES	COUNTRIES				
	CHINA	JORDAN	MALI	MAURITIUS	MOROCCO
<i>Diseases/Hygiene</i>					
- Vaccinating children against childhood diseases	-	+	-	-	+
- Features and symptoms of these diseases	+	+	+	+	+
- First measures to take to cure these diseases	+	+	+	-	+
- Insects that transmit disease	-	+	+	-	-
- Supplying medicines	+	+	-	-	-
- Observing correct dosage	-	+	+	-	+
- Harmful effects of smoking	-	+	-	+	+
- Washing hands before every meal	+	+	+	-	+
- Brushing teeth regularly	+	+	-	+	-
- Walking slowly after running	+	-	-	+	-
- How far away from one's eyes to hold a book when reading	+	-	-	-	-
<i>Nutrition</i>					
- Importance of water and its sterilization	-	+	+	-	+
- Importance of milk and its storage	-	+	+	-	+
- Importance of breakfast	-	-	-	+	+
- Importance of certain foods (meat, fish, eggs)	+	-	-	-	+
- Washing fruit before eating them	+	+	-	-	+
- Harmful effects of coffee and tea	-	+	-	-	-
- Breastfeeding	-	+	-	-	-
<i>Fertility</i>					
- Consequences of large families	-	+	-	-	-

**Key:** + = Included

- = Not-included in the specific country questionnaire.



## Environment

CATEGORIES	CHINA	JORDAN	MALI	MAURITIUS	MOROCCO
<i>Accidents/Personal safety</i>					
- Bleeding nose	-	+	+	-	+
- Cut on finger	+	-	+	-	+
- Snake bite	-	+	+	-	+
- Harmful liquid in eye	-	+	+	-	+
- Water safety	-	-	-	+	-
- Electrical accidents	+	-	-	+	-
- Reactions to a rain storm	+	+	-	+	-
- Reaction to an earthquake	+	+	-	-	-
- Be careful/don't follow a stranger	+	-	-	+	+
- Road sign observance/obedience	+	+	-	+	-
<i>In the Home</i>					
- Key concepts (in the kitchen, housework, home handy-man)	+	-	-	+	-

## Daily life

CATEGORIES	CHINA	JORDAN	MALI	MAURITIUS	MOROCCO
<i>Working Life</i>					
- Protect/increase agricultural production	+	-	+	-	+
- Pre-vocational cattle care	-	+	-	-	-
<i>Protecting the natural environment</i>					
- Protecting forested land	+	+	+	-	-
- Protecting rivers	+	-	-	-	-
- Protecting equipment supplies	-	-	-	+	-
<i>Social Life</i>					
- Reactions to finding a valuable item	-	+	+	-	+
- How to behave with other people	+	-	-	+	-
<i>Spatial orientation</i>					
- Using a map	+	+	-	+	+
- Using the sun for orientation	+	+	-	-	-
<i>Own country knowledge</i>					
- Head of state	-	+	+	-	+
- Neighbouring countries	-	+	+	-	+
- National flag	-	+	+	-	-
- Other questions relating to geography and political life in the country	-	+	-	-	-
<i>General knowledge</i>					
- Diverse questions on general culture	-	+	-	-	-

## PUPIL QUESTIONNAIRE

CATEGORIES	CHINA	JORDAN	MALI	MAURITIUS	MOROCCO
<i>Personal characteristics</i>					
-- Age	+	+	+	+	+
-- Sex	+	+	+	+	+
<i>Scholastic related characteristics</i>					
-- Number of classes repeated	-	-	+	-	+
<i>Out of school learning activities</i>					
-- Homework	+	+	-	+	-
-- Private tuition	-	+	+	+	+
-- Extra reading	-	+	-	+	-
-- Radio/watching TV	-	+	-	+	-
-- Work outside the home	-	+	+	+	+
<i>Parental contribution to education</i>					
-- Interest	+	+	-	+	+
-- Encouragement	-	+	-	+	+
-- Help	+	+	-	+	+
<i>Access to school facilities</i>					
-- Distance from home to school	+	+	+	-	+
-- Mode of transport used	+	+	-	+	-
-- Proximity of educational facilities	+	+	-	-	+
<i>Attitudes and opinions about schooling</i>					
-- Like going to school	-	+	-	+	-
-- School materials, books	+	-	+	+	+
-- Opinion about teacher/methods	-	+	-	+	-
-- Absenteeism	+	+	+	-	+
<i>Pre-school education classes</i>					
-- Availability/use	+	+	+	-	+
<i>Health</i>					
-- State of general health	-	-	-	-	+
-- Handicaps, disabilities	-	-	+	-	-
<i>Nutrition</i>					
-- Regular meals	+	-	+	-	+
-- Breakfast before school	+	+	-	-	-
<i>Access to school needs</i>					
-- Availability of personal materials	+	-	-	+	+
-- Private tuition	-	+	+	+	+
-- Meals	+	-	-	-	+
-- School costs	-	+	-	-	+
<i>Language</i>					
-- Language used at school	-	-	-	+	-

