Monitoring

in Education and Community Work

Tools for Quality Management

of Innovative Teaching- and Learning Processes

and of Community Participation

2004

This manual is the product of the GTZ-sector network, BEN (Basic Education Network) Asia.

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Outline

1. Introduction

1.1 Acknowledgement

This manual has been put together in collaboration with professionals who revised the draft. It builds on the experience accumulated over the last five years in basic education projects in Indonesia, Pakistan, Peru, Sri Lanka, and in community participation in Nepal and Bangladesh. It draws on previous work done by Johannes Spitta, and on a number of topical documents from GTZ section 04, GATE, as well as workshops on monitoring world wide. Critical analysis and recommendations to projects and programmes on basic education as well as various presentations and articles from Dr. Herbert Bergmann have been integrated into this manual.

At a moment where international development co-operation faces increasing pressure for accountability and is asked to show whether it is effective and, if so, to what extent, a monitoring approach focusing on impact and process quality should be particularly helpful. GTZ will now be asked to justify its activities by the effects they have on poor people.

This manual is the product of one of the GTZ-sector networks, BEN (Basic Education Network) Asia. BEN Asia is proud to offer it to all colleagues who work in the education sector, basic or not. The education sector has a very peculiar advantage. It can show effects and first level benefits for the ultimate beneficiaries in a relatively short time each time it focuses on improving teacher competence. At the same time, Education For All is one of the major approaches to poverty alleviation, and is therefore high on the international development agenda.

The approach presented here tackles a major quality issue in large scale, potentially country-wide training programmes involving really large numbers of staff, teachers as it were. Monitoring a multilevel approach to teacher in-service training is a tool to assess and improve the quality despite the large number of intermediaries involved.

At the same time, the manual offers a monitoring approach for working with communities. This is the more relevant as the development community has become ever more conscious of the fact that EDUCATION FOR ALL and Community Development need each other: the sheer magnitude of the task to get all children to and through school requires the full-scale co-operation of the surrounding communities, be they urban or rural. This has been realised for quite some time, and many if not most basic education projects and programmes have been working closely with local communities, fostering their responsibility through decentralisation and participation in school affairs. It is quite clear that these measures need a different, less formalised monitoring approach than the teacher in-service training cascade. In combining these tools in one handbook, we hope to make it particularly useful.

Last not least, this manual is not „finished" in any way. There is a lot of experience in many other projects that the authors simply do not know. The materials accessible through the hyperlinks so far all come from Asia and Latin America. The particular technique used in preparing the manual makes it easy to incorporate relevant additional materials. We invite all colleagues to send in what pertinent experience, instruments and monitoring reports they have. This manual can and should grow. Any criticism is welcome.

Dr. Herbert Bergmann and Verena von Hatzfeldt

1.2 Positioning of monitoring in development work today

1.2.1 Why is monitoring needed?

The need for accountability, for proper and effective use of resources and, above all, for keeping the project on target, calls for frequent and continuous monitoring and evaluation. For all those who are genuinely concerned to know whether a development project is right on track in relation to its set objectives, monitoring is a must.

It is the nature of all development projects that they introduce innovations that cause disruptions in 'the business as usual'. Though wholesome and necessary, these disruptions also tend to be perceived as problems. Often, project partners, expatriates, and even local project staff lack the experience how these innovations later on will work and how one best adapts to them.

Then there are deficiencies in the design of the innovations themselves, even though they seem to be diligently planned. Furthermore, changes in the project's political, social and/or economic playing field of action happen constantly.

These problems aggravate when large areas and/or large numbers of beneficiaries and intermediaries are addressed, as happens in the field of basic education. Reaching a large number of target groups in a large geographical area requires several levels of intermediaries before the individual target group has been reached. And at each level similar difficulties and resistances can be expected to plague the project.

These, and related factors tend to obstruct a project's safe sailing, if they are not being detected and addressed in time, which is possible only if frequent monitoring is integrated into the ongoing activities.

1.2.2 Monitoring for which purpose?

Monitoring and Evaluation (M&E) became an issue already in the late seventies, and they have become more important ever since. As a management tool that uses the approach and methods of applied action research, M&E uses quantitative and qualitative methods of data collection and analysis. M&E aims at validating success, as well as identifying weak points, clarifying errors and unwanted effects at given intervals during the full project phase, in order to react to them with corrective actions.

