

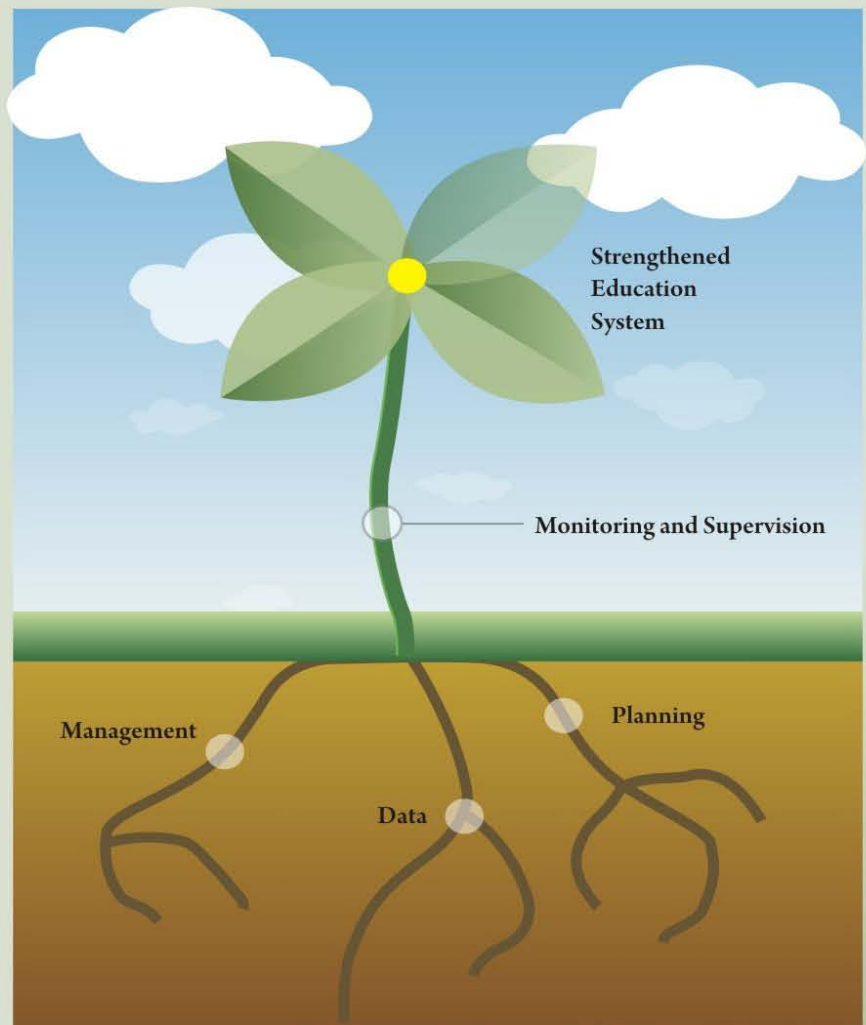
Training Manual



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Use of Data for Educational Monitoring and Supervision



National Education Management Information System
Academy of Educational Planning and Management
Capital Administration and Development Division
Cabinet Secretariat, Islamabad

Training Manual

Use of Data for Educational Monitoring and Supervision

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GLOSSARY

The following definitions reflect the use of these terms in the context of the M&S for education system. Therefore, these terms do not necessarily reflect their usage in other contexts.

Baseline Indicator: An analytical description of the situation against which progress can be assessed or comparisons made [2].

Cause and effect: Cause and effect means establishing that one variable has caused a change in the other variable. It is important to establish cause and effect, so that an undesirable effect can be changed or eliminated [19].

CPM: The critical path method (CPM) is an algorithm for scheduling a set of project activities. It is an important tool for effective project management [12]

Critical Path: Longest sequence of activities in a project plan which must be completed on time for the project to complete on due date. An activity on the critical path cannot be started until its predecessor activity is complete; if it is delayed for a day, the entire project will be delayed for a day unless the activity following the delayed activity is completed a day earlier [12].

Effectiveness: The extent to which the project has achieved, or is expected to achieve, its objectives, taking into account their relative importance. In this context, cost effectiveness assesses whether the costs of an activity can be justified by the outcome and impacts. At the design stage, the purpose is normally to identify the lowest cost alternatives that will achieve the specified objectives. At the Monitoring and Supervision stage, the purpose is to analyze what outcomes have been achieved at what cost [2].

Efficiency: A measure of how economically inputs are converted to results [2].

Governance: The structures, functions, processes and organizational traditions put in place to ensure the partnership and its activities are run in such a way that they achieve the objectives in an effective and transparent manner. It constitutes the framework of accountability and responsibility to users, stakeholders and the wider community within

which the manager takes decisions and exercises its functions in order to achieve its objectives [2].

Impact: The primary and secondary, positive and negative, intended and unintended long-term effects of intervention. An example would be attainment of higher grades and levels of employability amongst school-leavers as a result of training provided to their teachers [2].

Indicator: A quantitative or qualitative variable that shows a result relative to what was planned. An example would be the number of teachers trained as part of an education project plan [5].

Input: Human, financial or other resources used to produce an output

Logical frame: A management technique used to develop the overall design of a monitoring and strengthen supervision by presenting the essential elements of the program or project clearly and briefly [17].

Management: The day-to-day operation of the program within the context of the strategies, policies, processes and procedures that have been established by the project governing body [2].

Monitoring: Monitoring can be defined as an internal management process of continuous control of inputs, processes and outputs in order to identify strengths and weaknesses, formulating practical proposals for action to be taken, and taking the necessary steps to reach the expected results [4]

Outcome: A short-term or medium-term effect of an intervention's outputs. It can be positive or negative, expected or unexpected. An example would be a demonstrable increase in the skills and knowledge of teachers as a result of training [2].

Output: A tangible product, capital good or service that results from the implementation of a project or program. An example would be a teacher training workshop held and the number of teachers that attended [2].

PERT: Program Evolution and Review Techniques (PERT) is a project management tool used to schedule, organize, and coordinate tasks within a project. It is basically a method to analyze the tasks involved in completing a given project, especially the time needed to complete each task, and to identify the minimum time needed to complete the total project [12]

Result: A describable and measurable change in a state that is derived from a cause and effect relationship, that is, an outcome or impact. It is specific and can be captured either in quantitative or qualitative terms. It is mainly expressed and measured by performance indicators [2].

Resources: The inputs used in the activities of a project or program. Broadly speaking, the term encompasses natural, physical, financial, human and social resources [2].

Review: The periodic assessment of the performance of the project implementation. This may draw on the results of ongoing monitoring system [2].

Slack: In critical path method (CPM), the difference between the length of a path and the critical path. If an activity has zero slack, it is on the critical path [20].

Supervision: Supervision can be formally defined as an aspect of management which focuses on overseeing, inspecting and/or controlling the performance or operation of a person, a group or an activity/project [4]

Target: A target defines what can be achieved in terms of reaching a desired outcome within a specific timeframe. Target-setting is the final step in development of educational M&S system performance framework [2].

ACRONYMS

AEO	Assistant Education Officer
AEPAM	Academy of Educational Planning and Management
AJK	Azad Jammu & Kashmir
CPM	Critical Path Method
DDEO	Deputy District Education Officer
DDO	Deputy District Officer
DEO	District Education Officer
DO	District Officer
DMO	District Monitoring Officer
GB	Gilgit Baltistan
KPK	Khyber Pakhtun Khwa
MEA	Monitoring & Evaluation Assistants
NEMIS	National Education Management Information System
PERT	Project/Program Evaluation and Review Technique
PMIU	Program Monitoring and Implementation Unit
PESRP	Punjab Education Sector Reform Program
TPV	Third Party Validation

HOW TO USE THIS MANUAL

Who is the Manual for?

This manual has been produced for practitioners of Monitoring and Supervision (M&S) system for education. These are education managers at provincial and district level who are implementing education projects. Much literature exists on the subject of monitoring and evaluation for education system. However, research by National Education Management Information System (NEMIS) suggests that guidance on the role and function of M&S is lacking. This manual seeks to fill this gap.

The manual has been produced with a variety of audience members in mind. However, we recognize that all those with a stake in the outcomes of a program or project must have a role in setting and delivering its objectives, including those for M&S. For this reason, it is important that the manual is seen by all those involved in the project at different level, see the manual as a source of information and guidance. The manual has been designed as a practical guide and should be particularly useful for anybody involved in the project in any sort of coordination, management or governance capacity.

How do I use the Manual?

The manual follows a project life cycle management approach, and is designed to provide M&S guidance at different stages of the project implementation. Ideally, users should follow the manual from beginning to end, but we recognize that some may wish to use only specific sections of most relevance to their immediate needs. The manual is divided into seven sessions. For those at the early stage of thinking about the potential of M&S but who have yet to initiate the process, *Session 1, Introduction to Monitoring and Supervision* provides an overview of the role that M&S can play in effective project implementation. The session also describes the role of Supervision in different Monitoring systems and the conditions for successful M&S.

Practitioners already at the stage of establishing an M&S system should turn to *Session 2, Creating M&S System* where they will find guidance on how to create the

foundations of an effective M&S system for their project. The practitioners will also learn how to create a Framework for effective M&S system.

Session 3, Monitoring and Supervision in Pakistan – a Case Study is for the practitioner already at the stage of setting up a project, and wants to put in place an effective M&S system by understanding the existing system in different provinces of the country.

Readers of the Manual who are at the stage of identification of monitoring indicators turn to *Session 4. Monitoring Indicators*. This session describes what are monitoring indicators and how to identify these indicators with the help of objectives of the project. The session also describes the characteristics of good indicators.

Session 5. How to calculate Monitoring Indicators? A case study: EFA Indicators is useful for the readers who already identify the monitoring indicators and want to calculate these indicators.

For those at the stage of reviewing the progress and performance of the M&S system, *Section 5, Advance Techniques of M&S* provides guidance on advanced M&S techniques.

The final session of the manual, *Group Work*, is for the practitioners who want to do practical work and implement M&S system through examples. Assignments on different practical projects are prepared for group work.

What is the Manual's underlying methodology/philosophy?

The Manual takes a logical framework approach to the M&S system of the education sector in Pakistan. In general, a logical framework is a management technique for developing the overall design of a program or project, to improve implementation monitoring, and to strengthen supervision, by presenting the essential elements of the program or project clearly and briefly throughout its cycle. It is a 'cause and effect' model, which aims to establish clear objectives and activities based on project outcomes and, ultimately, its impact.

'Cause and effect' means establishing that one variable has caused a change in the other variable. It is important to establish cause and effect, so that an undesirable effect can be changed or eliminated.

Feedback encouraged

This Manual is a work-in-progress. We would be grateful for feedback from you regarding your experience of using the Manual; where you have found it useful, and where you feel it can be improved. It is a joint-initiative of NEMIS and ED-LINKS -- a USAID funded project. If you have cases of good practices you would like to report or suggestions for improvements to the guidance and tools set out in the manual, we would like to hear from you.

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SESSION 1: INTRODUCTION TO MONITORING AND SUPERVISION (M&S)

Objectives:

At the end of the session participants will be able to

- Understand the fundamentals of M&S
- Understand the essential components of M&S
- Differentiate between Monitoring and Supervision

What we will learn

- Core Concepts of Monitoring & Supervision
- Various model proposed for Supervision
- Concept of quality in M&S
- What quality does a good M&S system exhibit?

Total Time: 1 hour and 30 minutes

Agenda

Duration	Activity	What is needed?
20 Minutes	1. Pre-Training Test	Test about fundamentals of M&S
1 Hour	2. Prepare Presentation on M&S	Presentation or Slides
10 Minutes	3. Discussion	

Introduce the Objective of the session and the activities

Activity 1:

- Take pre-training test to assess the knowledge of participants about the topic of the manual. You can prepare your own test or take test given in this manual.

Activity 2:

- Make a presentation
-

Activity 3:

- Hold the discussion: “What is your personal experience about Monitoring and Supervision?”

1. INTRODUCTION TO MONITORING AND SUPERVISION

1.1 INTRODUCTION

The concept of monitoring and supervision system relates to the way in which the organization manages, on an ongoing basis, the effective implementation of its activities in a program/project. It is imperative that M&S is carried out at each stage i.e. from planning to implementation. Monitoring and Supervision are two complementary functions which often serve the same purposes. As such, supervision forms part of an overall monitoring system.

Effective monitoring and supervision process enables, among other things, to: a) identify problems and changes in circumstances affecting project or program implementation; b) provide essential data along with insights for decision-making; c) provide relative assurances that resources are used for agreed purposes; d) generate information on the validity of current development policies, strategies, as well as programs and projects, under implementation towards the achievement of stated development outcomes.

Monitoring and Supervision are important management tools to track your progress and facilitate decision making.

Use of accurate, reliable and up-to-date data is vital for the success of a monitoring and supervision system. It is imperative that right data is identified, efficient data collection tools as well as collection mechanisms are defined, and data is processed into useful information and indicators for monitoring and supervision. Equally important is the capacity of the monitoring and supervision managers to make effective use of data, information and indicators. Throughout this manual emphasis will be placed on use of data for effective monitoring and supervision.

While M&S are generic functions which can be applied to any sector, for the purpose of this document our focus is exclusively on the education sector. Following sections will discuss the concepts of M&S separately as well as jointly:

1.2 OBJECTIVES OF MONITORING AND SUPERVISION

The main objectives of M&S are to:

- Assess the progress of program/project with reference to their immediate and long-term objectives
- Identify necessary actions in order to ensure efficiency and effectiveness of the program or project
- Provide feedback information for adjustments in work plan and budgets
- Provide information on future program needs

1.3 MONITORING

Monitoring can be defined as an internal management process of continuous control of inputs, processes and outputs in order to identify strengths and weaknesses, formulate practical proposals for action to be taken and take the necessary steps to reach the expected results [2].

Important aspects of this definition are:

1. Monitoring is part of management, not something added from outside;
2. It is a continuous process, not a one-shot operation;
3. It has to do with identifying strengths and weaknesses and making proposals for action;
4. Monitoring is result-oriented – it implies a clear, measurable definition of expected results;
5. Monitoring does not stop with making proposals – it also involves taking action in order to solve problems and to reach objectives.
6. Monitoring can also be defined as “the regular observation and recording of activities taking place in a project or program. It is a process of routinely gathering information on all aspects of the project [Phil Bartle, 98]”.

1.3.1 Purpose of the Monitoring System

Monitoring is very important in project planning and implementation. It enlightens you that where you are going and what is a correct path? You can adjust as you go along and ensure that you are on the right track [1].

The purpose of the monitoring system is to answer the following four questions:

1. Where are we?
2. Where do we want to go?
3. How do we get there?
4. What happens as we do?

1. Where are we?

This question covers Situational Analysis and Problem Definition. Situational analysis is a process through which the general characteristics and problems of the people involved in the process are identified. It involves the identification and definition of the characteristics and problems specific to particular categories of people.

Situational analysis is done through collecting information necessary to understand the activity as a whole and individuals working on it. Information should be collected on what happened in the past, what is currently happening, and what is expected to happen in the future, based on the experiences.

Situational analysis should be continuous, in order to provide additional information during the monitoring process. Situational analysis and problem identification should be monitored to ensure that correct and up dated information is always available.

2. Where do we want to go?

Goal setting asks the question, "Where do we want to go?"

Before any attempts to implement an activity/project, the planners, implementers and beneficiaries should set up goals and objectives. A goal is a general statement of what should be done to solve a problem. It defines broadly, what is expected out of the

activity/project. A goal emerges from the problem that needs to be addressed and signals the final destination of the activity/project. Objectives are finite sub-sets of a goal and should be specific, in order to be achievable.

The objectives should be "SMART" , i.e. they should be:

Specific: clear about what, where, when, and how the situation will be changed;

Measurable: able to quantify the targets and benefits;

Achievable: able to attain the objectives

Realistic: able to obtain the level of change reflected in the objective; and

Time bound: stating the time period in which they will each be accomplished.

3. How do we get there?

Generating structure and strategies covers the third question of monitoring i.e. "How do we get there?"

The planners and implementers (communities and their enablers) should decide on how they are going to implement an activity/project, which is the strategy. Agreeing on the strategy involves determining all items (inputs) that are needed to carry out the project, defining the different groups or individuals and their particular roles they are to play in the activity/project. These groups and individuals that undertake particular roles in the project are called "actors."

Generating the structures and strategies therefore involves:

- Discussing and agreeing on the activities to be undertaken during implementation
- Defining the different actors and outside the community, and their roles
- Defining and distributing costs and materials necessary to implement the project

4. What happens as we do?

Monitoring implementation asks the fourth key question "What happens when we do?"

Monitoring is important at this implementation phase to ensure that the project is implemented as per the schedule. This is a continuous process that should be put in place before project implementation starts.

As such, the monitoring activities should appear on the work plan and should involve all stakeholders. If activities are not going on well, arrangements should be made to identify the problem so that they can be corrected.

Monitoring is also important to ensure that activities are implemented as planned. This helps the implementers to measure how well they are achieving their targets. This is based on the understanding that the process through which a project is implemented has a lot of effect on its use, operation and maintenance.

1.3.2 Essential components of Monitoring

The essential components of a monitoring system are presented in the form of activities in a framework in the following diagram. These activities are guided by a set of standards on what is considered 'quality' [2].

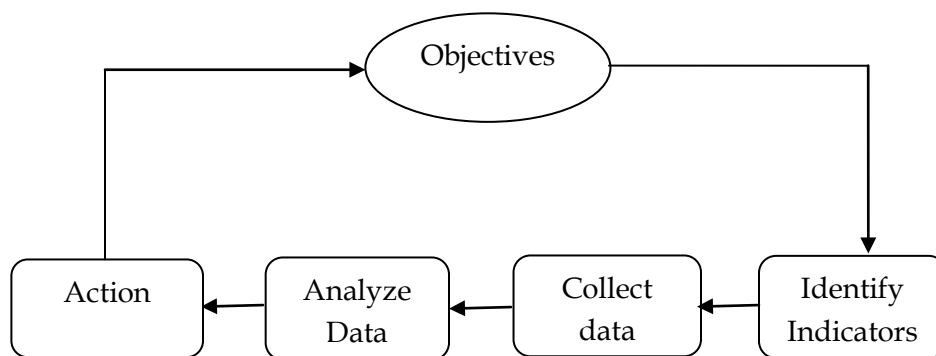


Figure 1.1: Essential Components of Monitoring

(i) Objectives and Activities

Monitoring cannot be started until the objectives and activities of a project are not

clearly defined with time lines.