## PARENT QUESTIONNAIRE

CATEGORIES	CHINA	JORDAN	MALI	MAURITIUS	MOROCCO
<i>Home/child characteristics</i>					
-- Number of brothers/sisters in family	+	+	+	+	+
-- Number of people living at home	+	+	-	-	-
-- Position of child in the family	-	-	-	-	+
-- Pupil's responsible party	-	+	-	+	+
-- Parents living with pupils	-	+	+	-	+
-- Parental civil status	-	-	-	+	-
-- Polygamous father	-	-	+	-	+
<i>Family socio-economic status</i>					
-- Home amenities	+	-	-	+	+
-- Home possessions	+	-	-	+	+
-- House size/ownership	-	-	-	+	-
<i>Parental occupations</i>					
-- Father's occupation	+	+	+	+	+
-- Mother's occupation	+	+	+	+	+
-- Other childrens' occupations	-	-	-	+	-
-- Family income level	-	-	-	+	-
-- Pupil supplements family income	-	-	+	-	-
-- Work temporary/permanent	-	-	-	+	-
<i>Home linguistic and literacy background</i>					
-- Language spoken at home	+	-	-	+	+
-- Frequency/use of other languages	-	-	+	+	-
-- Degree of proficiency in each language	-	-	+	+	-
<i>Home educational environment</i>					
-- Father's educational level	+	+	-	+	+
-- Mother's educational level	+	+	-	+	+
-- Other childrens' educational level	-	-	+	+	-
-- Home educational possessions/availability	+	-	-	+	-
-- Home reading resources	+	-	-	+	-
<i>Family commitment to educational activities</i>					
-- Parent/teacher association	+	+	-	+	+
-- Family/teacher meetings	-	+	-	+	-
-- Family interest/participation	-	+	-	+	-
-- Content of meetings with teacher	-	+	-	+	-
<i>Child/Parent educational interaction</i>					
-- Help/encouragement with homework	+	+	+	+	-
-- Who helps child with homework	-	+	-	-	-
<i>Family opinions about schooling</i>					
-- Adequate discipline	-	+	-	-	-
-- Feel school is important	-	+	-	-	-
-- Quality of teaching methods	-	+	-	+	-
<i>Future occupational aspirations</i>					
-- Parent's opinion/desires	-	+	-	+	-
-- Pupil's opinion/desires	-	-	-	+	-

## CLASS TEACHER QUESTIONNAIRE

CATEGORIES	CHINA	JORDAN	MALI	MAURITIUS	MOROCCO
<i>Personal Characteristics</i>					
-- Sex	+	-	+	-	+
-- Age	+	-	+	+	+
-- Civil status	-	-	-	-	+
<i>Professional Qualifications</i>					
-- Education/diplomas	+	+	+	+	+
-- Teacher training	+	+	+	+	+
-- In-service training/internship	+	+	+	+	+
<i>Professional experience</i>					
-- Teaching experience	+	-	+	+	+
-- Years in present school	-	-	-	-	+
<i>Class characteristics</i>					
-- Size/number of classes	+	-	+	+	+
-- Class composition: boys/girls	+	-	-	-	+
-- Class organisation in school: single/double classes; complete class structure	+	+	+	-	+
-- Repeating students	-	-	-	-	+
-- Regular attendance	-	-	-	-	+
-- Drop-outs	-	+	-	-	+
<i>Access to school facilities</i>					
-- Distance from school	+	-	-	+	+
-- Mode/time of transport	+	-	-	-	-
<i>Socio-economic profile</i>					
-- Personnel possessions	+	-	-	-	-
-- Personnel amenities	+	-	-	-	-
-- Availability of reading sources	+	-	-	-	-
<i>Remuneration</i>					
-- Source: state/community	+	+	+	-	-
-- Salary	+	-	+	-	+
-- In kind (goods and services)	-	-	+	-	-
<i>Class teacher work load</i>					
-- Classes/subjects/hours	+	-	-	+	+
-- Outside activities	+	-	-	+	-
<i>School/class practices</i>					
-- Class inspection/director's visit	-	-	-	-	+
-- Internal teacher meetings	-	-	-	-	+
-- Teaching methods/aids used	-	-	-	+	-
-- Discipline/autonomy	-	-	+	-	-
<i>Class teacher's opinion</i>					
-- Proper ventilation/natural light	+	-	-	-	-
-- Sufficient seating space	+	-	-	-	-
-- Teaching aids availability/use	+	-	-	-	+
-- Textbooks	+	-	-	-	-
-- Teacher mobility/transfers	-	+	-	+	-
-- School class practices	-	-	-	+	-