Monitoring techniques and skills should be accessible to all those actors who participate in the management of innovations, such as the project team, the partner, the intermediaries and, at least occasionally, even the target group(s).

The purpose of monitoring is to observe and reflect on the impact chain starting from the input, the project activities, the outputs towards the utilisation of the outputs by the partner organisation and the direct impact the utilisation causes up to sustainable impact.

As to formal education, its objective is the improvement of the learning capacity of pupils at the local level. Its progressive realisation has to be monitored. To achieve that objective it is required to carry out monitoring on different levels, such as the effectiveness of training of master trainers, of regional trainers and of teachers, development of improved, learner-friendly curricula and textbooks or improvement of school management as well as the direct and indirect impacts these services provide. Community participation in the learning- and teaching process is also of vital importance for improving the learning capacity of pupils.

1.3 Monitoring in today's GTZ context

Project monitoring is a mandatory management task that all projects/programs of GTZ are obliged to carry out. Like in other development agencies, also at GTZ monitoring is 'stock in trade' in objective-oriented planning and project/program implementation. The GTZ Guidelines for Impact Monitoring[1], give an orientation to monitoring in projects; at the same time they leave sufficient freedom to the projects to design their specific monitoring system.

1.3.1 Changes consequential to the introduction of AURA

AURA is an acronym and stands for '**AU**ftrags**RA**hmen', which means the new framework under which GTZ carries out the Commission of the German Ministry of Economic Cooperation and Development. Following the corresponding new concept of project management, the 'Auftragsmanagement', GTZ places specific emphasis on monitoring the immediate effects of the project services. Responsibilities of GTZ in new and ongoing projects/programs as defined in the ZOPP planning guides, until now, have focused on the implementation of activities and the delivery of quality products and/or services, whilst tending to neglect the importance of a focus on the *effects*, as they are induced by these services/products.

In the past, it was understood that the GTZ project management chiefly was held responsible for carrying out those activities in a qualified way that were supposed to bring about the anticipated results. Accordingly, what were predominantly being monitored were internal processes, i.e.

a) the input quality, such as manpower, or equipment;
b) the kind of activities that were carried out, such as training workshops, or the development of materials;
c) the kind of services and products rendered, such as teachers capacitated, and/or teaching- and learning materials provided.

All too often, responsibilities of GTZ, as being perceived by the management, ended here. Consequently, there was a tendency to exculpate the measure for not achieving the anticipated objectives. The ownership for the project, according to PCM, belonged to the partner. In other words, the GTZ measures tended to feel sufficiently justified for having produced quality 'shoes', even if nobody was wearing them. The rest was responsibility of the partner. This has now changed with the newly instituted concept of AURA and the equally new tool of the new orientation of the project management ('Auftragsmanagement'). The question is not any more, "Have we fulfilled our plan?" not even, "How did we carry out the plan?" rather, the overriding question is, "Have we attained the intended benefits? Have we provoked worthy effects? How can we improve them?"

> AURA's project management is a qualified shift away from 'activity' orientation, towards 'impact' orientation. The point is to stop insisting on the fulfilment of pre-formulated results and on activities that had been pre-determined to be adequate; it is, rather, to steer the measure in such a way that it leads to effects that are desirable within the framework of the measure.

Power Point representation on AURA by Dr. Ernst Reichenbach, 2003.

[1] Orientierungsrahmen für das Wirkungsmonitoring, Petra Müller-Glodde, 1999

As a result, ZOPP isn't any longer an instrument of communication between GTZ and BMZ. Instead, BMZ requires concise information about the objectives considered achievable, and - during the project phase - about immediate effects that the interventions cause in relation to the desired objective(s). In other words, BMZ has to be kept informed in such a way that it can assess the project's feasibility. Accordingly, it does not any longer need to be informed which activities the measure will undertake or has carried out, nor which services or products it has provided. BMZ neither requires to be informed about specified inputs and costs. In consequence, no PPM (Project Planning Matrix) will be needed. Putting it in terms of commerce, no longer is the information about the production of 'shoes' needed but about the demand-oriented supply of the market with quality, appropriate foot-ware.