(ii) Identify Indicators

Identification of indicators is a key component of monitoring. The whole M&S system depends upon indicators. The indicators should reflect the objectives of the project.

(iii) Collection of information

Monitoring the quality of education can only be done on the basis of solid information. Such information can come from different sources, among which the most common are:

- The regular school census;
- Examination and test results;
- Regular visit of schools
- Research/ evaluation reports.

Trying to compare apples and oranges?

Make sure everyone who is collecting information is doing it consistently and is using the same definitions; otherwise you end up trying to group clients or approaches that really are not comparable.

Collection of information can be without limits and monitoring can get lost in too much data. The guiding principle for deciding which data to collect is their usefulness for the analysis. Only data that will enter into the analysis should be gathered.

(iv) Information analysis

Data must be analyzed in order to detect achievements and problems and to propose appropriate action to be taken. This implies the selection and construction of reliable indicators that should allow the manager to detect achievements and problems relating to inputs, processes and outputs in an objective and consistent way. It also implies the definition and use of clear reference points or standards for making judgments.

(v) Action

Action can be preventive, corrective or reinforcement-oriented. As mentioned

earlier, action is an essential component of monitoring. Data collection and analysis without action can be meaningful from a research point of view, but is a sterile exercise from a management perspective.

1.4 SUPERVISION

Supervision can be formally defined as an aspect of management which focuses on overseeing, inspecting and/or controlling the performance or operation of a person, a group or an activity/project. Supervision may also be understood as covering all those services whose main function is (1) to inspect, control, evaluate; and/or (2) advise, assist and support those who are being supervised. Hence, supervision is a key function to support and strengthen a monitoring system. In the education system, supervision plays a vital role to advise, assist and support school heads and teachers.

Whereas supervision is traditionally perceived to be a form of external control, however during recent years many countries, in their attempts to reform and redefine supervision, have increasingly relied on internal mechanisms of supervision by devolving responsibilities of control and support to actors at the school-site level (principals, teachers, community members or even students) [2].

1.4.1 Why Supervision is necessary in Education

Supervision has been a neglected area of education management for a long time. During the 1970s, the word 'inspector' or even 'supervisor' had a negative connotation. Inspection was seen as an old fashioned non-democratic institution and a few countries got rid not only of the terminology, but also of the supervision service itself [2].

Nevertheless, since the beginning of the 1990s, there has undoubtedly been renewed worldwide interest in issues of quality and therefore in quality M&S. Some countries that had dismantled their supervision services earlier have re-established them (such as the Philippines), while others that did not have them in the past have created them (such as China and Sweden). More importantly, the number of countries that initiate a process of reorganizing and strengthening supervision services is

increasing every year.

There are several reasons for the renewed interest in supervision and quality monitoring, four of which are mentioned hereunder:

In most countries, there is a feeling that the rapid expansion, if not mass production, of education has led to the deterioration of quality. Consequently, quality improvement has become a top priority of policy makers, which has in turn reinforced their preoccupation with quality control.

More recently, the 'value for money' syndrome that permeates all sectors of society has also hit the education system. This is linked to a stronger demand for accountability in the public service.

At the same time, various studies have shown that one important determinant of the deterioration of the quality of schools precisely relates to the weakening of quality monitoring devices, including the professional supervision and support services.

Finally, the interest in supervision and quality control finds an additional justification in the present trend towards school autonomy. This greater degree of freedom left to schools has provoked an equally greater demand for accountability at school level and for monitoring procedures that should allow governments to guarantee standards of quality and equity across the system.

1.5 ROLE OF SUPERVISION IN DIFFERENT MONITORING SYSTEMS

It is mentioned earlier that the role of supervision is to improve the quality of monitoring in education system. Monitoring is concerned with quality, and supervision ensures that quality. Unfortunately, there is no standard definition of quality. Quality is a multi-dimensional concept composed of three interrelated dimensions: the quality of the human and material resources available (inputs); the quality of the management and teaching-learning processes taking place (processes); and the quality of the results obtained (outputs) [2].

Several studies have forcefully demonstrated that regardless of the actions being

taken at systems level, real quality improvement depends on what is actually happening in the classroom. Schools are the delivery points at which all the inputs of the system come together for interaction and determine the quality of the teaching-learning process. This is why in a growing number of countries quality-monitoring strategies are paying special attention to the functioning of schools. An analysis of different monitoring approaches according to their main focus will help in clarifying this issue.

As is the case for supervision, countries have built over time more or less complex monitoring systems that differ according to their main focus or area of concentration and also according to the main locus or body in charge.

Presented below are two typologies developed on the basis of the two main variables identified above. It should be borne in mind that a typology of this kind does not provide us with a description of reality, but rather gives us a useful analytical framework through which the organization and functioning of existing monitoring systems can be more easily analyzed and better understood.

1.5.1 Typology by main focus

This typology classifies monitoring systems according to the dimension of the quality concept on which each of them is mainly focusing: inputs, processes or results. (Richards, 1988) [2]

1.5.1.1 Compliance monitoring

A first type of monitoring places the emphasis mainly on school inputs (number of required textbooks per pupil, teacher qualifications, number of pupils per class, etc.). It has been called compliance monitoring as its first goal is to make sure that schools comply with predetermined norms fixed by law and administrative rules and regulations. Compliance monitoring is the oldest, most bureaucratic type of monitoring: i.e. checking that rules and regulations are respected. The classic inspectorate system combined with several forms of administrative self-reporting by schools (filling out forms!) is the main device on which this type of monitoring relies.

1.5.1.2 Diagnostic monitoring

The goal of this type of monitoring is to ensure that pupils learn what they are supposed to learn. The focus is on the instructional process, on what happens in the classroom. The techniques proposed at classroom level are those of mastery learning: setting clear learning objectives, regular diagnostic testing of the learners and systematic remediation.

Diagnostic monitoring is in the first instance the responsibility of the individual teacher. The main devices of this type of monitoring are indeed continuous self-assessment at school level combined with intensive external support services.

Diagnostic monitoring and mastery learning were very popular towards the end of the 1960s and during the 1970s, and led in many instances to fundamental changes in the classic supervision structures. Today there is a general consensus that process variables are more important than input variables in explaining differences in school quality.

1.5.1.3 Performance monitoring

The emphasis of this type of monitoring is on school results. Its goal is mainly to stimulate competition between schools in order to promote academic achievement. The most common monitoring devices used are the regular measurement of learner achievement by standardized tests and examinations, combined with the publication of results and systematic (external) auditing of schools.

1.5.2 Typology by main locus

This way of classifying monitoring systems concentrates on where the main locus of responsibility is for the quality improvement of schools. Kogan, elaborating on these models of accountability, distinguishes between the following types of monitoring:

1.5.2.1 Public or state control model

This is the dominant mode of education monitoring in most countries. Its main characteristic is that of a formal bureaucratic hierarchy: teachers are controlled by

school heads, who are controlled by district officers, who are controlled by central ministries that in turn are directed by elected representatives.

This monitoring system has democratic legitimacy because of the control chain that emanates from the political level. In this model, external forms of quality monitoring will prevail over internal ones, and the traditional inspection system, which can be more or less decentralized, will play a key role.

The key problem with this model is that the influence on decisions by those who have to implement them (local school actors) is generally low.

1.5.2.2 The professional accountability model

The professional model can be seen as an answer to the above-mentioned problem. In this model, the main focus of monitoring is not with the bureaucracy but with the professional community; in our case, the teaching staff. They are supposed to be the best judges of how to ensure quality education.

Two main arguments are generally put forward by the promoters of this model. The first is that the stronger the professional autonomy of teachers and schools, the more responsive they will be to the needs and conditions of their clients. The second is that professional accountability will protect schools against excessive external pressure, for example to boost school results.

The legitimacy of this model derives from the expertise and ethical code of the teaching profession. Its dominant procedures of monitoring will be internal ones, such as self-evaluation by teachers and peer reviewing. A country that has gone a long way in shifting towards a professional accountability system is Finland, where the external inspection system was abolished in 1991.

One problem is that responsiveness to the clients might be gradually replaced by professional isolation and complacency, and by self-protective reactions against outside demand and criticism (from parents, the local authorities and the public at large).

1.5.2.3 The consumerist model

According to this model, the main actors in charge of monitoring are supposed to be the consumers or beneficiaries of the education system, i.e. the students, the parents and the wider community. Kogan¹ distinguishes between two forms of the consumerist model.

1.5.2.3.1 The partnership model

The first one is based on a partnership between the parents (students) and teachers: parents should participate in¹ a partnership and not in a relationship where the client, i.e. the parent is dependent on the professional. The accountability relationship between teachers and parents involves three components: consensus on objectives; exchange concerning methods; and discussion about the results obtained. The partnership model assumes parity between the providers of education and the clients. Internal decisions about school functioning ought to be shared.

The main legitimacy of the partnership model are the values of democratic participation. As in the previous case, the main monitoring device will be self-assessment, but self-assessment in which parents and their representatives are heavily involved.

The problem with this model is that parents are often not available, not interested or not prepared to participate, while teachers might resent 'non-professional intrusion' in their work.

1.5.2.3.2 The free-market model

All the previous models continue to assume that decisions will ultimately be made by office holders, appointed or elected, within a public institutional set up. The 'free-market' model intends to break away from public control and to replace it with the control of the individual consumer. The ultimate way of moving from public control to market control is to provide parents with vouchers. These should allow families to buy

¹ *Source:* Kogan, 1988

the education they want for their children and put schools in a competitive position. In that case, individual family demand would become the regulating principle for education development in replacement of public control. Reforms in this direction were introduced at the beginning of the 1990s in countries such as the UK and Chile, but in both cases without giving up the essentials of the classical state control model.

The justifying principle behind the free-market model is that efficiency and quality can best be obtained via free-market mechanisms and competition. The main monitoring device in this model is the regular collection and dissemination of different performance indicators and the publication of league tables, often combined with the imposition from above of a well-defined curriculum framework.

1.6 CONCEPT OF QUALITY IN MONITORING AND SUPERVISION [2]

There is no standard definition of school quality. In the literature, a large variety of quality statements can be found that might refer either to inputs, or to processes, or to outputs, or to the three dimensions at the same time. Some examples of quality statements go like this:

- Relating to inputs (e.g. A good school is a school with qualified teachers and good equipment.)
- Relating to processes (e.g. A good school is a school with discipline and a good teaching-learning climate.)
- Relating to outputs (e.g. A good school is a school that produces above average exam results.)

These three definitions of a good school have their value, but the one directly referring to results seems to be the most logical. This is the definition that users of education services (the parents) mostly refer to when they talk about a good school and one of those they might refer to when choosing a school for their children.

Most of the time, the only way of measuring results is by using learner exam scores or test performances. This is the common indicator used for making national comparisons in the quality of education between different countries and between sub-national

entities and/or schools within countries.

Let us look in more detail at the use of exam results as an indicator of school quality.

To what extent are exam results a fair reflection of the results produced by a school?

There are many other results that are not captured by exams such as the acquisition of attitudes, of values, of behavioral patterns and of practical skills and know-how. These types of results are unfortunately more difficult to measure and therefore get easily forgotten. But is a school that focuses exclusively on obtaining good results in national tests and exams necessarily a good quality school?

How shall we judge the quality of the test results obtained?

Even if we agree to limit quality assessment to the measurement of academic achievement, can we say that a school with high achievement scores is necessarily 'better' than another with lower scores? While this may be true in absolute terms, it might not be so when we consider the value added to the learner's knowledge and skills by these two schools. For instance, it may be that the learners of the high achievement school had a strong academic level upon entering the school because they come from a high socio-economic background. This is where the notion of effectiveness comes in. An effective school is one where the average achievement of the learners is higher than expected, given the background of the learners and the context they are living in. In several countries, school effectiveness indicators have been built.

In conclusion, the quality of education is a multi-dimensional concept composed of three inter-related dimensions: the quality of the human and material resources available (inputs); the quality of the management and teaching-learning processes taking place (processes); and the quality of the results (outputs).

1.7 CONDITIONS FOR SUCCESSFUL MONITORING AND SUPERVISION SYSTEM

There are certain per-requisites of an efficient and effective monitoring and supervision system. A successful monitoring and supervision system should have the following conditions [16]:

Regularity

Regularity refers to the submission of reports and returns at regular intervals. Much value of the reports is lost if these are delayed and do not reach the concerned person time.

Accuracy

Accuracy of information is another factor as it provides credibility to the program. If the supplied information is inaccurate, it will be of little use in taking corrective actions.

Promptness

Promptness is analysis and supply of feedback to the concerned persons is crucial in monitoring.

Completeness

Completeness of information and feedback is also an important condition in monitoring. If the information provided are incomplete, even if supplied regularly, accurately and promptly, will be of little use in taking any decision or action of the improvement of the program.

SESSION 2: CREATING MONITORING AND SUPERVISION SYSTEM

Objectives:

At the end of the session participants will be able to

- Develop the framework for M&S
- Explain types of monitoring indicators
- Understand the significance of data, resources and communication

What we will learn

- Essentials of M&S Framework
- Basics of indicators
- M&S methods and tools

Total Time: 1 hour and 30 minutes

Agenda

Duration	Activity	What is needed?
1 Hour 10 Minutes	1. Presenting framework for M&S	Presentation or Slides
20 Minutes	2. Discussion	

Introduce the Objective of the session and the activities

Activity 1:

- Make the presentation

Activity 2:

- Hold a discussion: “What do you think about M&S framework?”
- Sum up the points

2. CREATING MONITORING AND SUPERVISION SYSTEM

2.1 MONITORING AND SUPERVISION FRAMEWORK [17]

The Monitoring and Supervision Framework adopts a logical approach of input, process, output, outcome and impact indicators to ensure ongoing monitoring and supervision objectives. It should be based on the principles of monitoring and supervision.

An effective M&S framework should exhibit the following characteristics:

- It should be based on the principles of M&S as laid down earlier in the document.
- It should adopt a logical approach of input, process, output, outcome and impact indicators to ensure ongoing M&S of the goals and objectives of the Plan.
- It should be designed to measure progress towards the achievement of objectives of the project.

Keep It Short and Simple – the easier your systems are to use, the more people will be willing to use it and the more consistent the information you gather will be.

Therefore, the objectives of the M&S Framework should be to collect and provide information that will be used to:

- Track progress on implementation of all components of the project
- Identify gaps and weaknesses
- Support the system
- Plan, prioritize, allocate and manage resources
- Monitor the impact of outcomes
- Improve the mechanism (if required)

The M&S system should consist of three phases: pre-implementation, implementation and post-implementation.

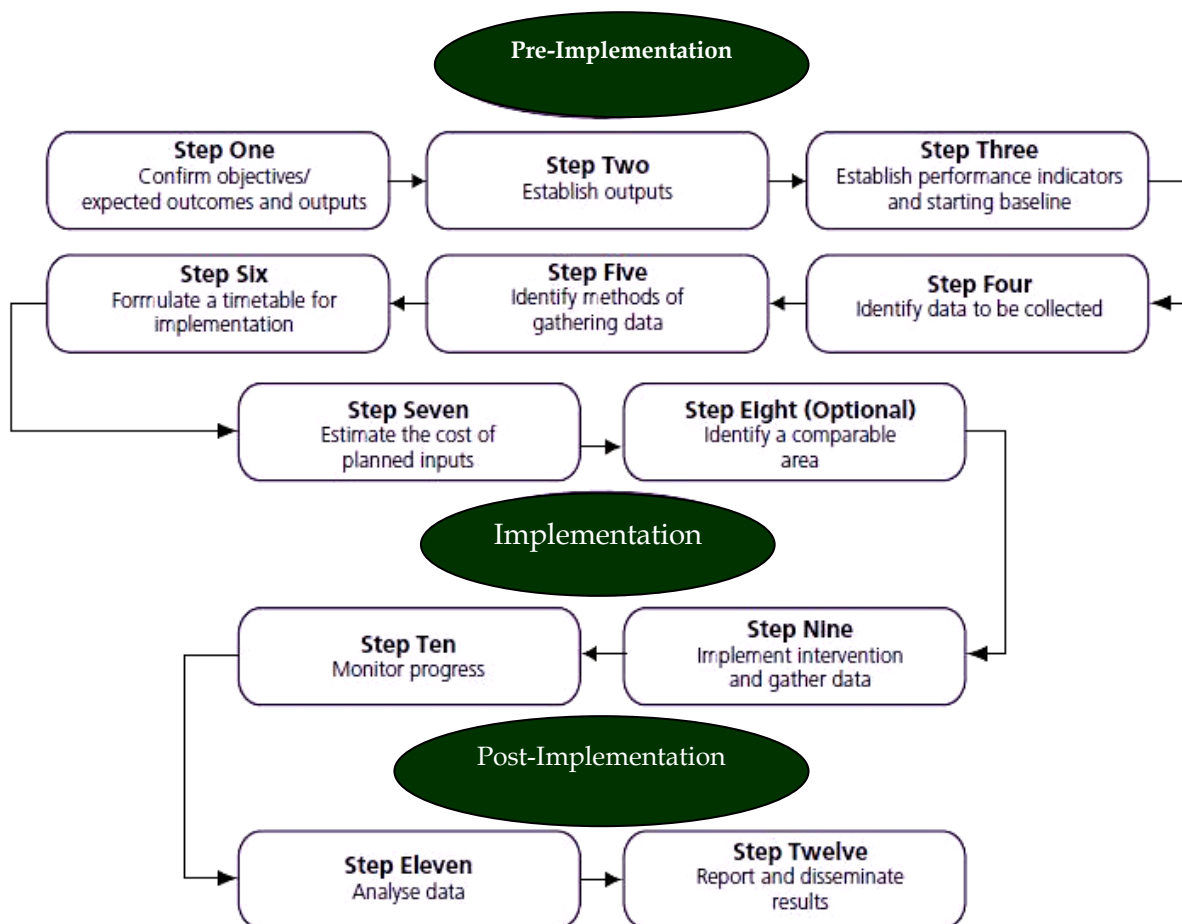


Figure 2.1: Monitoring and Supervision Framework

2.1.1 Pre-implementation (planning)

Step One: Confirm objectives/expected outcomes and outputs

Objectives are the key to every successful program or project. Each M&S system is about measuring whether the objectives have been achieved. Before starting the M&S process, the team should know what the objectives are. The objectives should be SMART as explained in previous session.

Unless you have a clear idea about what the project is trying to achieve, you cannot measure whether or not it has been achieved.

Step Two: Establish outputs for the intervention

Outputs are the things that need to be produced or done in order to achieve the desired objectives/ outcomes. For example, if the intervention is to increase female enrolment in the district, the outputs might be: organize publicity for the local schools and communities, announce scholarships for female students and so on.