## SCHOOL QUESTIONNAIRE

CATEGORIES	CHINA	JORDAN	MALI	MAURITIUS	MOROCCO
<i>Head teacher: personal characteristics</i>					
-- Age	+	+	+	-	+
-- Sex	+	+	+	-	+
-- Civil status	-	+	-	-	+
<i>Head teacher: professional qualifications</i>					
-- Education/diplomas	+	+	-	-	+
-- Teacher training	+	+	-	-	+
-- Head teacher training	-	+	-	-	+
<i>Head teacher: professional experience</i>					
-- Years of teaching experience	+	+	-	-	+
-- Years at present school	+	+	-	-	+
-- Years as head teacher	+	+	-	-	+
<i>School description</i>					
-- Size/type of school	+	+	+	-	+
-- Location: rural/urban	-	-	+	-	+
-- School group participation	+	-	+	-	+
-- Average class size/composition	-	+	+	+	+
-- Age of school building	+	-	+	-	-
-- Materials used in school construction	+	-	+	-	-
-- Area of school/classrooms	+	-	+	-	-
<i>Teacher description</i>					
-- Number of teachers	+	-	+	+	+
-- Number of male teachers	+	-	+	-	+
-- Teacher age distribution	+	-	-	-	-
<i>Financial considerations</i>					
-- Salaries, fees	+	+	-	-	-
-- Budgets	+	-	+	-	-
-- Source of revenue	+	-	-	-	-
<i>Access to school</i>					
-- Distance school/home	-	+	-	-	+
-- Live-in facilities	-	-	-	-	+
-- Proper road to school	-	+	-	-	-
-- Distance from other educational institutions	+	+	-	-	+
<i>Pupil/teacher turn-over</i>					
-- Pupil transfer/drop-out	-	+	+	+	-
-- Teacher mobility	-	+	+	+	-

**Key:** + = Included

- = Not-included in the specific country questionnaire.

## SCHOOL QUESTIONNAIRE (continued)

CATEGORIES	CHINA	JORDAN	MALI	MAURITIUS	MOROCCO
<i>School facilities</i>					
-- Activity, staff rooms	+	-	+	+	+
-- School furniture	+	+	+	-	-
-- Teaching aids	+	+	-	+	+
-- Television/radio/telephone	+	+	-	+	-
-- Tape recorder/video/computer	+	+	-	-	-
-- Proper heating/ventilation	+	+	+	-	-
-- Speaker system	+	+	-	-	-
-- Playground/garden	+	-	+	+	+
-- Electricity	+	+	+	-	+
-- Water taps/toilet	+	+	+	-	+
-- Lunch room/library	-	-	+	-	+
<i>School services</i>					
-- Library book loan	-	+	+	-	-
-- Lunch program	+	+	-	-	+
-- Medical centre	-	+	-	+	-
-- Sanitorial services	-	-	-	-	+
-- Administrative/secretarial services	-	-	-	-	+
-- Transport services	-	-	-	-	+
<i>School inspection</i>					
-- Frequency of inspection visits	+	+	-	-	-
-- Purpose of visits	+	+	-	-	-
<i>Head teacher work-load</i>					
-- Teaching: subjects/levels/periods	+	+	-	-	-
-- Administrative duties	+	+	-	-	+
-- Outside meetings	+	+	+	-	+
-- Teacher supervision/help	+	+	-	-	+
-- Continued education	-	-	-	-	+
-- Meeting parents	-	-	-	-	+
<i>Head teacher's opinion</i>					
-- School infra-structure	+	+	-	-	-
-- Absenteeism	-	+	-	-	-
-- Teacher training/hiring	+	+	-	-	-
-- School equipment/teaching aids	-	+	-	-	-
<i>Miscellaneous</i>					
-- Publisher/editor of school books	+	-	-	-	-

**Key:** + = Included

- = Not-included in the specific country questionnaire.