It is, furthermore, the required way to keep BMZ and other partners informed at any time where we are – whether on, or off track: In case we detect that we are somewhat 'off', monitoring helps deciding which are the adaptations to be taken to counter unexpected changes in the framework condition, to avoid major risks. The point is to reach the desired destination, i.e. to produce benefits for the project's customers – and, behold, these are benefits according to the judgement of the customers as well as of the professionals. This calls for *flexibility* in project steering, and it calls as well for a kind of *monitoring* that checks on the project's advancement from the customer's perspective. What that means specifically in the field of formal education and in community participation, will be illustrated further below.

1.3.2 Levels of monitoring

GTZ proposes to monitor along a hypothetical impact chain, which is clarified by indicators. It starts with the inputs and the activities which lead to results, such as capable trainers or revised educational material. Up to this level in the impact chain the project still holds to a large extent control on providing the right services. The next step on the impact chain would be the utilisation of these services by the partner, e.g. how the trainers apply the innovations learnt in the training or how the teachers use the revised educational materials. This leads to one further step, expressed in the objective of the project, what impact has the utilisation of the services on the beneficiaries, e.g. do the teachers understand the training, and are they able to apply the innovations in their regular classes and do the students benefit from the classes? Further impact needs to be measured at a later stage and is not the task of the project itself.

Only independent teams should monitor and evaluate any higher aggregated development progress at higher levels (macro-level economic, social, political, ecological), as concerns indirect benefits accruing later, induced benefits and development impact that is induced by interventions in the wider project surroundings. (Chart, adapted from Herbert Bergmann: Presentation of Monitoring, 2001) Higher-level effects often cannot be clearly related to the interventions of the project itself, as they may have been influenced by other projects and/or by all kinds of local/regional factors. Furthermore, those impacts can be measured only after longer time periods. Therefore, any claim to have reached aggregated goals at higher levels, and any attempt at monitoring at this level, should be avoided by the project.

The attribution gap between those impacts monitored during project life and those monitored much later is documented in the graphic of GTZ's Impact Model, where education has been taken as an example (Guidelines for Impact Monitoring in Economic and Employment Promotion Projects with Special Reference to Poverty Reduction Impacts, Part 1, page 30, unit: 04, GTZ)

1.4 Purpose of this handbook

The purpose of this handbook is twofold:

1) to improve quality management by providing guidance to project management in how to structure and implement the monitoring process, so that it contributes qualitatively to the achievement of the objective(s).
2) to give an overview of the specific monitoring strategies available for large scale introduction of innovations in the educational field.

1.4.1 To improve quality management for educational project/programmes

The main objective of the monitoring system is to improve the quality of a project/programme during its implementation, so that its objectives will be achieved.

As to formal education, its objective is the improvement of the learning capacity of pupils at the local level. Its progressive realisation has to be monitored. Nevertheless, to achieve that objective it is required to carry out monitoring also on other levels, such as the effectiveness of training of master trainers, of regional trainers and of teachers.

A milestone-objective would be that master trainers are actually capable to train regional trainers in a motivating and qualified way, demonstrating their capacity in practice. Having reached that milestone-objective, namely that knowledge and skills are being passed on to the next level of trainers, gives us the feedback that we are on the right track towards the overall objective of the project/programme. In case we detect that the first milestone-objective could not be achieved, corrective activities are required before moving on to the next level of trainers. Simply to expect that the trainers, after having been properly trained, actually will train those at the following level adequately remains wishful thinking. It needs to be assessed, step by step, through adequate continuous monitoring.

1.4.2 To present an overview of specific monitoring strategies

There are no ready-made monitoring precepts, as all projects/programmes are different and very specific. The experiences of one cannot be transferred to the next one without modification and adaptation. Still, the positive as well as the negative experiences of different projects can very well serve as a knowledge bank for project management. They can be used in the individual design of an adequate concept for managing “our” project/programme.

In this handbook we introduce therefore a variety of monitoring modalities. Some may be used for managing formal educational projects and programmes, and others may be used for community involvement, as it is most often necessary in educational processes. In both cases, the objective-oriented actions require continuous and systematic monitoring, so as to keep the project/programme on a desirable track.