Step Three: Establish performance indicators and starting baseline

Once the M&S team is clear about the objectives and outcomes of the intervention, the next step is to think about how to measure the extent to which they have been achieved. Performance indicators (PIs) are a means by which you can do this. They can be quantitative, which means that they use statistical information to measure the effects of a piece of action. Or they can be qualitative, which means that they measure things such as feelings and perceptions. Performance indicators can use any information, from any source that shows whether objectives are being met. Obesity prevalence figures are quantitative PIs – they are a direct measure of the degree of the problem in your area. Other PIs, such as those that measure parents' perceptions of their child's education, are qualitative. If an intervention's objective is to educate parents in the target clusters about importance of female education, qualitative PIs must be used to measure this.

When you are developing performance indicators, it is important to establish a starting baseline for the intervention against which performance will be measured. Performance indicators are a key part of any M&S framework, as they enable the measurement of what actions have been achieved.

Step Four: Identify data to be collected

The next step in the framework is to decide what data need to be collected to measure the intervention's success against the performance indicators. It is important to collect the right information, at the right time and in the right

Bean counting

One of the reasons people dislike monitoring is that they say all too often, all it does is produce lots of figures that don't actually tell them anything.

format. Some questions to be asked at the beginning are:

What data are needed to calculate the performance indicators?

1. How much detail is needed?
2. When and how often are data needed?
3. What format are the data required in?
4. Where do the data come from?
5. Are the data available, accurate and reliable?

Step Five: Identify methods of gathering data

If data are not available or are not of sufficient quality or relevance, monitoring team may need to collect data themselves. For collection of data a tool or method should be identified according to the requirements of the system. At the end of this session a list of data collection tools for monitoring are given.

Step Six: Formulate a timetable for implementation

In order to ensure that the program runs as smoothly as possible and meets deadlines, management should put together a timetable of implementation. As a minimum, the timetable should: list all the key stages of work including milestones for key activities

- show the dates by which each stage needs to be completed
- show what resources are needed for each stage
- show who needs to be involved at each stage
- include milestones for regular review of the inputs and outputs
- be regularly updated to reflect any changes.

Step Seven: Estimate the costs of planned inputs

Estimating the costs of planned inputs at the beginning of and during the intervention will enable analysis of the cost-effectiveness of the intervention. It is important to review input costs during the intervention to ensure that an accurate analysis of cost-effectiveness is undertaken.

Step Eight (Optional): Identify a comparable area

Comparing changes in the intervention area with what is happening in another area is useful in helping to establish whether any changes are a result of the intervention or could have happened anyway. If management undertake this step, they should identify a comparison area (similar in size and characteristics) not covered by the intervention so that a comparison at the cost implementation stage can be undertaken. It is important to look at the wider area around the intervention for comparison.

2.1.2 Implementation

Step Nine: Implement intervention and gather data

The following are some important aspects to consider for the implementation step of the M&S framework.

Why do you need the information?

Don't collect information just because you can, or you think it seems like a good idea.

- **Contingency planning:** As with planning an evaluation in general, anticipating adjustments and changes to data collection is to be encouraged. It is useful to have a 'plan B' with alternative arrangements for data collection should it become apparent that, for example, time, skills or operational constraints are likely to conspire against planned activities.
- **Triangulation:** The evaluation should already have been designed with regard to the resource requirements of the choices specified and with the 'insurance' of contingency planning in mind. It is also worth noting that 'insurance' also has a methodological component: triangulation. Triangulation means utilizing different methods to cover the evaluation from different angles (for example, assessing the effectiveness of organizational structures of an intervention from the points of view of different actors).
- **Operational rules:** The evaluation should be able to track (and have a record of): what data are being collected, who collects the data, and in what form and location the data are stored. Clear rules about operational procedures should be set out and distributed to all those involved in data collection and analysis. Similarly, it is useful to

draw up 'evaluation contracts' with other stakeholders, especially those supplying information. These contracts should specify the objectives of the evaluation and any guarantees that apply (for example, on confidentiality).

Step Ten: Monitor progress

Make any necessary adjustments to implementation, structures and processes using the pre-implementation steps.

- Monitor inputs.
- Monitor output and outcome data using the performance indicators identified.
- Monitor key milestones.
- Consider whether there are any core tracking data that do not relate directly to the inputs, milestones, outputs or outcomes that it may also be useful to collect and monitor.
- Allow the results of the monitoring to dictate any changes to the ongoing implementation of the intervention.

An example of monitoring the intervention would be: Keep a record of the resources used in running the intervention, e.g. number of staff, who the staff are, how many hours staff work, and costs incurred by the intervention.

Once a framework is established, those running the intervention monitor the data and provide feedback to the relevant information to the management.

2.1.3 Post-implementation

Step Eleven: Analyze data

Before analyzing data, local areas need to ask the following questions:

- Are the data in the right format to apply to the performance indicators?
- Are there in-house facilities for analyzing the data or do they need to be bought in?
- What methods of analysis are there?

Key point

Once the intervention has been implemented and data collected for evaluation, local areas should:

- compare outcome data with the baseline
- calculate the cost-effectiveness of the intervention and evaluation
- calculate the costs of the intervention, including any inputs monitored during the intervention
- examine comparable areas
- examine trends in the wider area and any similar comparison area to assess the impact of the Intervention.

Step Twelve: Report and disseminate results

This step should be a continuation of the M&S process. In this sense, it is important to give those involved in the intervention being evaluated, as well as in the evaluation itself, and project participants a sense of closure of the project and the evaluation, where appropriate, by running concluding feedback events.

More generally, it is important to the reputation, value and impact of the evaluation to give final formal feedback to everybody who has contributed in some way to the evaluation (for example, by sending them a copy of the report or inviting them to a final feedback event). Dissemination should not be restricted to the circulation of a final report – especially in the case of developmental process evaluation. Different stakeholders may require different communication approaches. These might include:

- Short summaries of the evaluation, tailored to different audiences
- Journal articles for other researchers
- Topical articles in the ‘trade’ press
- Workshops for specific audiences
- Feedback seminars for key decision makers.

The results from the evaluation should always be fed back into the future planning of interventions.

2.2 INPUT, PROCESS, OUTPUT AND IMPACT INDICATORS

- Input indicators: describe what goes on in the project (e.g. number of students enrolled in primary stage of education)
- Output indicators: describe the project activity (e.g. number of students who passed the first stage of education)
- Outcome indicators: describe the product of the activity (e.g. number of pupils attending the school in second stage of education)
- Impact indicators: measure change in conditions of the community (e.g. reduced illiteracy in the community)

The distinction between outputs and outcomes is often muddled. An output is often an activity or a deliverable implemented. An outcome is the net result of these outputs

2.3 BASELINE INDICATORS

Baseline indicators are used in the definition of the project strategy. They fall into two categories:

- Objective related baseline indicators: These are directly linked to the wider objectives of the project.
- Context related baseline indicators: These provide information on relevant aspects of the general contextual trends that are likely to have an influence on the performance of the project

2.4 MONITORING METHODS & TOOLS

The following table gives a list of tools for collection of data for M&S. The pros and cons and typical context of use of each tool are also given to ease the process of selection of most relative tool for planners.

Table 2.1: Monitoring Methods and Tools

Methods	Typical Techniques	Typical Context of Use	Pros and Cons
Surveys	Interviews Mapping Questionnaires	All-purpose Operational: mapping interactions between actors Summative: user satisfaction,	Easy to carry out Can produce large numbers of responses Limited depth in

		<p>user impacts</p> <p>Learning: surveys of participants experiences</p>	<p>questionnaire surveys (more depth in interviews and focus groups)</p> <p>Good in outcome-linked evaluations</p>
Field studies	<p>Observation</p> <p>Task analysis</p> <p>Critical incidents</p> <p>Case studies</p> <p>Diaries</p>	<p>All-purpose</p> <p>Summative: how users respond to intervention</p> <p>Operational: how institutional structures operates</p> <p>Learning: retrospective analysis of what happened</p> <p>Comparison of different settings</p>	<p>In-depth data, giving insights on social construction of intervention</p> <p>Time-consuming and skill-intensive</p> <p>Difficult to utilize in outcome-linked evaluations</p>
Modeling	<p>Simulations</p> <p>Soft systems</p>	<p>Usually operational and learning modes</p> <p>Assessing organizational structure, dynamics and change</p> <p>Cost-benefit analysis</p> <p>Optimization of management functions</p>	<p>Can predict possible outcomes to adjustment in uncertain and complex contexts</p> <p>Sometimes highly abstracted. Requires high level of skill</p>
Interpretative	Content analysis	<p>All purpose.</p> <p>Used in operational (analysis of meetings etc), summative (analysis of materials or reports) and learning (deconstruction of program reports).</p>	<p>Deconstruction of 'hidden' meanings and agendas.</p> <p>Rich interpretation of phenomena.</p> <p>Inherent risk of ideological bias.</p>
Critical	Discourse analysis	More theoretical (usually critical theory) based than	As for interpretative methods,

		content analysis. Typically used to assess structure, coherence and value of large-scale programs for learning purposes.	but emphasizes establishment of generalizable laws. Perceived to be unscientific, especially by experimentalist practitioners.
Participatory	Action research	Typically in developmental evaluation mode.	Encourages real engagement of subjects of intervention. Good in highly uncertain contexts. Evaluators sometimes get too involved in intervention itself.

2.5 DATA QUALITY

Quality data is the cornerstone of evaluation. Without it, any results obtained will lack sufficient reliability to form an accurate picture of the efficacy of a program. Data quality can generally be broken down into six categories [11]:

1. Validity – There are precise definitions for all data collected, data sources are validated and there are no sampling or administration errors.
2. Reliability – The survey process and protocols are well defined and consistently applied, all documentation is formulated and correctly implemented.
3. Integrity – Statistical practices are correctly implemented, there is transparency (no perverse incentive to bolster numbers) and ethical standards regarding collection and storage of data are adhered to.
4. Precision – Data contains no bias or errors (transcription and manipulation are common), an error log is maintained.

5. Timeliness – Recording and collection of data follows implementation plan, data is collected inside a timeframe that is appropriate for its subsequent use.
6. Completeness – All data is received as expected and where not, this is recorded and accounted for; procedures are in place for addressing missing data.

2.6 RESOURCING AND CAPACITY BUILDING

Resource and budget allocation for M&S is a key to its success. Before allocating resources and budget for M&S the managers should identify what capacity and infrastructure is available, and what new capacity and infrastructure has to be built.

The second step after resource allocation is capacity building of resources. The monitoring team should know how to collect information from the given set of given data and supervisor should know what to do with the information once it arrives. The resources should be well aware of the objectives of the project [11].

2.7 DOCUMENTATION AND COMMUNICATION

The framework of monitoring indicators, baseline indicators and targets becomes the basis for planning, including budgeting, resource allocation and staffing. The framework can and should be a relevant guide to managers and should be frequently consulted and considered during the process of managing towards the desired outcomes.

SESSION 3: MONITORING AND SUPERVISION IN PAKISTAN – A CASE STUDY

Objectives:

At the end of the session participants will be able to

- Appreciate the need for a comprehensive M&S mechanism in Pakistan
- Understand the existing M&S system in Punjab
- Develop basic structure for an M&S system at any level

What we will learn

- How the M&S system works in Punjab
- The Proposed district level M&S system

Total Time: 3 hours

Agenda

Duration	Activity	What is needed?
1 Hour 30 Minutes	1. Make a presentation on a case study	Presentation or Slides
1 Hour	2. Practical work	Create groups
30 Minutes	3. Discussion	

Introduce the Objective of the session and the activities

Activity 1:

Make a presentation

Activity 2:

Practical work

Activity 2:

- Hold a discussion: “Is there any M&S mechanism is in-place in participant’s districts?”
- Sum up the points

3. MONITORING AND SUPERVISION IN PAKISTAN – A CASE STUDY

3.1 EXISTING MONITORING AND SUPERVISION SYSTEM IN PAKISTAN

Monitoring and Supervision system exists, in some form, in all the provinces and areas of Pakistan. These systems vary significantly from each other due to specific requirements of the concerned province/area, therefore, no harmony is found in the objectives, structure and implementation strategy of these system. The Punjab province has implemented an elaborate Monitoring and Supervision systems which is included in this document as a case study [5].

3.2 MONITORING AND SUPERVISION SYSTEM IN PUNJAB [7],[8]

The Punjab Education Sector Reform Program (PESRP) was initiated with the aim to establish a monitoring and evaluation system based on time series data. The Program Monitoring and Implementation Unit (PMIU) was established to steer the program agenda and it was primarily tasked with monitoring and evaluating the impact of the program, and for overseeing the implementation of certain key components of the reform program.

At the district level, the monitoring and evaluation system of PMIU was supported by the District Monitoring Officers (DMOs) and Monitoring & Evaluation Assistants (MEAs). More than 900 MEAs were recruited in all the districts of the province and their main responsibility was to regularly inspect schools and collect information on student attendance, receipt of stipends and free textbooks, pace and quality of civil works and teachers' presence.

The framework of M&S in Punjab is shown in given diagram:

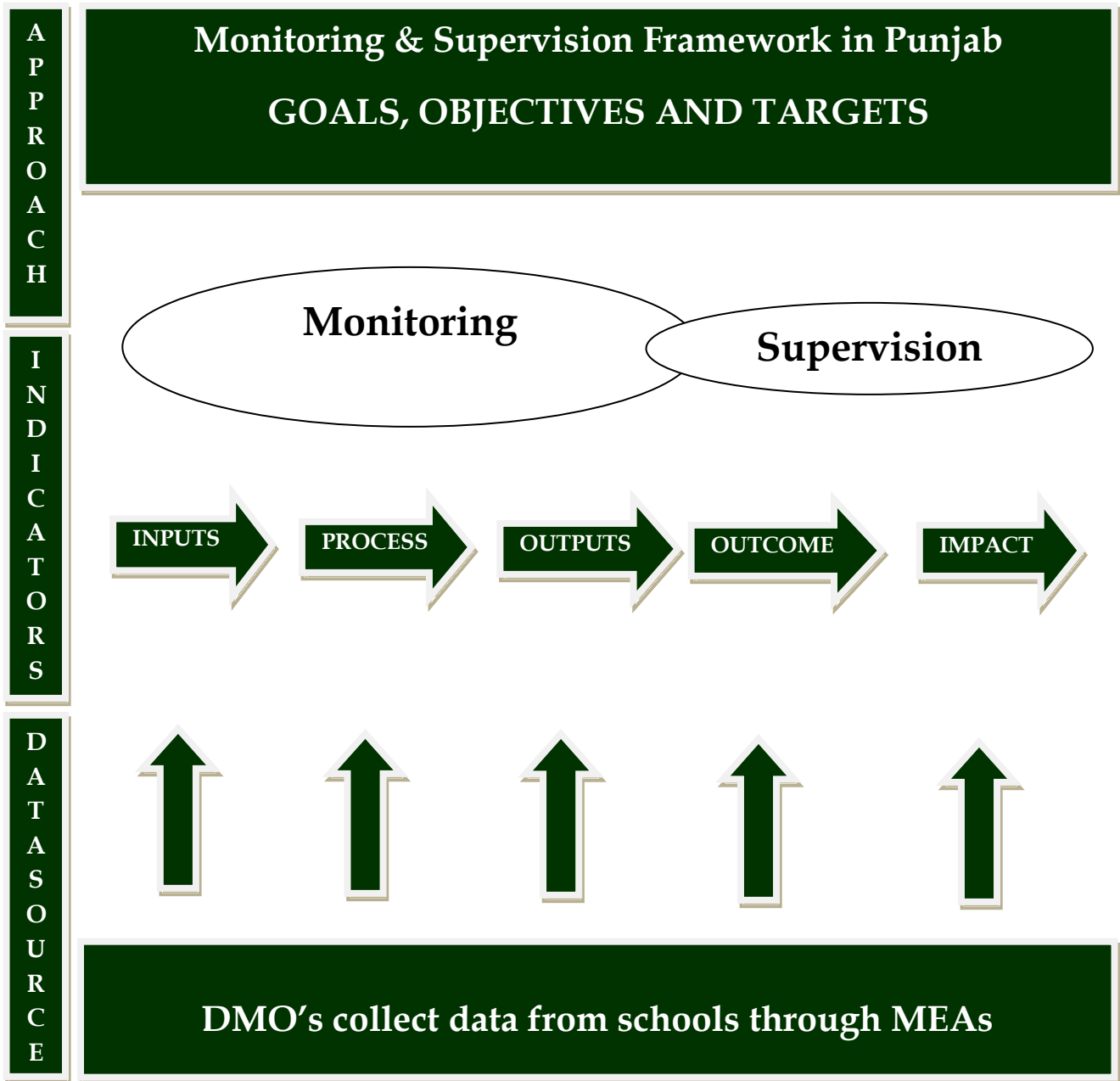


Figure 3.1: Monitoring and Supervision Framework in Punjab

3.2.1 Objectives of the Program

The objective of the program is to monitor and supervise the following activities started by the Government of Punjab in the Province.

1. Provision of missing infrastructure
2. Stipend to girl students
3. Distribution of free text books
4. Restructuring of Punjab Education Foundation
5. Teacher Recruitment
6. Teacher training
7. Reactivation of School Councils
8. Awareness campaign

3.2.2 Monitoring and Supervision Mechanism

The Province of Punjab has adopted the following mechanism for implementation of M&S system.

- Identify the objective of the program
- Identify indicators for monitoring
- Design tools for collection of data
- To monitor the program assign one supervisor to each district, the designation of the supervisor in the province is DMO
- Assign resources to each DMO for collection of required data, the designation of data collector in the province is MEA
- Verify the information collected by monitoring team through Third Party Validation (TPV)
- Compiled data is send to the PMIU for analysis
- The data is analyzed on the basis of composite index, developed by PMIU, for assessing the performance of district. There are twelve parameters as shown in the following table
- Findings are sent to the concerned EDO for necessary action.