## **GLOSSARY \***

<b>Achievement tests:</b>	Measure present proficiency, mastery, and understanding of general and specific areas of knowledge.
<b>Aggregated data:</b>	Measure the features of a system which are derived from the features of those individuals or units making up the system.
<b>Analysis:</b>	The categorizing, ordering, manipulating and summarizing of data to obtain answers to inquiries and research questions.
<b>Basic learning competencies:</b>	Competencies which encompass minimum literacy, numeracy and life skills and refer to the knowledge, skills, attitudes and values necessary for people to survive, to improve the quality of their lives, and to continue learning.
<b>Basic education:</b>	Basic education consists of a combination of knowledge, values and skills that serves as the foundation for an individual's lifelong learning.
<b>Bivariate analysis:</b>	Analysis of relationship between two variables. For instance, in cross- tabulation, correlation, and regression analyses.
<b>Code book:</b>	A book or record of all coding decisions.
<b>Coding:</b>	The act of categorizing raw data into groups or giving the data numerical values or alphanumerical symbols.
<b>Coefficient:</b>	A statistic (or value) that represents the degree of occurrence of a property or relationship (see also correlation coefficient).
<b>Computer program:</b>	Computer program is a set of instructions that tells the machine how to read in and print out data, what operations to perform, how to perform them, and how to analyse the data.
<b>Core trainer:</b>	A person who is a specialist for training purposes.
<b>Correlation:</b>	A statistic which indicates the degree of relationship (going together or happening together) between or among variables. Correlation can vary from -1.00 +1.00.
<b>Correlation coefficient:</b>	A measure of association between two variables; it can range from 0 (no relationship) to -1.00 (perfect negative relationship) or +1.00 (perfect positive relationship). It is a measure of association between two continuous variables that estimates the direction and the strength of linear relationship.
<b>Cost-effective analysis:</b>	An assessment of the inputs, processes and outputs of a programme in terms of the effectiveness of means employed for the ends obtained.

\* Adapted from Bhola, H.S (1990) and Borhnstedt G.W & Knoke D. (1994)

<b>Criterion:</b>	Approved, accepted, valid measure of some variables. It is a standard by which something is judged.
<b>Criterion-referenced tests:</b>	Tests whose scores are interpreted according to the criteria of performance specifically defined by the teacher in regard to a particular group, and not by reference to performance of some comparable populations. The stress is on what the pupil learns, on the criterion of learning set by the teacher and the learner, on the goals of instruction.
<b>Critical mass approach:</b>	Broad-based participation of stakeholders in programme or project design, implementation, evaluation and reporting.
<b>Cross-tabulation:</b>	Cross-tabulation is a joint frequency distribution of cases according to two or more classified variables.
<b>Curriculum:</b>	A set of planned and guided learning actions, including the definition of teaching aims, contents, methods, equipment, textbooks, and teacher training. In this broad sense of the term, "curriculum development" represents the entire curriculum preparation and implementation process while "curriculum evaluation" is the continuous process of partial and/or specific evaluation operations.
<b>Data:</b>	Material gathered during the course of an evaluation study (both quantitative and qualitative) which is then used to develop information for decision-making. It is a set of information relating to the phenomenon under investigation expressed in numerical or characteristics form.
<b>Data analysis:</b>	The process of identifying ideas, themes, and hypotheses from the data, and the use of data to demonstrate support for them.
<b>Data collection:</b>	The activity of constructing primary data records for a given sample or population of observations. Data collection can be done through various methods, e.g. observation, interview, questionnaire, test, and experiment.
<b>Data validation:</b>	A process that includes data cleaning and data editing and precedes data analysis. Data validation involves checking for errors, inconsistent/invalid codes, and omissions.
<b>Dependent variable:</b>	A variable that has a consequent, or affected, role in relation to the independent variable .
<b>Dissemination:</b>	The process of spreading information about objectives and results among those concerned.