The mechanism is shown in the following figure:

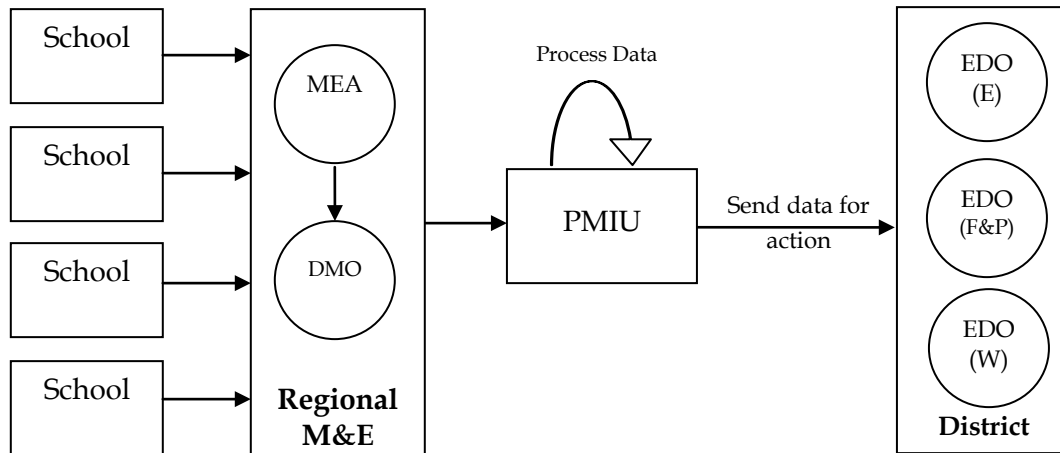


Figure 3.2: Monitoring & Supervision Mechanism

3.2.3 Composite Index

A grouping of indicators, indexes or other factors combined in a standardized way, providing a useful statistical measure of overall system or sector performance over time is called composite index. Usually, a composite index has a large number of factors which are averaged together to form an indicator representative of an overall system. The composite index developed by the province of Punjab consists of twelve parameters to evaluate the performance of a district, as shown in following table. Each indicator used in the index has given a relative weightage to reflect it in overall performance of the district. The weightage given is based on the importance of each indicator on the performance of the district.

Table 3.1: Parameters of Composite Index to Evaluate Performance of a District

Sr. No	Parameter	Weightages
1	Increase in enrolment	8
2	Students presence in school (Attendance gap)	8
3	Functionalizing of School councils	8
4	Missing facilities (Pace of work)	14
5	Missing facilities (Quality of work)	18
6	Free textbook provision	9
7	Stipend distribution	7

Sr. No	Parameter	Weightages
8	Reopening of non-functional schools	3
9	Illegal fee/levies being charged	5
10	School Inspections being done by district staff	5
11	Teacher absenteeism	12
12	School cleanliness	3
	TOTAL	100

3.2.4 How to Calculate Composite Index?

A computerized system, Composite Index Calculator, is developed by PMIU for the calculation of parameters identified in the above mentioned composite index. The parameters of the index are calculated by using the following formulas:

1. Increase in Enrolment

$(E_i / E_s) (8)$ where

- ΔE = Absolute increase in enrolment over the Previous Year in the district
- ∂E = Total No of out of school children in the district
- E_i = $\Delta E / \partial E$
- E_s = Average of E_i s of top five Districts

2. Students presence in school (Attendance gap)

$[(E_p + 1/10 E_t) / E_t] - 0.6 (20)$ where

- E_t = Total Enrolment in schools visited by the Monitors
- E_p = Total students present on the day of visit of Monitors
- Performance Efficiency Floor is 50% and
- Performance Efficiency Ceiling is 90%

3. Functionalizing of School councils

$F_{tr} / F_t (8)$ where

- F_{tr} = Funds transferred by a District Government to Primary and Middle Schools' Councils
- F_t = Funds specified to be transferred to School Councils as per signed TOPs

4. Missing facilities (Pace of work)

(U_m / U_d) (14) where

- U_m = Financial Utilization in percentage terms in nth month of total funds provided
- U_d = Desirable level of financial utilization in the nth month while U_d in % terms in
- $M_1 = 0$ $M_2 = 0$ $M_3 = 0$ $M_4 = 5$ $M_5 = 10$ $M_6 = 15$
 $M_7 = 25$ $M_8 = 40$ $M_9 = 55$ $M_{10} = 70$ $M_{11} = 85$ $M_{12} = 100$

5. Missing facilities (Quality of work)

$\{[(Q_p \times 0.1) + (Q_a \times .75) + Q_g] / Q_t\}$ (18) where

- Q_p = No. of observations termed as Poor by the Monitors
- Q_a = No. of observations termed as Average by the Monitors
- Q_g = No. of observations termed as Good by the Monitors
- $Q_t = Q_p + Q_a + Q_g$

6. Free textbook provision

$\{[(S_b + 1/50 E_t) / E_t] - 0.75\}$ (36) where

- S_b = Total students with Free Text Books on the day of visit by MEAs
 - E_t = Total Enrolment in schools visited by MEAs
- while
- Performance Efficiency Floor is 73%
 - Performance Efficiency Ceiling is 98%

7. Stipend distribution

$\{[(G_t - G_c) / (G_t)] - 0.9\}$ (70) where

- G_t = Total eligible girls in the schools visited by Monitors
 - G_c = Total eligible girls who did not receive stipends
- while
- Performance Efficiency Floor is 90%

8. Reopening of non-functional schools

$\{S_{op} / (S_t / 4)\}$ (3) where

- S_{op} = No of non-functional schools operationalized in last 6 months period
- S_t = Total no of non-functional schools in a district as per May 2005 Census

9. Illegal fee/levies being charged

$$\left\{ \left(\frac{E_t - E_f}{E_t} \right) - 0.5 \right\} (10) \quad \text{where}$$

- E_f = No of students from whom illegal fee is charged in the schools visited by the Monitors
- E_t = Total enrolment in the schools visited by the Monitors

while

- Performance Efficiency Floor is 50%

10. School Inspections being done by district staff

$$\left\{ \left(\frac{V_t}{S_t} \right) - 0.5 \right\} (2) \quad \text{where}$$

- V_t = No of inspection visits by ED's officers in 12 months prior to the Monitors' visit to schools
- S_t = Total schools visited by the Monitors

While

- Performance Efficiency Ceiling is 3 visits per school per Year
- Performance Efficiency Floor is 0.5 visits per school per Year

11. Teacher absenteeism

$$\left\{ \left(\frac{T_p + T_t/10}{T_t} \right) - 0.60 \right\} (30) \quad \text{where}$$

- T_t = Total teachers posted in schools visited by Monitors
- T_p = Total teachers present on the day of visit

While

- Performance Efficiency Floor is 50 %
- Performance Efficiency Ceiling is 90%

12. School cleanliness

$$\left\{ \left(\frac{C_g}{C_t} \right) + \left(\frac{C_p \times 0.1}{C_t} \right) + \left(\frac{C_a \times 0.5}{C_t} \right) \right\} (3) \quad \text{where}$$

- C_p = No. of observations termed as Poor by the Monitors
- C_a = No. of observations termed as Average by the Monitors
- C_g = No. of observations termed as Good by the Monitors
- C_t = $C_p + C_a + C_g$

3.2.5 Analysis of Punjab Monitoring System

As we learned in session 1 that a monitoring system should have following essential components:

1. Objectives and Activities
2. Identify Indicators
3. Collection of information;
4. Information analysis; and
5. Action

Now we will analyze whether the monitoring system implemented in the province of Punjab has these three components.

1. Objectives and Activities

The objectives and activities are well defined in light of the guidance already specified in this document.

2. Identify Indicators

Monitoring indicators are identified and data is collected against these identified indicators.

3. Collection of Information

A data collection tool is designed as shown in Annexure A. Regular mechanism of data collection on monthly basis is available. MEAs collect data from schools through pre-developed data collection instrument on monthly basis.

4. Information analysis

The collected information, from schools, is sent to PMIU for analysis. PMIU performs analysis of this information on the basis of composite index. Comprehensive data entry and analysis software is developed for this purpose.

5. Action

The analyzed information is sent to the concerned EDOs for necessary action. EDOs take action in light of the information.

3.3 PROPOSED MONITORING AND SUPERVISION MODEL AT SCHOOL LEVEL

The M&S system presented above focuses on Monitoring and Supervision at the province level. An M&S system is required at the district level as well, which should provide a framework to evaluate the performance of various schools in the district. Keeping in view this requirement, a proposed M&S system has been developed by National Education Management Information System (NEMIS) which is presented below:

3.3.1 Components of the Proposed Monitoring and Supervision System

The proposed M&S system will consist of following three components:

1. Objectives and Activities
2. Identify Indicators
3. Data collection
4. Data analysis
5. Action

3.3.2 Approach

Our framework will be based on the M&S framework implemented in the province of Punjab, however, the variables, indicators, and data collection instruments would be according to the M&S needs of a district. The system of data collection, and the specific roles assigned to various individuals, departments and organizations have been intentionally kept generic. The specific districts may tailor this system according to their specific needs.

In our proposed system, the monitoring inspector will collect data from schools and send it of the concerned EDOs for processing. After processing and evaluating the data, the EDO will take necessary action to increase the performance of the school. The process is shown in following diagram:

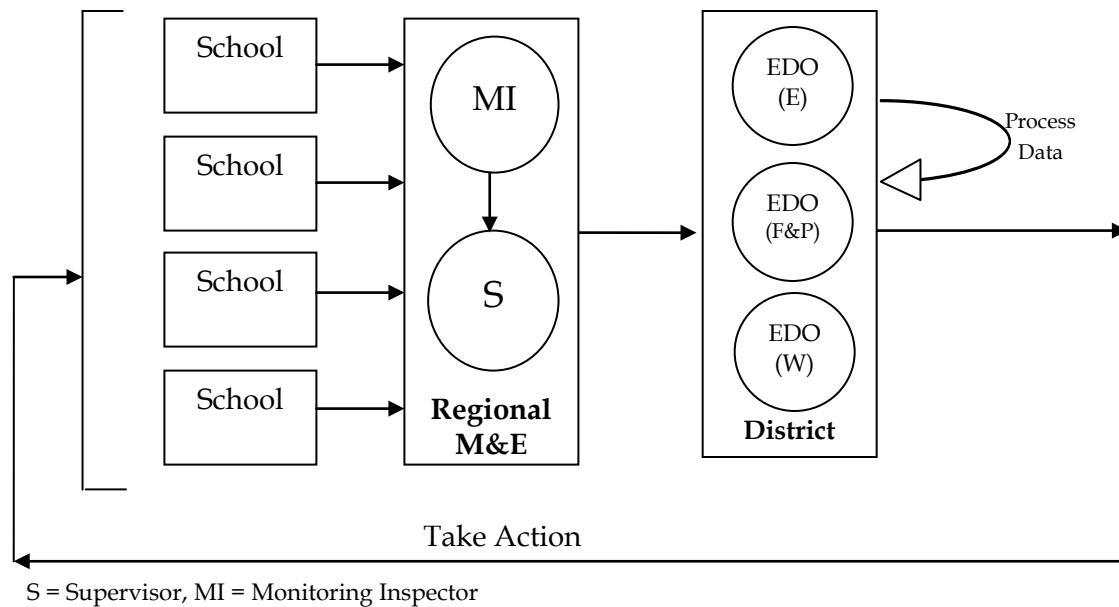


Figure 3.3: Proposed M&S System

3.3.3 Tools used for Proposed System

In this M&S system we will use the following tools:

- Composite Index
- School Inspection Form
- Instruction Manual

The composite index will be used to evaluate the performance of individual school, based on different indicators identified at the start of implementation of the project.

The school inspection form will be used as a tool for collecting the most basic and relevant data, for use in M&S, from individual school. This tool will also be used as mean of collecting consistent data throughout the program.

Instruction manual will be used as a guide tool for monitoring inspectors who will be collecting data from the school. It will guide him/her to

The Instruction manual will be developed to help monitoring inspectors for better understanding the requirements that may apply to the monitoring system by providing

them with a simple, easy-to-use reference that will help them navigate the head of the school, teachers and students.

3.3.4 Monitoring Indicators

We will use the following indicators for the proposed M&S system

1. Attendance gap
2. Retention rate
3. Availability of drinking water
4. Percentage of time when electricity is available during school time
5. Student-Latrines ratio
6. Availability of boundary wall
7. Student-Classroom ratio
8. Pupil-Teacher ratio
9. Teacher absenteeism
10. Non-Teaching staff absenteeism
11. School cleanliness
12. Percentage of teachers with teacher training certification
13. Percentage of teachers using teacher training guides
14. Security of the school
15. Building condition

To collect data for these monitoring indicators an instrument is designed which is attached at **Annexure B**.

3.3.5 Calculation of Monitoring Indicators

A composite index is designed to give an appropriate weightage to each of the above mentioned indicator for ranking the schools. The composite index is shown below:

Table 3.2: Parameters of Composite Index to Evaluate the Performance of a School

Sr. No	Parameter	Weightage
1	Students presence in school (Attendance gap)	12
2	Retention rate	9
3	Availability of drinking water	6
4	Percentage of time when electricity is available during school time	5
5	Student-Latrine ratio	5
6	Availability of boundary wall	4
7	Student-Classroom ratio	9
8	Pupil-Teacher ratio	10
9	Teacher absenteeism	15
10	Non-Teaching Staff absenteeism	3
11	School cleanliness	5
12	Percentage of teachers with teacher training certification	5
13	Percentage of teachers using teacher training guides	5
14	Security of school	4
15	Building condition	3
	TOTAL	100

1. Students presence in school (Attendance gap)

$[\{(E_p + 1/10 E_t) / E_t\} - 0.6] (25)$ where

- E_t = Total Enrolment in schools visited by the Monitors
- E_p = Total students present on the day of visit of Monitors
- Performance Efficiency Floor is 50% and
- Performance Efficiency Ceiling is 90%

2. Retention rate

$[{1-(E_p-E_c / E_p)}]-0.9]$ (80) where

- E_p = Enrolment of the school in previous visit
 - E_c = Enrolment of the school in current visit
- While
- Performance Efficiency Floor is 90%

3. Availability of Drinking Water

$\sum Wa / \sum V$ where

- $\sum Wa$ = No of times when drinking water was available
- $\sum V$ = Total number of visits

4. Percentage of time when electricity is available during school time

(T_e / T_t) (3) where

- T_e = Time during school hours when electricity is available
- T_t = Total school time

5. Student-Latrines ratio

$\sum S / \sum L$ where

- $\sum S$ = Total Number of Students
- $\sum L$ = Total Number of Latrines

Use the following spectrum to assign the weightages to this parameter

<100	101-125	126-150	151-175	176-200	201-225	226-250	251-275	276-300	>300
5	4.5	4	3.5	3	2.5	2	1.5	1	0

6. Availability of boundary wall

$\sum Ba / \sum V$ where

- $\sum Ba$ = No of times when boundary wall was available
- $\sum V$ = Total number of visits

7. Student-Classroom ratio

$\sum S/\sum C$ where

- $\sum S$ = Total Number of Students
- $\sum C$ = Total Number of Classrooms

Use the following spectrum to assign the weightages to this parameter

≤ 40	41-45	46-50	51-55	56-60	61-65	66-70	71-75	76-80	> 80
9	8	7	6	5	4	3	2	1	0

8. Pupil-Teacher ratio

≤ 35	36-40	41-45	46-50	51-55	56-60	61-65	66-70	71-75	76-80	> 80
10	9	8	7	6	5	4	3	2	1	0

9. Teacher absenteeism

$[(T_p + T_t/10)/T_t] - 0.60$ (25) where

- T_t = Total teachers posted in schools visited by Monitors
- T_p = Total teachers present on the day of visit

While

- Performance Efficiency Floor is 50 %
- Performance Efficiency Ceiling is 90%

10. Non-Teaching Staff absenteeism

$[(T_p + T_t/10)/T_t] - 0.60$ (5) where

- T_t = Total non-teaching staff posted in schools visited by Monitors
- T_p = Total non-teaching staff present on the day of visit

While

- Performance Efficiency Floor is 50 %
- Performance Efficiency Ceiling is 90%

11. School cleanliness

$[(C_g) + (C_p \times 0.1) + (C_a \times 0.5)] / C_t$ (6) where

- C_p = No. of observations termed as Poor by the Monitors
- C_a = No. of observations termed as Average by the Monitors

- C_g = No. of observations termed as Good by the Monitors
- C_t = $C_p + C_a + C_g$

12. Percentage of teachers with teacher training certification

$$[\{1 - (T_t - T_c)/T_t\} - 0.5] (10) \quad \text{where}$$

- T_t = Total number of teachers in the school
 - T_c = Teachers having teacher training certificate
- While
- Performance Efficiency Floor is 50%

13. Percentage of teachers using teacher training guides

$$[\{1 - (T_t - T_g)/T_t\} - 0.5] (10) \quad \text{where}$$

- T_t = Total number of teachers in the school
 - T_g = Number of Teachers using teaching guide
- While
- Performance Efficiency Floor is 50%

14. Security of school

$$[\{(S_g) + (S_p \times 0.1) + (S_a \times 0.5)\} / C_t] (6) \quad \text{where}$$

- S_p = No. of observations termed as Poor by the Monitors
- S_a = No. of observations termed as Average by the Monitors
- S_g = No. of observations termed as Good by the Monitors
- S_t = $S_p + S_a + S_g$

Assignment # 1

Evaluate the monitoring and supervision system implemented in the province of Punjab, compare it with the system existing in your province, Identify the points of deviation between the two provincial system.

Assignment # 2

Give your suggestions for the improvement of existing monitoring & supervision system in light of what we have learned in the previous sessions.

Assignment # 3

Prepare your own composite index to measure the performance and quality of a school

Assignment # 4

Design a data collection instrument based on the composite index you developed in previous exercise

Discussion

Open discussion on the work done by the participants in their assignments

SESSION 4: MONITORING INDICATORS

Objectives:

At the end of the session participants will be able to

- Understand the fundamental of monitoring indicators?
- Identify indicators relevant to their work

What we will learn

- Monitoring indicators
- Elements of indicators
- Types of indicators
- Elements of indicators

Total Time: 3 Hours

Agenda

Duration	Activity	What is needed?
1 Hour 30 Minutes	Presentation on monitoring indicators	Presentation or Slides
1 Hour	Group work	Examples
30 Minutes	Discussion & Findings	

Introduce the Objective of the session and the activities

Activity 1:

- Make a presentation

Activity 2:

- Create groups and assign them to identify monitoring indicators for different projects

Activity 3:

- Hold a discussion on identified indicators
- Sum up the points

4. MONITORING INDICATORS

4.1 INTRODUCTION

Definition:

The English Language Dictionary describes an indicator as: “An instrument which gives you information” [18]

“A quantitative or qualitative factor or variable that provides a simple and reliable means to measure achievement, to reflect changes connected to an intervention, or to help assess the performance of a development actor” (DAC Glossary of Key Terms in Evaluation, May 2002) [18]

The choice of indicators will depend on the aims of the program and indicators need to be:

- **Relevant to the program**
- **Feasible to collect**
- **Easy to interpret**
- **Able to track changes over time**
- **Cost effective**
- **Measurable in a timescale relevant to the project**

Indicators are quantities describing specific aspects of a system, important means of conveying information based on available data, quantities making it easier to compare different parts of a system or to track changes over time and useful parameters used in planning calculations.

Indicators are calculated from raw data and in most cases quite simple calculations are used for calculating indicators. Indicators are used for presenting information in a way which is easily understood, for example, the ratio between pupils and teachers. Indicators focus on important issues. Analyses are made much easier using indicators. Many norms in education are expressed as indicators, for example the desired average class sizes, and the number of textbooks per pupil. In short most indicators are easily calculated quantities, powerful in conveying information and very useful for analyses, quantifying norms and several other purposes. Indicators are actually very simple quantities intended to make it easier to see the information contained in the data.

In education like in many other fields indicators are internationally standardized, allowing a comparison across countries and between units within a country. The indicator that everyone in education knows is the marks in the final examination. It allows comparing school leavers across a whole country and is used for a number of decisions on the student's future.

Formal definitions of the concept 'indicator' tend to make the simple concept look very complex. The reader should not be confused by a definition of indicator such as the following: "Indicator: An event, entity or condition that typically characterizes a prescribed environment or situation; indicators determine or aid in determining whether or not certain stated circumstances exist or criteria are satisfied."

With the renewed interest in education as a major investment in human resources and its value in the globalised market, lists of indicators which are generally used have been developed. They cover participation in education, efficiency and output (achievements), quality of process and output, costs and financing etc. The UNESCO Institute of Statistics (UIS) has produced an authoritative compilation of internationally agreed education indicators complete with formulae and references.

4.2 ELEMENTS OF INDICATORS

Indicators have a number of elements or characteristics that we shall briefly describe:

- Variable
- Current value, values over time
- Quality statement
- Target value
- Target group
- Scope (e.g. Geographic)
- Target time (milestones)
- Operational definition
- Measurement and calculation rules

Variable

A variable is a property (or attribute or characteristic) of people or objects or events, where the properties of different people (or object of events) can differ from one another. Examples of variables are size, age, gender and quantity, such as the sizes of persons, or the quantity or number of textbooks. An indicator is a measure of a variable.

Current value, values over time

At any given time, a variable property of an object has one value, and only one. This value might be easy to measure (class size, gender) or difficult (intelligence, learning achievement), however, the variable always has one value. Such values can be recorded at different points in time and then constitute time series.

Quality statement

Quality statements can be values of indicator variables that cannot be expressed as a number, that is, quantitatively. Thus, the indicator “subject mastery in Mathematics” might be described by a series of things students and teachers should know and be able to do.

Target value

When indicators are used for planning purposes, they have a target value in addition to their current value. Target values are values to be achieved after a certain time. Thus the current value of the indicator “Gross enrolment Rate (GER) of girls” was 47% in 2002, its target value according to the Basic Education Development Strategy (BEDS) is 95% in 2015.

Target group

For all indicators the group of schools, grades, people, etc. for whom the indicator is calculated must be mentioned. For example, the gross enrolment rate can be calculated for different ranges of grades, such as grades 1 to 6, 1 to 9 or 1 to 12. It can also be calculated for male, female or male and female. The geographic area to which the indicator applies also needs to be specified.

Target time (milestones)

Indicators are important management instruments. Specifying the time frame in which an indicator should reach a target value – often referred to as setting a milestone – is a particularly important consideration.

Measurement and calculation rules

Finally, any quantitative indicators need measurement and calculation rules. Measurement rules tell what raw data to collect and how to do this. They specify the type of instruments to use or constitute the instrument itself. Calculation rules are expressed as formulae that prescribe how the raw data should be used in the calculations necessary to arrive at the indicator values.

Characteristics of a Good Indicator

The characteristics of a good indicator may be outlined as follows:

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

It should make it possible to:

- Measure how far or how close one is from an objective;
- Identify problematic or unacceptable situations;
- Meet policy concerns, and to answer the questions leading to its choice;
- Compare its value to a reference value, to a standard or to itself, as computed for a different observation period.

4.3 TYPE OF INDICATORS [18]

We distinguish two types of indicators:

1. Direct indicators, which refer directly to the subject they have been developed for
2. Indirect indicators, which only refer in an indirect way to the subject

Direct indicators

These indicators directly pinpoint at the subject of interest. This is often the case with operational and more technical subjects. What the manager wants to know, can be (and generally is) measured directly.

Indirect indicators

Indirect indicators (or proxy-indicators) refer in an indirect way to the subject of interest. There can be several reasons to formulate indirect indicators:

- The subject of interest cannot be measured directly. This is particularly the case for more qualitative subjects, like behavioral change, living conditions, good governance, etc.;
- The subject of analysis can be measured directly, but it is too sensitive to do so, for example level of income;
- The use of an indirect indicator can be more cost-effective than the use of a direct one.

4.4 WHAT SHOULD BE MEASURED?

In order to construct a good indicator, one has to be able to identify the most interesting phenomena to measure, which will depend, inter alia, on the country's choices, as inspired by the objectives of its education policy. The relevance of some indicators is more universal, and also more descriptive, but in every case their importance will depend on the context. The enrolment rate in primary education is a good indicator. But when a country has full school attendance, it loses much of its importance. No surprise, then, that the net enrolment rate at the primary level is

certainly present in the indicator documents for developing countries, but does not appear in developed countries reports. On the other hand, the latter document contains an indicator of enrolment among children aged two to five years, which is of less importance for developing countries reports [4].

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

4.5 HOW TO CLASSIFY INDICATORS? [4]

The indicators can be classified into following categories:

Impact indicators: Long-term results

Measure the quality and quantity of long-term results generated by program outputs (e.g. measurable change in quality of life, reduced incidence of diseases, increased income for women, reduced mortality).

In the absence of more definite impact indicators, early pointers of impact may be used during project implementation to indicate progress toward achieving project objectives. For example, in many cases, output indicators and indicators of risk factors can serve as suitable intermediate or leading indicators of impact.

Outcome indicators: Medium-term results

Measure the intermediate results generated by program outputs. They often correspond to any change in people's behavior as a result of program, e.g. the use of oral re-hydration therapy.

Output indicators: Short-term results

Measure the quantity, quality, and timeliness of the products — goods or services — that are the result of an activity/ project/program.

Process indicators:

Measure the progress of activities in a program/ project and the way these are carried out (for example, referring to the degree of participation).

Input indicators:

Measure the quantity, quality, and timeliness of resources — human, financial and material, technological and information — provided for an activity/project/program.

Baseline indicators

Baseline indicators should come from officially recognized sources of information and targets need to be established and agreed against these baseline indicators. The classification of baseline indicators according to age, gender, rural, urban, literate and illiterate divides can help highlight significant disparities and the setting of targets that aim to close the gaps.

4.6 ACCESS, EQUITY AND QUALITY INDICATORS

Access

Access means reach, a passage, an entrance or a doorway to education. It has two-way role [14]:

1. Physical approach: Availability of educational services for population at various levels, starting from primary to tertiary levels.
2. Utilization of existing facilities: it is not only essential to provide education facilities but it is important that these facilities are utilized. The utilization is measured by various rates like GER, NER, GIR, NIR etc

Participation, a related concept, means that an individual has had the opportunity to experience an education or training opportunity. Each child has a right to education and to have access to education institution.

Equity

In Education, the extent to which access and opportunities for children and adults are just and fair. This implies reduction in disparities based on gender, poverty, residence, ethnicity, language, location, or other characteristics.

Any indicator can be calculated from the viewpoint of any one or more of the above divides. For example Gender Parity Index (GPI) can be calculated to highlight the equity based on gender. GPI on its own is meaningless unless used in the context of another indicator e.g. GPI for enrollment, GPI for NER, etc.

Quality

Quality is one of the most important dimensions of an education system. There are probably as many different ideas about quality as there are schools. Quality is creating an environment where educators, parents, government officials, community representatives, and business leaders work together to provide students with the resources they need to meet current and future academic, business and changes [15].

Some important indicators to measure quality of education are: Pupil-teacher ratio, student-classroom ratio, number of students per textbook, number of teachers by professional qualification, number of teachers by academic qualification etc.

SESSION 5: HOW TO CALCULATE INDICATORS? A CASE STUDY: EFA INDICATORS

Objectives:

At the end of the session participants will be able to

- Understand the significance of EFA indicators?
- A first level introduction to Millennium Development Goals (MDGs) and related indicators.

What we will learn

- The purpose and focus of each indicator
- How to Calculate various EFA indicators

Total Time: 3 Hours

Agenda

Duration	Activity	What is needed?
1 Hour 30 Minutes	Presentation on how to calculate monitoring indicators	Presentation or Slides
1 Hour	Group work	Examples
30 Minutes	Discussion & Findings	

Introduce the Objective of the session and the activities

Activity 1:

- Make a presentation

Activity 2:

- Create groups and give them assignment to calculate the identified indicators

Activity 3:

- Hold a discussion on indicators
- Sum up the points

5. HOW TO CALCULATE INDICATORS? A CASE STUDY: EFA INDICATORS [10]

Education for All (EFA) is a global movement led by UNESCO, aiming to meet the learning needs of all children, youth and adults by 2015. The EFA goals also contribute to the global pursuit of the six Millennium Development Goals (MDGs). Keeping in view the importance of EFA indicators in education system, this session will focus on the calculation of these indicators. Following are the six MDG goals along with their respective indicators.

5.1 GOAL 1: EARLY CHILDHOOD CARE AND EDUCATION

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

Table 5.1: List of Core MDG EFA indicators in Goal 1

1	Core EFA MDA Indicators	Suggested disaggregation (If data are available)	Data Source
1.1	Gross Enrolment Ratio (GER) in Early Childhood Care and Education (ECCE) Programs	<ul style="list-style-type: none"> • Sex • Geographical region • Urban/Rural • Pre-school/community based • Other social and economic disaggregation such as <ul style="list-style-type: none"> ○ Ethnicity, caste ○ Language ○ Disabilities ○ Mother's education ○ Income quintile 	<ul style="list-style-type: none"> • Annual school census • Household surveys
1.2	Percentage of New Entrants to Primary Grade 1 who have Attended Some Form of Organized ECCE Program	<ul style="list-style-type: none"> • Sex • Geographical region • Urban/Rural • Public, private • Pre-school/community based • Other social and economic disaggregation such as <ul style="list-style-type: none"> ○ Ethnicity, caste ○ Language ○ Disabilities ○ Mother's education 	<ul style="list-style-type: none"> • Annual school census • Household surveys

1	Core EFA MDA Indicators	Suggested disaggregation (If data are available)	Data Source
		<ul style="list-style-type: none"> ○ Income quintile 	
1.3	Private Centre Enrolment as percentage of Total Enrolment in ECCE Programs	<ul style="list-style-type: none"> • Sex • Geographical region • Urban/Rural 	<ul style="list-style-type: none"> • Annual school census • Household surveys
1.4	Percentage of Trained Teachers in ECCE Programs	<ul style="list-style-type: none"> • Sex • Geographical region • Urban/Rural • Public, private 	<ul style="list-style-type: none"> • Annual school census • Household surveys

5.1.1 Gross Enrolment Ratio (GER) in Early Childhood Care and Education Programs

Definition and Purpose

Total number of children enrolled in early childhood care and education programs, regardless of age, expressed as a percentage of the population in the relevant official age-group, otherwise the age-group 3 to 5.

Method of Calculation and Data Required

Divide the number of children enrolled in ECCE programs, regardless of age, by the population in the relevant official age-group (otherwise the age-group 3 to 5) in a given school-year, and multiply by 100.

$$GER_{EC}^t = \frac{E_{EC}^t}{P_{EC}^t} \times 100 \quad \text{or} \quad GER_{EC}^t = \frac{E_{EC}^t}{P_{3-5}^t} \times 100$$

Where,

GER_{EC}^t = Gross enrolment ratio in early childhood development programmes in school-year t

E_{EC}^t = Number of children enrolled in early childhood development programmes in school-year t

P_{EC}^t = Population in relevant official age-group concerned with ECCE in school-year t

Interpretation

A high gross enrolment rate in ECCE programs indicates adequate capacity for this type of program within the country. A gross enrolment rate approaching or surpassing 100 per cent indicates that a country is, in principle, able to accommodate all children in the official age-group that should take part in ECCE programs.

5.1.2 Percentage of New Entrants (NE) to Primary Grade 1 who have Attended Some Form of Organized ECCE Programme

Definition and Purpose

Number of new entrants to primary Grade 1 who have attended some form of organized ECCE program equivalent to at least 200 hours, expressed as a percentage of total number of new entrants to primary Grade 1.

Method of Calculation and Data Required

Divide the number of new entrants to Grade 1 of primary education who have attended some form of organized early childhood development program by the total number of new entrants to primary Grade 1 in a given school-year, and multiply by 100.

$$\%NE_{I,EC}^t = \frac{NE_{I,EC}^t}{NE_I^t} \times 100$$

Where,

$\%NE_{I,EC}^t$ = Percentage of new entrants to grade 1 of primary education in school-year t who have attended some form of organized early childhood care and education programme;

$NE_{I,EC}^t$ = Number of new entrants to grade 1 of primary education in school-year t who have attended some form of organized early childhood care and education programme;

NE_I^t = Total number of new entrants to primary grade 1 in school-year t.

Interpretation

A high percentage of new entrants to Grade 1 of primary education who have attended some form of organized ECCE program indicate that a large proportion of these children have participated in organized learning activities prior to entering primary

school. The indicator may also be useful in highlighting disparities in access to ECCE across different regions and among different populations.

5.1.3 Private Centre Enrolment as Percentage of Total Enrolment in ECCE Programs

Definition and Purpose

The total number of enrolment in private institutions and centers expressed as a percentage of total number of enrolment in ECCE programs. This indicator helps to assess the proportion of private sector involvement in ECCE programs.

Method of Calculation and Data Required

Divide the total number enrolment in private institutions and centers by the total number of enrolment in ECCE programs in a given school-year, and multiply by 100.

Interpretation

A high percentage of enrolment in private institutions and centers indicates a significant role and involvement of the private sector. A low GER and high enrolment in the private sector indicates there is a need for the government to allocate more resources and give more attention to expand its ECCE programs.

5.1.4 Percentage of Trained Teachers in ECCE Programs

Definition and Purpose

The number of teachers who are trained to teach pre-school children, expressed as a percentage of the total number of teachers at ECCE programs.

Method of Calculation and Data Required

Divide the number trained teachers by the total number of teachers in ECCE programs in a given school-year, and multiply by 100.

Interpretation

A high percentage indicates the availability of better quality of ECCE services and programs in the country.

5.2 GOAL 2: ACHIEVING UNIVERSAL PRIMARY/BASIC EDUCATION

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

Table 5.2: List of core indicators in Goal 2

2	Core EFA MDA Indicators	Disaggregation	Data Sources
2.1	Gross Intake Rate (GIR) in Primary Education	<ul style="list-style-type: none"> • Sex • Geographical region • Urban/Rural • Other social and economic disaggregation such as <ul style="list-style-type: none"> ○ Ethnicity, caste ○ Language ○ Disabilities 	<ul style="list-style-type: none"> • Annual school census • Household surveys
2.2	Net Intake Rate (NIR) in Primary Education	<ul style="list-style-type: none"> • Sex • Geographical region • Urban/Rural • Other social and economic disaggregation such as <ul style="list-style-type: none"> ○ Ethnicity, caste ○ Language ○ Disabilities 	<ul style="list-style-type: none"> • Annual school census • Household surveys
2.3	Gross Enrolment Ratio (GER) in: <ul style="list-style-type: none"> • primary education • secondary education 	<ul style="list-style-type: none"> • Sex • Geographical region • Urban/Rural • Other social and economic disaggregation such as <ul style="list-style-type: none"> ○ Ethnicity, caste ○ Language ○ Disabilities 	<ul style="list-style-type: none"> • Annual school census • Household surveys
2.4	Net Enrolment Ratio (NER) in:	<ul style="list-style-type: none"> • Sex • Geographical region • Urban/Rural • Other social and 	<ul style="list-style-type: none"> • Annual school census

2	Core EFA MDA Indicators	Disaggregation	Data Sources
	<ul style="list-style-type: none"> • primary education • secondary education 	economic disaggregation such as <ul style="list-style-type: none"> ○ Ethnicity, caste ○ Language ○ Disabilities 	<ul style="list-style-type: none"> • Household surveys
2.5	Repetition Rates (RR) by Grade in Primary Education	<ul style="list-style-type: none"> • Sex • Geographical region • Urban/Rural • Public/private • Other social and economic disaggregation such as <ul style="list-style-type: none"> ○ Ethnicity, caste ○ Language ○ Disabilities 	<ul style="list-style-type: none"> • Annual school census
2.6	Survival Rate to Grade 5	<ul style="list-style-type: none"> • Sex • Geographical region • Urban/Rural • Public/private • Other social and economic disaggregation such as <ul style="list-style-type: none"> ○ Ethnicity, caste ○ Language ○ Disabilities 	<ul style="list-style-type: none"> • Annual school census
2.7	Transition Rate to Secondary Education	<ul style="list-style-type: none"> • Sex • Geographical region • Urban/Rural • Public/private • Other social and economic disaggregation such as <ul style="list-style-type: none"> ○ Ethnicity, caste ○ Language ○ Disabilities 	<ul style="list-style-type: none"> • Annual school census • Household surveys
2.8	Percentage of Trained Teachers at Primary Education	<ul style="list-style-type: none"> • Sex • Geographical region • Urban/Rural • Public, private • Number of teachers with training for special education 	<ul style="list-style-type: none"> • Annual school census • Household surveys
2.9	Pupil-Teacher Ratio at Primary Education	<ul style="list-style-type: none"> • Geographical region • Urban/Rural • Public, private 	<ul style="list-style-type: none"> • Annual school census • Household surveys

2	Core EFA MDA Indicators	Disaggregation	Data Sources
2.10	Public Expenditure on Primary Education as Per cent of Total Public Expenditure on Education	<ul style="list-style-type: none"> National level indicator 	<ul style="list-style-type: none"> Government Budget reports

5.2.1 Gross Intake Rate (GIR) in Primary Education

Definition and Purpose

Total number of new entrants in the first grade of primary education, regardless of age, expressed as a percentage of the population at the official primary school-entrance age.