<b>Early childhood education:</b>	Early childhood education is an integral part of basic education. It refers to programmes intended to provide education for children from their birth until the age of 6 or 7 (prior to their entry into primary education).
<b>Evaluation:</b>	Objective and systematic collection of information about a programme, project, or instructional material for its improvement.
<b>Evaluation system:</b>	An arrangement of methods, procedures and plans of action designed to provide decision-makers with information on the inputs, outputs, context and processes of a given programme or project.
<b>External evaluation:</b>	Evaluation conducted by specialists who are not on the staff of a programme or project.
<b>Factor analysis:</b>	Factor analysis is a technique that analyses the internal structure of a set of variables to identify any underlying constructs, called factors.
<b>Frequencies:</b>	The numbers of objects in sets and subsets. They are often presented in a table of outcomes, or response categories, of a variable and the number of times each outcome is observed.
<b>Feedback:</b>	A term borrowed from electronics: the return of part of the output of a system into the input for purposes of modification and control of the output. In the context of programme planning, feedback means evaluative information on programme effects.
<b>Field study:</b>	A study for which the data are collected from persons acting out their typical roles in the everyday world, rather than as subjects in the laboratory.
<b>Field test:</b>	A preliminary study of a programme, project or instructional material in a setting very similar to the one in which it will be later implemented or used on a much larger scale.
<b>Generalizability:</b>	The extent to which claims and assertions made about a programme, project or instructional material in one setting can be applied in other settings.
<b>Human resource development (HRD):</b>	The education and training of manpower, both for formal and informal sectors of the economy, using both formal and nonformal systems of education or instruction.

- Independent variable:** A treatment variable introduced in an evaluation setting (example: a new teaching method), expected to create varying effects on a dependent variable (for example, performance on a test). It is a variable that has an antecedent or causal role, usually appearing first in the hypothesis.
- Indicator:** Observable measure of underlying unobservable theoretical construct. Something that indicates, points, signifies; a gauge that represents another entity.
- Inputs:** Resources or information available to a given system to operate.
- Institution building:** The process of developing organizational arrangements or systems for the implementation of programmes or projects on a long-term basis.
- Latent variable** A variable that cannot be observed and can only be measured indirectly.
- Level of significance:** A predetermined probability value which is used to decide whether the results of an evaluation study were really a consequence of a programme, project or instructional material, or whether they occurred by chance, ( $p = .01$  means that there is the probability of only one in a hundred for the programme effect to have appeared by chance).
- Life skills:** Life skills refer to competency and essential knowledge that enable one to function in one's physical and social environment. Life skills include essential knowledge and skills of basic science, health and nutrition, socialization and communication, critical thinking, problem solving and analysis, the content of which will vary according to particular context.
- Management information system (MIS):** A system (computerized, manual or a mix of the computerized and the manual) including planning and implementation of data in regard to a programme or project (See also Monitoring.)
- Mean:** The arithmetic average of a set of data in which the values of all observations are added together and divided by the number of observations. It is the sum of a group of scores divided by the number of scores.
- Median:** A measure of central tendency; the middle score of a sample, separating the upper half of the cases from the lower half. It is the outcome that divides an ordered distribution exactly into halves.
- Mode:** The score in a group of scores that occurs most often.

<b>Monitoring:</b>	To monitor is to check on an on-going programme or project for flaws or breakdowns, to enable decision-makers to regulate activities and to undertake corrective action. Monitoring is typically a function of a management information system.
<b>Multivariate analysis:</b>	Multivariate analysis (multiple correlation, multiple regression) are remarkably powerful and robust techniques for assessing the combined effects of a series of independent or predictor variables on a dependent variable.
<b>Needs assessment:</b>	The process of ascertaining the learning needs, health needs or other development needs of beneficiaries of educational and developmental programmes. Needs assessments are a mix of "felt" needs expressed by beneficiaries and new needs "fashioned" by change agents.
<b>No significant difference:</b>	A label which is used to say that the observed difference between two statistics could have occurred by chance. (See level of significance above.)
<b>Nonformal education:</b>	An organized or semi-organized educational activities, operating outside the formal education system and meeting the immediate educational needs of both conventional and non-conventional learners.
<b>Norm:</b>	A value or pattern of values representing the typical performance of a group or population.
<b>Norm-referenced tests:</b>	Tests whose scores are interpreted according to the objectives which a programme, project or course was designed to teach, without comparing performance of other groups on the test.
<b>Output:</b>	Results produced by a computer from specific inputs in the form of statistics, tables, plots, data, matrices, etc.
<b>Output evaluation:</b>	Assessing the quality and quantity of the final product(s) of the programme or project, also taking into account any unintended by-products of the programme or project.
<b>Paradigm:</b>	An example or pattern; a very clear example of an archetype. In evaluation, a paradigm is equivalent to the "intellectual ideology" of an evaluator".
<b>Parameter:</b>	Any one of a set of properties whose value determines the characteristics or behaviour of something.
<b>Participative approaches:</b>	Designs, procedures and methods of planning, implementation and evaluation that are built upon the active involvement of the would-be beneficiaries of programmes and projects.