Method of Calculation and Data Required

$$GIR_{Pri, t} = \frac{\text{Number of new entrants to Grade 1 (all ages) in school-year } t}{\text{Population of the official primary school-entrance age in school-year } t} \times 100$$

The above formula assumes that data on new entrants is available. If data on new entrants is not available, the new entrants to Grade 1 can be estimated by subtracting the number of Grade 1 repeaters from the total enrolment in Grade 1. This is shown below:

$$GIR_{Pri, t} = \frac{\text{Number of pupils in Grade 1 in school-year } t) - (\text{Number of repeaters in Grade 1 in school-year } t)}{\text{Population of the official primary school-entrance age in school-year } t} \times 100$$

Interpretation

A high Gross Intake Rate indicates in general a high degree of access to primary education. As this calculation includes all new entrants to first grade, including over-aged and under-aged children entering primary school for the first time, the GIR can be more than 100 per cent.

5.2.2 Net Intake Rate (NIR) in Primary Education

Definition and Purpose

The net intake rate is the ratio of new entrants in the first grade of primary education who are of the official primary school-entrance age, to the total population of the same age expressed as a percentage.

Method of Calculation and Data Required

$$GIR_{Pri,t} = \frac{(\text{Number of pupils in Grade 1 in school-year } t) - (\text{Number of repeaters in Grade 1 in school-year } t)}{\text{Population of the official primary school-entrance age in school-year } t} \times 100$$

Interpretation

A high NIR indicates a high degree of access to primary education for the official primary school-entrance age children and a high proportion of pupils of the same age in the first primary grade. It is a measure of how close countries are to universalizing primary education.

Note also the difference between the apparent intake rate and the net intake rate. The numerator for the apparent intake rate is the total number of new entrants regardless of age. The numerator for the net intake rate is the total number of new entrants for a specific primary school-entrance age. The denominator for both rates is the total population of the official primary school-entrance age. The net intake rate is always less than or equal to the apparent intake rate.

5.2.3 Gross Enrolment Ratio (GER)

Definition and Purpose

The GER is the total enrolment for a particular education level (primary or secondary), regardless of age, expressed as a percentage of the eligible official school-age population of that particular education level in a given school-year.

Method of Calculation and Data Required

$$\text{GER}_t = \frac{\text{Total enrolment at the specific education level in school-year } t}{\text{Population of the official age group of specific education level in school-year } t} \times 100$$

Interpretation

The GER is the most commonly used indicator to measure coverage. It shows the overall coverage of an education system in relation to the population eligible for participation in the system. It is useful for those who are interested in the overall participation of the school-age population in a particular education level. It can be used for comparing different districts, provinces, regions, urban and rural provinces, boys and girls, etc.

The gross enrolment ratio can be over 100 per cent, where the number of over-aged children in schools is high relative to children of the official age for the level. A high GER indicates a high degree of participation, whether the students belong to the official age-group or not. A GER value approaching or exceeding 100 per cent indicates a country is, in principle, able to accommodate all of its primary school-age population. It does not, however, indicate the proportion of that population actually enrolled.

5.2.4 Net Enrolment Ratio (NER)

Definition and Purpose

The enrolment in a particular education level of the official school age-group expressed as a percentage of the corresponding population. The NER gives a more precise measurement of the extent of participation in primary education of children belonging to the official primary school age.

Method of Calculation and Data Required

$$\text{NER}_t = \frac{\text{Enrolment of official age group in the in school-year } t}{\text{Population of the official school age group in school-year } t} \times 100$$

Interpretation

A high NER in primary education denotes a high degree of participation in primary education of the official primary school age-group. The NER's maximum value is 100 per cent. An NER in primary education that increases over time reflects improving participation at the primary level of education. The difference between the GER and the NER measures the incidence of under-age and over-age enrolment.

5.2.5 Repetition Rates (RR) by Grade in Primary Education

Definition and Purpose

The repetition rate is the proportion of pupils who repeat a grade. It measures the rate at which pupils repeat grades. A high repetition rate implies high wastage ratio. It blocks access to schooling for other children since the school space is occupied by repeaters.

Method of Calculation

$$RR_{g,t} = \frac{\text{Number of pupils repeating grade } g, \text{ in school-year } t+1}{\text{Number of pupils enrolled in grade } g, \text{ in school-year } t} \times 100$$

As a particular example, if you would like to find out the repetition rate of grade 3 in school year of 2004, the formula would be:

$$RR_{3,2004} = \frac{\text{Number of pupils repeating grade 3, in school-year 2005}}{\text{Number of pupils enrolled in grade 3, in school-year 2004}} \times 100$$

Interpretation

Repetition rates should ideally approach zero per cent. High Repetition Rates indicate problems in the internal efficiency of the education system and possibly a poor level of instruction. When compared across grades, the patterns can indicate specific grades with relatively higher repetition rates. In some cases, low repetition rates merely reflect policies or practices of automatic promotion. The maximum repetition rate and

the number of grade repetitions allowed may in some cases be determined by the education authorities in order to cope with limited capacity at certain grade levels and to increase the flow of pupils through the education cycle.

5.2.6 Survival Rate to Grade 5

Definition and Purpose

Survival Rate to Grade 5 is the proportion of a cohort of pupils who reached Grade 5 expressed as a percentage of pupils enrolled in the first grade of a given cycle in a given school year.

Method of Calculation

Divide the total number of pupils belonging to a pupil cohort who reached Grade 5 of primary education by the number of pupils in the original pupil cohort, i.e. those pupils who enrolled together in the first grade of primary education, and multiply by 100.

Usually this indicator is derived using reconstructed student cohort flow model. It requires the following data.

- Number of students enrolled by grade for two consecutive years
- Number of repeaters by grade in the second school year
- Number of graduates (successful completers) in the first school year
- Number of net transfer students (optional)

Interpretation

A Survival Rate approaching 100 per cent indicates a high level of retention and low dropout incidence. Survival Rate may vary from grade to grade, giving indications of grades with relatively more or less dropouts. The distinction between survival rate with and without repetition is necessary to compare the extent of wastage due to dropout and repetition.

5.2.7 Transition Rate (TR) to Secondary Education

Definition and Purpose

Transition Rate is the proportion of students that progress from the final grade of one level to the first grade of the next level, expressed as a percentage of those enrolled in the final grade of the preceding school year.

Method of Calculation

$$TR_{\text{Pri to Sec, } t} = \frac{\text{New entrants to the first grade of the next higher level at school year } t}{\text{Number of pupils in the last grade of the previous level at school year } t-1} \times 100$$

When data on new entrants to the next higher grade is not available, subtract the number of repeaters from the total enrolment of the first grade of the next higher level to get the number of new entrants into the first grade of the next higher level. Divide the result by the total number of pupils in the last grade of the first level in the previous year.

$$TR_{\text{Pri to Sec, } t} = \frac{E - R}{\text{Number of pupils in the last grade of the previous level at school year } t-1} \times 100$$

1. E = Enrolment of the first grade of the next higher level at year t
2. R = Repeaters of the first grade of the next higher level at year t

Interpretation

High Transition Rates indicate high access or transition from one level of education to the next. It also reflects the intake capacity of the next level of education. Inversely, low transition rates indicate problems in bridging between two cycles or levels of education, due to either deficiencies in the examination system or inadequate admission capacity in the higher cycle or level of education, or both.

5.2.8 Percentage of Trained Teachers at Primary Education

See details on the EFA Goal 6 (Quality) section

5.2.9 Pupil-Teacher Ratio at Primary Education

See details on EFA Goal 6 (Quality) section

5.2.10 Public Expenditure on Primary Education as a Per cent of Total Public Expenditure on Education

Definition and Purpose

Public expenditure on primary education expressed as a percentage total public expenditure on education. It indicates government emphasis given to investments in primary education.

Method of Calculation and Data Required

$$\% \text{ of Public Expenditure}_{\text{pri, t}} = \frac{\text{Public expenditure on primary education programs}}{\text{Total public expenditure on education at year t}} \times 100$$

Interpretation

A high percentage of public expenditure on primary education program as a proportion of the total education budget indicates a high degree of government interest and priority for this area.

5.3 GOAL 3: LIFE SKILLS AND LIFELONG LEARNING

Ensuring that the learning needs of all young people and adults are met through equitable access to appropriate learning and life skills programs

Table 5.3: List of Core EFA MDA Indicators

3	Core EFA MDA Indicators	Suggested disaggregation (If data are available)	Data Source
3.1	Youth Literacy Rate (15-24 years)	<ul style="list-style-type: none"> • Sex • Geographical region • Urban/Rural • Other social and economic disaggregation such as <ul style="list-style-type: none"> ○ Ethnicity 	<ul style="list-style-type: none"> • Household surveys • Population

3	Core EFA MDA Indicators	Suggested disaggregation (If data are available)	Data Source
		<ul style="list-style-type: none"> ○ Language ○ Disabilities 	census
3.2	Gross Enrolment Ratio in Technical, and Vocational Education and Training (TVET)	<ul style="list-style-type: none"> • Sex • Geographical region • Private/public • Other social and economic disaggregation such as <ul style="list-style-type: none"> ○ Ethnicity ○ Language ○ Disabilities 	<ul style="list-style-type: none"> • MoE • Ministry of Labour • Ministry of Youth and Sports • Relevant ministries
3.3	Transition rates between primary and secondary systems, and secondary to higher education systems.	<ul style="list-style-type: none"> • Sex • Level of education • Geographical region • Urban/Rural • Public/Private • Other social and economic disaggregation such as <ul style="list-style-type: none"> ○ Ethnicity ○ Language ○ Disabilities 	<ul style="list-style-type: none"> • Annual school census • Household survey

5.3.1 Youth Literacy Rate

See details on EFA Goal 4 (Literacy) Section

5.3.2 Gross Enrolment Ratio in Technical and Vocational Education and Training (TVET)

Definition & Purpose

The GER is a percentage of the number of enrolments in TVET for ages 16 to 22, in relation to the population by theoretical age according to ISCED level.

Method of Calculation and Data Required

$$= \frac{\text{Number of enrolments in TVET at a particular age}}{\text{Total population of theoretical age}} \times 100\%$$

Interpretation

A high, and growing, TVET GER will indicate that young people are increasingly availing of this form of post-secondary education.

5.3.3 Transition rates between primary and secondary systems and secondary and higher education systems

(Refer also to Indicator 2.2 for EFA Goal 2 (UPE))

Definition & Purpose

The number of pupils (or students) admitted to the first grade of a higher level of education in a given year, expressed as a percentage of the number of pupils (or students) enrolled in the final grade of the lower level of education in the previous year.

Method of Calculation and Data Required

$$TR = \frac{\text{New entrants to the first grade of the next higher level (year } y)}{\text{Pupils in the last grade of the previous level year (} y - 1)} \times 100$$

When data on new entrants to the next higher grade is not available, subtract the number of repeaters from the first grade of the next higher level to get the number of new entrants into the first grade of the next higher level. Divide the result by the total number of pupils in the last grade of the first level in the previous year.

$$TR = \frac{\begin{array}{c} | \\ E - R \end{array}}{\text{Pupils in the last grade of the previous level year (} y - 1)} \times 100$$

E = Enrolment of the first grade of the next higher level at year y

R = Repeaters of the first grade of the next higher level at year y

Interpretation

High transition rates indicate a high level of access or transition from one level of education to the next. They also reflect the intake capacity of the next level of education. Inversely, low transition rates can signal problems in the bridging between two cycles or levels of education resulting in fewer individuals with the skills needed for income growth as well as social development.

5.4 GOAL 4: LITERACY

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

Table 5.4: List of Core MDA EFA Indicators

4	Core EFA MDA Indicators	Disaggregation	Data Source
4.1	Adult Literacy Rate (15 years and above)	<ul style="list-style-type: none"> • Sex • Geographical region • Urban/Rural • Other social and economic disaggregation such as <ul style="list-style-type: none"> ○ Ethnicity, caste ○ Language ○ Disabilities 	<ul style="list-style-type: none"> • Population censuses • Household surveys • Literacy surveys
4.2	Youth Literacy Rate (age 15-24 year olds)	<ul style="list-style-type: none"> • Sex • Geographical region • Urban/Rural • Other social and economic disaggregation such as <ul style="list-style-type: none"> ○ Ethnicity, caste ○ Language ○ Disabilities 	<ul style="list-style-type: none"> • Population censuses • Household surveys • Literacy surveys
4.3	Gender Parity Index for Adult Literacy	<ul style="list-style-type: none"> • Geographical region • Urban/Rural • Other social and economic disaggregation such as <ul style="list-style-type: none"> ○ Ethnicity, caste ○ Language ○ Disabilities 	<ul style="list-style-type: none"> • Population censuses • Household surveys • Literacy surveys

5.4.1 Adult Literacy Rate (15 years and above)

Definition and Purpose

Adult literacy rate is defined as the percentage of the population aged 15 years and over who can both read and write with understanding a short simple statement related to everyday life.

Calculation Method and Data Required

$$\text{Adult Literacy Rate (15 years and above)} = \frac{\text{Literate population aged 15 years and over in year t}}{\text{Population aged 15 years and over in year t}} \times 100$$

Interpretation

A high adult literacy rate suggests an effective primary education system and/or adult literacy programs that have enabled a large proportion of the population to acquire the ability of using the written word (and making simple arithmetic calculations) in daily life. The literacy rate, however, cannot exceed 100 per cent.

5.4.2 Youth Literacy Rate (age 15-24 year olds)

Definition and Purpose

The literacy rate of 15–24 year-olds or the youth literacy rate is the percentage of the 15–24 years-old population who can both read and write with understanding a short simple statement on everyday life.

Method of Calculation

$$\text{Youth Literacy Rate (age 15-24 year olds)} = \frac{\text{Literate population aged 15-24 years old in year t}}{\text{Population aged 15-24 years old in year t}} \times 100$$

Interpretation

A high youth literacy rate suggests an effective primary education system that has enabled a large proportion of the young population to acquire the ability of using the written text and making simple arithmetic calculations in daily life.

5.4.3 Gender Parity Index for Adult Literacy

Definition and Purpose

The Literacy Gender Parity Index is the ratio of the female literacy rate to the male literacy rate for the 15 years and above age group.

Method of Calculation

$$\text{Gender Parity Index for Adult Literacy} = \frac{\text{Adult female literacy rate}}{\text{Adult male literacy rate}} \times 100$$

Interpretation

When the literacy gender parity index shows a value equal to 1, female literacy and male literacy rates are equal. A value less than 1 indicates that proportionately fewer women than men have basic literacy skills, and conversely, a value exceeding 1 indicates that proportionately fewer men have basic literacy skills.

5.5 GOAL 5: GENDER PARITY AND EQUALITY

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

Table 5.5: List of Core EFA MDA Indicators

5	Indicators	Disaggregation	Data Source
5.1	Gender Parity Index for:	<ul style="list-style-type: none"> • Geographical region • Urban/Rural • Other social and economic disaggregation such as <ul style="list-style-type: none"> ○ Ethnicity, caste ○ Language ○ Disabilities 	<ul style="list-style-type: none"> • Annual school census • Population censuses • Household and specialized surveys
5.9	Percentage of Female Enrolment	<ul style="list-style-type: none"> • Geographical region • Urban/Rural • Public/private 	<ul style="list-style-type: none"> • Annual school census • Various institutional data collections
5.10	Percentage of Female Teachers in		
5.11	Percentage of repetition of girls and boys in primary and secondary levels		

5.5.1 GPI for Adult Literacy

Definition and Purpose

The Literacy GPI is used to assess gender differences in literacy rates among adult populations. It is calculated as the ratio of literacy rate for females divided by the literacy rate for males. It would be wrong to mention as GPI for the ratio of absolute numbers, and it must be presented as a ratio.

Method of Calculation and Data Required

$$\text{Gender Parity Index for Adult Literacy} = \frac{\text{Adult female literacy rate}}{\text{Adult male literacy rate}} \times 100$$

Interpretation

A value of less than one indicates a difference in favor of males; a value above one indicates a difference in favor of females; a value close to one indicates gender parity. However it can be assumed that there is no disparity if GPI value ranges between 0.97 and 1.03. Great disparity is often expected amongst older populations, gaps that should have been significantly narrowed over time through universal primary education.

5.5.2 GPI for GER in ECCE

Definition and Purpose

The GPI for GER in ECCE is used to assess gender differences in access to organized early learning. It is calculated as the ratio of GER in ECCE for girls divided by the rate for boys.

Method of Calculation and Data Required

$$\text{Gender Parity Index for GER in ECCE} = \frac{\text{GER in ECCE (Female)}}{\text{GER in ECCE (Male)}} \times 100$$

Interpretation

A value of less than one indicates a difference in favor of males; a value above one indicates a difference in favor of females; a value close to one indicates gender parity. However it can be assumed that there is no disparity if GPI value ranges between 0.97 and 1.03. In many countries, one will find girls enrolled in government run or community based centers while boys are found in more expensive private centres.

5.5.3 GPI for Gross Intake Rate (GIR) in Primary Education

Definition and Purpose

The GPI for Primary GIR is used to assess gender differences in intake rates between boys and girls. It is calculated as the ratio of the primary intake rate for girls divided by the indicator for boys. It would be wrong to mention as GPI for the ratio of absolute numbers such as number of teachers, number of enrolment.

Method of Calculation and Data Required

$$\text{Gender Parity Index for GIR in Primary Education} = \frac{\text{GIR in Primary Education (Female)}}{\text{GIR in Primary Education (Male)}} \times 100$$

Interpretation

A value of less than one indicates a difference in favor of males; a value above one indicates a difference in favor of females; a value close to one indicates gender parity. However, it can be assumed that there is no disparity if GPI value ranges between 0.97 and 1.03.

5.5.4 GPI for Net Intake Rate (NIR) in Primary Education

Definition and Purpose

The GPI for Primary NIR is used to assess gender differences by appropriate age of intake. It is calculated as the ratio of the female primary NIR divided by the NIR for males.

Method of Calculation and Data Required

$$\text{Gender Parity Index for NIR in Primary Education} = \frac{\text{NIR in Primary Education (Female)}}{\text{NIR in Primary Education (Male)}} \times 100$$

Interpretation

A value of less than one indicates a difference in favor of males; a value above one indicates a difference in favor of females; a value close to one indicates gender parity. However, it can be assumed that there is no disparity if the GPI value ranges between 0.97 and 1.03. The use of the NIR gives deeper insight into age differences in boy and girl intake with obvious advantages and disadvantages this can provide to one sex or the other.

5.5.5 GPI for GER

Definition and Purpose

The GPI for GER in Primary or Secondary Education is commonly used to assess gender differences in gross enrolment at the primary or secondary level.

Method of Calculation and Data Required

$$\text{Gender Parity Index for GER in Primary Education} = \frac{\text{GER in particular education level of Education (Female)}}{\text{GER in particular level of Education (Male)}} \times 100$$

Interpretation

A value of less than one indicates a difference in favor of males; a value above one indicates a difference in favor of females; a value close to one indicates gender parity.

5.5.6 GPI for NER

Definition and Purpose

The GPI for NER in Primary or Secondary Education is used to assess gender differences in primary and secondary net enrolment.. The indicator measures progress towards gender parity in enrolment at the primary and secondary level.

Method of Calculation and Data Required

GPI for NER in Primary Education:

$$\text{Gender Parity Index for NER in Primary Education} = \frac{\text{NER in Particular Education Level (Female)}}{\text{NER in Particular Education Level (Male)}} \times 100$$

Interpretation

A value of less than one indicates a difference in favor of males; a value above one indicates a difference in favor of females; a value close to one indicates gender parity.

5.5.7 GPI for Survival rate to Grade 5

Definition and Purpose

The GPI for Grade 5 survival rates is used to assess gender differences in primary completion. It is calculated as the ratio of primary survival for females divided by the survival rate for males.

Method of Calculation and Data Required

$$\text{Gender Parity Index for Survival rate to Grade 5} = \frac{\text{Survival rate to Grade 5 (Female)}}{\text{Survival rate to Grade 5 (Male)}} \times 100$$

Interpretation

A value of less than one indicates a difference in favor of males; a value above one indicates a difference in favor of females; a value close to one indicates gender parity.

5.5.8 GPI for Transition Rate to Secondary Education

Definition and Purpose

The GPI for Secondary Transition Rates is calculated as the ratio of transition rates for girls divided by the transition rates for males.

Method of Calculation and Data Required

$$\text{Gender Parity Index for Transition rate to Secondary Education} = \frac{\text{Transition rate to Secondary Education (Female)}}{\text{Transition rate to Secondary Education (Male)}} \times 100$$

Interpretation

A value of less than one indicates a difference in favor of males; a value above one indicates a difference in favor of females; a value close to one indicates gender parity.

5.5.9 Percentage of Female Enrolment

Definition and Purpose

Number of female enrolment expressed as a percentage of total enrolment in one particular education level such as primary, secondary, vocational and technical.

Method of Calculation and Data Required

$$\% \text{ Female Enrolment} = \frac{\text{Number of female enrolment in particular education level in school-year } t}{\text{Total number of enrolment in particular education level in school-year } t} \times 100$$

Interpretation

This indicator shows the degree of female participation in these education levels. However, one may need to look at population structure of those particular age-groups to interpret correctly.

5.5.10 Percentage of Female Teachers

Definition and Purpose

Number of female teachers expressed as a percentage of total number of teachers in one particular education level such as primary, secondary, vocational and technical.

Method of Calculation and Data Required

$$\text{Per cent Female Teachers} = \frac{\text{Number of female teachers in particular education level in school-year } t}{\text{Total number of teachers in particular education level in school-year } t} \times 100$$

Interpretation

This indicator shows the gender composition of the teaching force. It also helps in assessing the need for opportunities and/or incentives to encourage women to participate in teaching activities at a given level of education.

5.6 GOAL 6: QUALITY EDUCATION

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

Table 5.6: Core EFA MDA Indicators

6	Core EFA MDA Indicators	Disaggregation	Data Source
6.1	Survival Rate to Grade 5	<ul style="list-style-type: none"> • Sex • Geographical region • Urban/Rural • Other social and economic disaggregation such as <ul style="list-style-type: none"> • Ethnicity, caste • Language • Disabilities 	<ul style="list-style-type: none"> • Annual school census • Household surveys
6.2	Percentage of Primary School Teachers having the Required Academic Qualifications	<ul style="list-style-type: none"> • Sex • Geographical region • Urban/Rural • Public, private • Other social and economic disaggregation such as <ul style="list-style-type: none"> ○ Ethnicity, caste ○ Language ○ Disabilities 	<ul style="list-style-type: none"> • Annual school census
6.3	Percentage of School Teachers who are Certified to Teach According to National Standards for: <ul style="list-style-type: none"> • Early Childhood Care and Education • Primary Education • Secondary Education • Non-Formal Education 	<ul style="list-style-type: none"> • Sex • Geographical region • Urban/Rural • Public, private • Other social and economic disaggregation such as <ul style="list-style-type: none"> ○ Ethnicity, caste ○ Language ○ Disabilities 	<ul style="list-style-type: none"> • Annual school census
6.4	Pupil-Teacher Ratio (PTR) for: <ul style="list-style-type: none"> • Primary Education • Secondary Education 	<ul style="list-style-type: none"> • Geographical region • Urban/Rural 	<ul style="list-style-type: none"> • Annual school census

6	Core EFA MDA Indicators	Disaggregation	Data Source
		<ul style="list-style-type: none"> Public/private 	
6.5	Pupil-Class ratio (PCR) for: <ul style="list-style-type: none"> Primary Education Secondary Education 	<ul style="list-style-type: none"> Geographical region Urban/Rural Public/private 	<ul style="list-style-type: none"> Annual school census
6.6	Pupil-Textbook ratio (PBR) for: <ul style="list-style-type: none"> Primary Education Secondary Education 	<ul style="list-style-type: none"> Geographical region Urban/Rural Public/private 	<ul style="list-style-type: none"> Annual school census
6.7	Public Expenditure on Education as Per cent of Total Government Expenditure	National level indicator	<ul style="list-style-type: none"> Government Budget reports
6.8	Public Expenditure on Education as Per cent of Gross National Product (GNP)	National level indicator	<ul style="list-style-type: none"> Government Budget reports
6.9	Public Expenditure on Primary/Secondary Education per Pupil as Per cent of GNP per Capita	National level indicator	<ul style="list-style-type: none"> Government Budget reports
6.10	Percentage of schools with improved drinking water sources	<ul style="list-style-type: none"> Geographical region Urban/Rural Public/private 	<ul style="list-style-type: none"> Annual School census. Project surveys and reports
6.11	Percentage of schools with adequate sanitation facilities.	<ul style="list-style-type: none"> Geographical region Urban/Rural Public/private 	<ul style="list-style-type: none"> Annual School census. Project surveys and reports

5.6.1 Survival Rate to Grade 5

See details in EFA Goal 2 (UPE) section

5.6.2 Percentage of Primary School Teachers Having the Required Academic Qualifications

Definition and Purpose

The number of primary school teachers with at least the minimum academic qualifications required by the public authorities for teaching in primary education, expressed as a percentage of the total number of primary school teachers.

Calculation Method and Data Required

$$\% \text{ Primary teacher having the required academic qualifications}_t = \frac{\text{Total number of primary teachers with required academic qualification in year } t}{\text{Total number of primary teachers year } t} \times 100$$

Interpretation

A high percentage of teachers having the required academic qualifications denotes the availability of academically qualified teachers and the general quality of the teaching force.

5.6.3 Percentage of School Teachers who are certified to Teach According to National Standards

Definition and Purpose

The number of school teachers who are certified to have received the minimum organized teacher-training (pre-service or in-service) required for teaching at a certain level of education, expressed as a percentage of the total number of school teachers at that level.

Calculation Method and Data Required

$$\begin{aligned} & \text{\% of Teachers who are certified to teach according to national standards}_t \\ = & \frac{\text{Total number of teachers who are certified to teach according to national standards in year } t}{\text{Total number of teachers in year } t} \times 100 \end{aligned}$$

Interpretation

A high percentage of teachers certified to teach in primary schools imply that a majority of the teaching force is trained and has the necessary pedagogical skills to teach and use the available instructional materials in an effective manner.

5.6.4 Pupil-Teacher Ratio (PTR)

Definition and Purpose

Pupil-teacher ratio (PTR) is one of the most common indicators used in educational planning. A low number of pupils per teacher indicate pupils will have a better chance of contact with the teachers and hence a better teaching-learning process.

Method of Calculation

$$\text{PTR}_t = \frac{\text{Total number of pupils in particular education level in school-year } t}{\text{Total number of teachers in particular education level in school-year } t} \times 100$$

Interpretation

The PTR should normally be compared to established national norms on the number of pupils per teacher for each level or type of education. A high pupil-teacher ratio suggests that each teacher has to deal with a large number of pupils and that, conversely, pupils receive less attention from the teacher.

5.6.5 Pupils-Class Ratio (PCR)

Definition and Purpose

The average number of pupils per class is an important indicator which gives a rough indication of class size. It is used to assess the efficiency of resource utilization.

Method of Calculation

$$\text{PCR}_t = \frac{\text{Total number of pupils in particular education level in school-year } t}{\text{Total number of Classes in particular education level in school-year } t} \times 100$$

* A group of pupils in one instructional class. Hence, a section is equal to a class. One classroom can be used for a number of sections.

Interpretation

The PCR should normally be compared to established national norms on the number of pupils per Class for each level or type of education. A high pupil-class ratio suggests that each Class has to deal with a large number of pupils and that,

- Cause degrading teacher ability to handle the class
- Physical and mental uneasiness of pupils in crowded classes
- Both affect the quality of teaching-learning.

5.6.6 Pupil-Textbook Ratio (PBR)

Definition and Purpose

The average number of textbooks per pupil is an important indicator which gives a rough indication of allocation of resources/materials to learners.

Method of Calculation

$$\text{PBR}_t = \frac{\text{Total number of textbooks distributed to particular education pupils in school-year } t}{\text{Total number of pupils in particular education level in school-year } t} \times 100$$

* A group of pupils in one instructional class. Hence, a section is equal to a class. One classroom can be used for a number of sections.

Interpretation

The PBR should normally be compared to established national norms on the number of books per pupil for each level or type of education. A high pupil-book ratio suggests that each student is equipped with more materials and resources to support the learning process.

5.6.7 Public Expenditure on Education as Percentage of Total Government Expenditure

Definition and Purpose

Total public expenditure on education (recurrent and capital) expressed as a percentage of total government expenditure in a given financial year.

Method of Calculation and Data Required

Public Expenditure on Education as Per Cent of Total Government Expenditure t

$$= \frac{\text{Total public expenditure on education in a financial year } t}{\text{Total government expenditure in a financial year } t} \times 100$$

Interpretation

A higher percentage of government expenditure on education shows a high government policy priority for education relative to the perceived value of other public investments, including defense and security, health care, social security for unemployment and elderly, and other social or economic sectors.

5.6.8 Public Expenditure on Education as a Percentage of Gross National Product (GNP)

Definition and Purpose

Total public expenditure on education (current and capital) expressed as a percentage of the Gross National Product (GNP) in a given financial year.

Calculation Method and Data Required:

Public Expenditure on Education as a Per cent of GNP_t

$$= \frac{\text{Total public expenditure on education in a financial year } t}{\text{Gross National Product in financial year } t} \times 100$$

Interpretation

In principle, a high percentage of GNP devoted to public expenditure on education denotes a high level of attention given to investment in education by the government; and vice versa.

5.6.9 Public Current Expenditure per Pupil as Percentage of GNP per Capita (Primary and Secondary)

Definition and Purpose

Public current expenditure per pupil at each level of education, expressed as a percentage of GNP per capita in a given financial year. This indicator measures the share of per capita income that has been spent on each pupil or student.

Calculation Method and Data Required

$$A = \frac{\text{Public current expenditure on particular education in financial year t}}{\text{Total enrolment in particular education level h in school-year t}}$$

$$B = \frac{\text{Gross National Product in financial year t}}{\text{Total national population in year t}}$$

Public Current Expenditure per Pupil (student) as per cent of GNP per Capita at year t

$$= \frac{A}{B} \times 100$$

Interpretation

A high percentage for this indicator denotes a high share of per capita income being spent on each pupil (student) in a specified level of education (either **primary** or **secondary**). It represents a measure of the financial cost per pupil (student) in relation to average per capita income.

5.6.10 Percentage of schools with improved water sources

Definition and Purpose

The water sources include the following: piped, public taps and standpipe, tube wells and boreholes, protected dug wells, protected springs and rainwater collection. Without access to water, it is extremely unlikely that sanitation facilities can possibly function for students.

Calculation Method and Data Required

$$\frac{\text{Number of Schools (primary and/or secondary) with Improved water sources}}{\text{Total number of schools (primary and/or secondary)}} \times 100$$

Interpretation

Without access to water, it is extremely unlikely that sanitation facilities and toilets can function properly, if at all. There are some professionals who would say that without the provision of water and toilets, school buildings are simply learning sheds.

5.6.11 Percentage of schools with improved sanitation facilities

Definition and Purpose

To ensure the provision of improved sanitation facilities, schools must rely on a wide range of technologies and networks, 'improved' sanitation facilities are defined as the following: flush/pour flush to piped sewer, septic tank or pit latrine; ventilation improved latrine; pit latrine with slab and composting toilet (.wssinfo.org).

Calculation Method and Data Required

$$\frac{\text{Number of Schools (primary and/or secondary) with Improved toilet facilities}}{\text{Total number of schools (primary and/or secondary)}} \times 100$$

Interpretation

It is important that the data presented for this indicator is properly and clearly defined. In some countries, 'adequate' is a standard which requires toilets to have water and to be in regular use, while in other countries, there is no distinction between adequate and exists, so that broken or out of use facilities are included in the calculations. This should be made clear in the report.

SESSION 6: ADVANCED TECHNIQUES FOR MONITORING AND SUPERVISION

Objectives:

At the end of the session participants will be able to

- Understand the importance and use of Program Evaluation and Review Techniques (PERT) for project monitoring
- Use the PERT and CMP techniques for M&S of their projects.

What we will learn

- Program Evaluation and Review Techniques (PERT)
- Critical Path Method (CPM)

Total Time: 1 Hour 30 Minutes

Agenda

Duration	Activity	What is needed?
1 Hour	Presentation on PERT & CPM	Presentation or Slides
30 Minutes	Group work	

Introduce the Objective of the session and the activities

Activity 1:

- Make a presentation

Activity 2:

- Create groups and give them assignment to use PERT and CPM for project monitoring

6. ADVANCED TECHNIQUES FOR PROJECT MONITORING AND SUPERVISION

6.1 PROGRAM EVALUATION AND REVIEW TECHNIQUES (PERT) AND CRITICAL PATH METHOD (CPM) [12]

CPM and PERT are powerful tools that help you to schedule and manage complex projects. CPM helps you to plan all tasks that must be completed as part of a project. They act as the basis both for preparation of a schedule, and of resource planning. During management of a project, they allow you to monitor achievement of project goals. They help you to see where remedial action needs to be taken to get a project back on course.

PERT is a project management tool used to schedule, organize, and coordinate tasks within a project. It is basically a method to analyze the tasks involved in completing a given project, especially the time needed to complete each task, and to identify the minimum time needed to complete the total project. PERT planning involves the following steps:

- Identify the specific activities and milestones.
- Determine the proper sequence of the activities.
- Construct a network diagram.
- Estimate the time required for each activity.
- Determine the critical path.
- Update the PERT chart as the project progresses

The main objective of PERT is to facilitate decision making and to reduce both the time and cost required to complete a project.

PERT planning involves the following steps that are described below.

1. Identify the specific activities and milestones: The activities are the tasks required to complete a project. The milestones are the events marking the beginning and the end

of one or more activities. It is helpful to list the tasks in a table that in later steps can be expanded to include information on sequence and duration.

2. Determine the proper sequence of the activities: This step may be combined with the activity identification step since the activity sequence is evident for some tasks. Other tasks may require more analysis to determine the exact order in which they must be performed.

3. Construct a network diagram: Using the activity sequence information, a network diagram can be drawn showing the sequence of the serial and parallel activities. Each activity represents a node in the network, and the arrows represent the relation between activities. Software packages simplify this step by automatically converting tabular activity information into a network diagram.

4. Estimate the time required for each activity: Weeks are a commonly used unit of time for activity completion, but any consistent unit of time can be used. A distinguishing feature of PERT is its ability to deal with uncertainty in activity completion time. For each activity, the model usually includes three time estimates:

- *Optimistic time* – generally the shortest time in which the activity can be completed. It is common practice to specify optimistic time to be three standard deviations from the mean so that there is a approximately a 1% chance that the activity will be completed within the optimistic time.
- *Most likely time* – the completion time having the highest probability. Note that this time is different from the *expected time*.
- *Pessimistic time* – the longest time that an activity might require. Three standard deviations from the mean is commonly used for the pessimistic time.

PERT assumes a beta probability distribution for the time estimates. For a beta distribution, the expected time for each activity can be approximated using the following weighted average:

- Expected time = (Optimistic + 4 x Most likely + Pessimistic) / 6
- This expected time may be displayed on the network diagram.

- To calculate the variance for each activity completion time, if three standard deviation times were selected for the optimistic and pessimistic times, then there are six standard deviations between them, so the variance is given by:

$$[(\text{Pessimistic} - \text{Optimistic}) / 6]^2$$

5. Determine the critical path: The critical path is determined by adding the times for the activities in each sequence and determining the longest path in the project. The critical path determines the total calendar time required for the project. If activities outside the critical path speed up or slow down (within limits), the total project time does not change. The amount of time that a non – critical path activity can be delayed without the project is referred to as a *slack time*. If the critical path is not immediately obvious, it may be helpful to determine the following four quantities for each activity:

ES – Earliest Start time

EF – Earliest Finish time

LS – Latest Start time

LF – Latest Finish time

These times are calculated using the expected time for the relevant activities. The earliest start and finish times of each activity are determined by working forward through the network and determining the earliest time at which an activity can start and finish considering its predecessors activities. The latest start and finish times are the latest times that an activity can start and finish without delaying the project. LS and LF are found by working backward through the network. The difference in the latest and earliest finish of each activity is that activity's slack. The critical path then is the path through the network in which none of the activities have slack.

The variance in the project completion time can be calculated by summing the variances in the completion times of the activities in the critical path. Given this variance, one can calculate the probability that the project will be completed by the certain date assuming a normal probability distribution for the critical path. The normal

distribution assumption holds if the number of activities in the path is large enough for the central limit theorem to be applied.

Since the critical path determines the completion date of the project, the project can be accelerated by adding the resources required to decrease the time for the activities in the critical path. Such a shortening of the project sometimes is referred to as *project crashing*.

6. Update the PERT chart as the project progresses: Make adjustments in the PERT chart as the project progresses. As the project unfolds, the estimated times can be replaced with actual times. In cases where there are delays, additional resources may be needed to stay on schedule and the PERT chart may be modified to reflect the new situation.