<b>Path analysis:</b>	A statistical method for analysing quantitative data that yield empirical estimates of the effects of variables in an hypothesized causal system. It is a form of applied multiple regression analysis that uses path diagrams to guide problem conceptualization or to test complex hypotheses. Through its use one can calculate the direct, indirect and total influence of independent variables on dependent variables.
<b>Peripheral trainee:</b>	Participants from regional, sub-regional, district and local community levels in training programmes.
<b>Population:</b>	The entire set of persons, objects, or events that have at least one common characteristic of interest to the investigator.
<b>Predictor variable:</b>	A variable that has an antecedent or causal role, usually appearing first in the hypothesis. It is an independent variable in a regression analysis.
<b>Process evaluation:</b>	Assessing procedural strategies which compare effectiveness of different approaches to instruction, extension, animation and organization.
<b>Primary education:</b>	Primary education for children is the most important component of basic education because the human life-cycle requires that the basic competencies and life skills are acquired at an early age. The formal primary school is the principal vehicle for primary education; but other complementary non-formal and flexible approaches are also needed to make primary education universal.
<b>Qualitative data:</b>	Facts, claims and assertions in narrative form, and not in numbers (qualitative data can, however, be converted into numerical form by coding and scoring procedures).
<b>Quantitative data:</b>	Facts, claims and assertions presented in numerical forms.
<b>Random sample:</b>	A sample whose cases or elements are selected at random from a population. Each individual or element chosen from among the population has an equal chance of being selected each time a random sample is drawn.
<b>Regression:</b>	Regression techniques are used to analyse linear relationship between dependant (criterion) and independent (predictor) variables.
<b>Reliability:</b>	The extent to which different operationalization of the same concept produces consistent results. The proportion of an item's variance that is attributable to the unobserved cause.
<b>Representativeness:</b>	The selection of units of analysis whose characteristics accurately stand for the larger population from which the sample was drawn.

<b>Sample:</b>	A subset of cases or elements selected from a population.
<b>Sampling:</b>	The selection of a sample or individuals or elements from the total population to be studied. Sampling may involve elaborate selection procedures if the inference from the sample are to be sound.
<b>Standard deviation:</b>	A measure of variability calculated on the basis of differences of individual scores within a group from the group means. Its squared is called variance.
<b>Standard error:</b>	The standard deviation of a sampling distribution.
<b>Standardized tests:</b>	Tests whose scores are interpreted in comparison with norms established in terms of some larger groups or populations.
<b>Statistic:</b>	A summary number that describes the characteristic or property of a sample.
<b>Statistical analysis:</b>	An examination of complex relationships between variables using empirical data and rules of statistics.
<b>Statistics:</b>	The science of methods for analysing data obtained from empirical observations to make descriptions or inferences. Thus, there is descriptive statistics, and there is inferential statistics.
<b>Stratification:</b>	The study of units (roles, individuals, families, groups, or whatever a given theorist wishes to specify) distributed along one or more ranking systems.
<b>Structural equation:</b>	A mathematical equation representing the structure of hypothesized relationships among variables in a social theory.
<b>Target population:</b>	Any special population which one wishes to aim a message at, observe more closely, or study through a sample.
<b>Unit of analysis:</b>	A person, an object, an element or a group for observation.
<b>Univariate analysis:</b>	The analysis of a single variable in the form of frequencies, percentages, measure of central tendency, measure of dispersion, etc.
<b>Validity:</b>	The property of an instrument which is able to measure what it was supposed to measure.
<b>Variable:</b>	Any characteristic or attribute of persons, objects or events that can take on different values.
<b>Variance:</b>	A measure of variability calculated on the basis of differences of individual scores within a group from the group mean. The square root of variance gives the value of standard deviation(s).

## ***Notes***