6.2 BENEFITS [12]

PERT is useful for Monitoring and Supervision because it provides the following information:

- Expected project completion time;
- Probability of completion before a specified date;
- The critical path activities that directly impact the completion time;
- The activities that have slack time and that can be lend resources to critical path activities;
- Activity start and end date
- Strengthen the M&S process of project management

6.3 SLACK AND CRITICAL PATH

Slack is an important concept in project management because it tells the manager – after forward and backward passes are calculated – which activities can be delayed. There are two different types of slack: total and free. Total slack is, mathematically, $LS - ES$, where LS is “late start” and ES is “early start,” respectively. In other words, total slack lets us know the amount of time a particular activity can be put

off and not delay the entire project. After slacks for all the activities that comprise the project are completed, we can establish the critical path (CP). The critical path is the network path(s) that has (have) the least slack in common.

The other type of slack is free slack. Mathematically, free slack is $ESB_B - EFA_A$. That is, the “early start” of activity B minus the “early finish” of the preceding activity, A. An activity with free slack can be delayed w/o delaying the ES of succeeding activities.

6.4 A CASE STUDY: ANNUAL SCHOOL CENSUS

The Provincial/Regional EMIS units are responsible for collection and compilation of education data. These units usually collect data through their district EMIS cells by conducting Annual School Census (ASC). ASC is an activity of gathering information on variables of interest in an established systematic fashion. Keeping in view the importance of timely availability of educational data, ASC is taken as an example to be monitored through PERT.

Identify the specific milestones

In first step we will divide our activity into different milestones, it is base of your monitoring system, be careful while identifying milestones of your activity. In this example our activity can be divided into following milestones:

Questionnaire designing, Pre-Testing of questionnaire, Publication of questionnaire, Capacity building workshop, Develop data entry tool, Distribution of questionnaire, Collection of filled questionnaire, Data Entry and finally Data cleansing

Determine the proper sequence of the activities

Arrange the identified milestones in a proper sequence

- A. Questionnaire Designing
- B. Pre-Testing of questionnaire
- C. Develop data entry tool
- D. Publication of questionnaire

- E. Capacity building workshop
- F. Questionnaires distribution
- G. Collection of filled questionnaires
- H. Data entry
- I. Data cleansing

Construct a network diagram

As mentioned above that a network diagram shows the sequence of the serial and parallel milestones of an activity or activities of a project. The network diagram of our activity is shown in figure 6.1

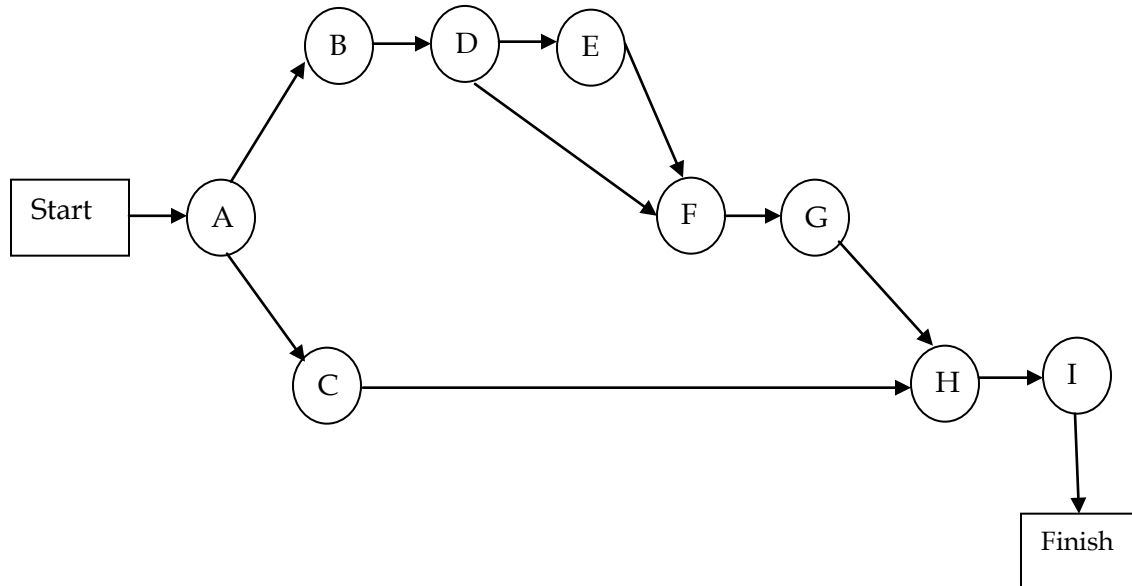


Figure 6.1: Network Diagram

Estimate the time required for each activity

In this case study we will take day as a unit of time for milestone completion, but any consistent unit of time can be used.

The succession of the milestones of the activity and the optimistic, pessimistic and most likely time (in days) for these milestones are shown in following table:

Table 6.1: Milestones to achieve the activity of ASC

Activity	Description	Predecessors	Optimistic Time (o)	Pessimistic Time (P)	Most likely Time (M)	Expected Time (O+4M+P)/6
A	Questionnaire Designing	-	6	12	9	9
B	Pre-Testing of questionnaire	A	6	12	10	10
C	Develop data entry tool	A	12	21	15	16
D	Publication of questionnaire	B	2	10	6	6
E	Capacity building workshop	D	1	3	2	2
F	Questionnaires distribution	D,E	15	30	20	21
G	Collection of filled questionnaires	F	20	35	30	30
H	Data entry	C,G	20	35	30	30
I	Data cleansing	I	15	25	20	20

Determine the critical path

As we learned above in this session that for determination of critical path we first calculate early start (ES), early finish (EF), late start (LS) and late finish (LF) for each milestone of the activity and finally calculate slack by using formula (LS-LF). After slacks for all the milestones that comprise our activity are completed, we can establish the critical path (CP). Let's start to find critical path step by step:

Step 1: Redraw network diagram with estimated time of each milestone

In table 6.1 we have calculated estimated time for each milestone of the activity, now we will show it on the network diagram as show below:

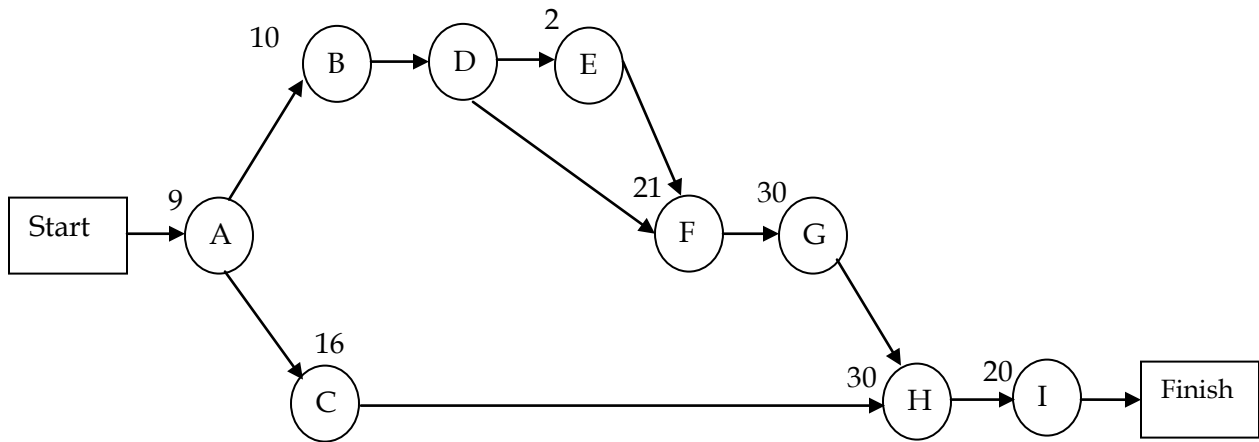


Figure 6.2: Network diagram with estimated time

Step 2: Calculate Early Start (ES) time

We can easily find out the duration of the activity by simply using forward pass of the network diagram as shown in figure 6.2. By doing forward pass we can also find out the ES of each milestone in our activity. What we can do is very simple; we will take first node of network diagram and move forward to reach the last node of the activity. At each node we will find out how much time will be required to reach at particular node. Node A is a first node, its mean we will start our activity from this node, so to reach at this node we will take no time; hence the ES of node A is 0. Now coming to node B, this is going to be start after 9 days as soon as node A completes its time, similarly ES of node C is also 9 days. What we do is simply add the estimated time and ES of predecessor node that is in this case node A. repeat the same process until the last node of network diagram. You will notice that there are two passes to reach at node G that is from nodes E and F. If we come from nod E then ES of G will be 27 while if we come from the other side that is from node F then ES of node G will be 46. In this situation we will consider the maximum time duration as ES of the particular node, hence the ES of node G will be 46. The network diagram with ES is shown below:

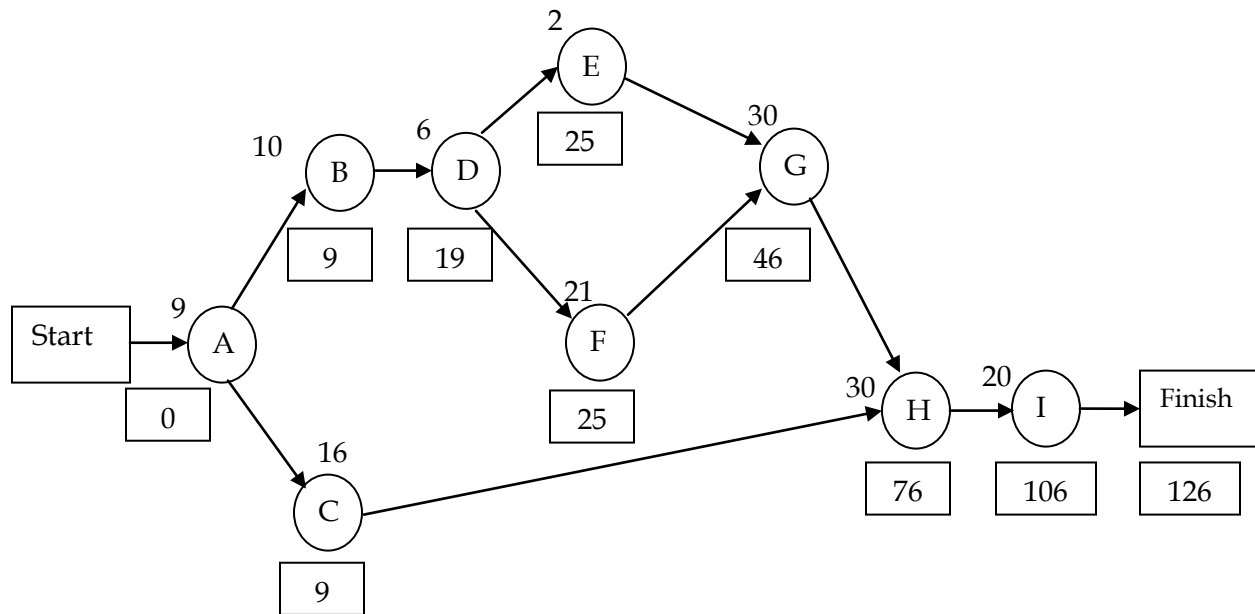


Figure 6.3: Time Scaled Network Diagram with ES

Step 3: Calculate Late Start (LS) time

Now we will find out the LS time of each node by using the backward pass of the network diagram. We will start from node 'I' which is last node of network diagram and use backward pass to reach at first node that is node A. At each node will be finding the LS time by simply subtracting estimated time of predecessor node from ES time of current node. However, in case of first node while using backward pass that is node 'I', LS will be equal to ES. For example if we find out LS of node H, follow the following formula:

$$LS(H) = LS(I) - \text{Estimated Time}(H)$$

$$LS(H) = 106 - 30 = 76$$

In the similar fashion we can find out LS time of rest of the nodes in network diagram as shown in following figure.

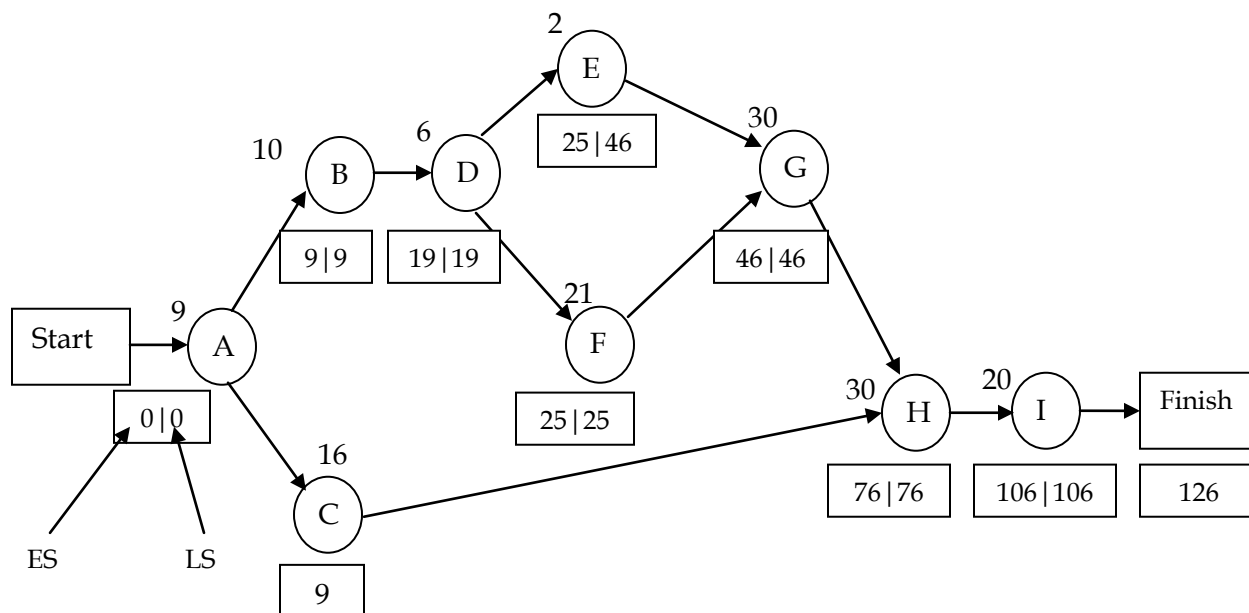


Figure 6.4: Time Scaled Network Diagram with LS

Step 4: Find Critical Path

The critical path is the network path(s) that has (have) the least slack in common. Notice that the slack values for all nodes in path A-B-D-F-G-H-I are 0. Hence, this is the critical path because it is the path with the least slack in common as shown in the following table.

Table 6.2: Calculation of slack

Node	Duration	ES	EF	LS	LF	Slack
A	9	0	9	0	9	0
B	10	9	19	9	19	0
C	16	9	25	62	78	66
D	6	19	25	19	25	0
E	2	25	27	46	48	21
F	21	25	46	25	46	0
G	30	46	76	46	76	0
H	30	76	106	76	106	0
I	20	106	126	106	126	0

Once the critical path is known, time and resources can be tightly managed and costly mistakes can be minimized or eliminated. If some unexpected delay does arise in the critical path, it is possible to identify the activities on the critical path that cost the least to shorten. Activities on others paths may also need to be shortened.

Update the PERT chart as the activity progresses

Make adjustments in the PERT chart as the activity progresses.

SESSION 7: GROUP WORK

Objectives:

At the end of the session participants will be able to

- Create M&S system
- Give presentation of their work

What we will learn

- Process of developing M&S system at district level

Total Time: 4 Hour 30 Minutes

Agenda

Duration	Activity	What is needed?
20 Minutes	1. Group formation and give assignment	Pre-developed assignments
1 Hour and 30 Minutes	2. Group work	Group formation and pre-defined assignments
50 Minutes	3. Group presentations	
20 Minutes	4. Discussion on presentations	
30 Minutes	5. Post-training assessment	
1 Hour	6. Open discussion and conclusion of workshop	

Introduce the Objective of the session and the activities

Activity 1:

- Prepare at-least five different assignments

Activities 2, 3 & 4 are related to group work

Activity 5:

- Prepare post-training assessment test

Activity 6:

- Open discussion and conclusion of workshop

ASSIGNMENT # 1

The Government has decided to increase NER to 90% at primary level of education. Create a project's M&S system to increase the NER to 90% at district level

ASSIGNMENT # 2

This is an era of computer science and provides computer education at high and higher secondary level of institutions is a need of time. A donor agency wants to establish computer labs to all high and higher secondary institutes in the district. Develop a M&S system for this project.

ASSIGNMENT # 3

Provision of quality education is a key concern of the Government. Identify the quality indicators, rate each indicator, select 50 public sector institutions of different level of education institutions and create a M&S system to rank the selected schools according to rating given to each indicator.

ASSIGNMENT # 4

Identify equity indicators of education and develop a M&S system for at-least 50 public sector institutions. Develop an index based on identified indicators to give rating to each school and take necessary action.

ASSIGNMENT # 5

Identify access indicators of education and develop a M&S system for at-least 50 public sector institutions. Develop an index based on identified indicators to give rating to each school and take necessary action.

ASSIGNMENT # 6

Based on physical facilities (Electricity, Drinking water, Boundary wall and Student toilet) develop a composite index of at-least 50 public sector institutions and develop a monitoring and supervision system.

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ED-LINKS is comprised of a team of partners: AIR, the prime is joined by the Aga Khan Foundation (AKF-US/Pakistan) including affiliates, Aga Khan University Examinations Board and Aga Khan University Institute for Educational Development, Children's Resource International, Pakistan, Management Systems International (MSI), Society for Community Support for Primary Education in Balochistan (SCSPEB), Teachers Resource Center (TRC), and Kidz Online. As a team, we share the belief that students learn best in schools that are well-resourced with teaching and learning materials, staffed by skilled and confident teachers, supported by engaged government structures responsive to the needs of teachers and students, and operate within an overall system that effectively links schools, teachers, and government officials. ED-LINKS is working in collaboration with government counterparts to create these conditions for success, building an effective and efficient education system that will lead ultimately to an improvement in the quality of education for children throughout Pakistan. In order to improve the quality of education, ED-LINKS focuses on improving student learning, improving pre- and in-service teacher education and professional development, improving education governance, and strengthening the capacity of the public sector to deliver quality education. Successful implementation of the activities requires effective and transparent coordination between national, provincial and district DoEs; ED-LINKS endeavors to reinforce linkages and synchrony between the different tiers of the public education sector. The program works with the Federal Ministry of Education (MoE), and DoEs in the Federally Administered Tribal Areas (FATA), the provinces of Sindh, Balochistan, KPK and target districts.

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