Such modalities or strategies are: process monitoring, impact monitoring, participatory impact monitoring, and cascade monitoring. They differ according to the time and the extent of participation, their major focus, their reliance on “hard” or “soft” data, and their reliance on professionals, internal or external. None of them should be used alone; the best approach is a strategy mix, particularly so in large programmes with a number of different components with sometimes very different characteristics.

2. Definition and Strategies of Monitoring

2.1 Definition of *Monitoring*

Since the path towards reaching a given project objective is influenced by many factors, it is vital for the project/programme's ultimate success to respond pro-actively to those influences. Monitoring is not the only instrument, and yet an essential one, to steer the project towards an objective that may have to be adjusted during the project phase, in order to remain both desirable and attainable.

Monitoring and evaluation are two sides of the same coin, often put together as M&E. They differ in frequency and range of decisions. The separation may seem artificial but is useful.
Monitoring is a day-to-day management tool. It focuses on ongoing review, systematic documentation, analysis and decision making. We understand monitoring as a process of systematic and critical review of an operation with the aim of checking the operation and adapting it, whereas needed, to circumstances in order to achieve its objectives. It is done because of the risk that something goes wrong, that objectives are not achieved in time, etc. .
Evaluation is the less frequent form of reflection. It is deeper and leads to more fundamental adjustments. It involves a comprehensive analysis of the operation with the aim of adapting strategy and planning, and even objectives, to circumstances. It greatly profits from databases established by monitoring as a basis.

In this manual we will focus on *monitoring* as it is being carried out continuously during the project phase. The relevance of all forms of monitoring applied in a project is the impact the interventions are creating.

Monitoring is an instrument for quality management. It registers *changes* of all kinds, and it facilitates *adaptation* of project activities. It checks on possible changes in regular intervals and, thereby, creates a dynamic data bank as the basis for successive analyses and any resulting consequential decisions for further actions.

This includes detection of risks; it helps to eliminate or, at least, to reduce them; it also helps to find solutions for the detected problems and to implement corrective actions at an early stage. It goes without saying that the goal in all educational projects is that the target groups (in formal education: the pupils) will finally be able to improve their livelihood by what they have learnt.

Any data collection only makes sense to the degree that it strengthens the decision making processes of management. In quality management, only continuous and systematic monitoring that focuses on the project *objectives* provides the data needed both for day-to-day decision making and for later project evaluation. It should be available to, and used by all those who participate in the management of project innovations.

How intensely and frequently monitoring activities are carried out depends on the nature of the risks involved. An extreme case is the continuous monitoring of the heart beat in intensive care units. Any change beyond certain critical values is being detected and signalled immediately for rapid medical action. Situations in education projects are not quite as dramatic, but rapid reactions might sometimes be quite necessary, e.g. before whole training courses go wrong.

Monitoring includes the following important steps:

1. identification of “critical points”, i.e. risks associated with actions, processes or events that can go so wrong as to jeopardise the objectives.
2. systematic observation of the utilisation of the services provided by the project / programme, and of their benefits rendered to the users (per milestone);
3. documentation of those data that focus on possible risks to achieve the envisioned objectives;
4. assessment and analysis of all data collected, with special emphasis on the possibilities, as far as they exist, to mitigate those problems that have the potential to cause extensive damage to the project objective;
5. decision making that addresses corrective actions;
6. implementation of the corrective actions.

In sum, it is not enough “to do the things right”. Doing things right is important, but it is only of relevance as far as it effectively contributes to achieve a desirable impact. Focusing on the impact of the interventions requires asking: “Have we done the right thing?” By enabling management to get continuous feedback from the different processes, areas and levels of the project/programme monitoring supports the project management in its principal steering task: to do the right things right. It is an important element of short-term optimisation of an ongoing work programme, based on a long-range vision. In monitoring, we make systematic and frequent observations at predefined stages as to the implementation of activities, in order to provide data that are needed to keep the project on course in an unstable environment and, if possible, even to improve the services provided. Monitoring focuses both on specific situations that carry potential risks, as well as on innovations where experience is lacking and implementation not yet effective.

Monitoring cannot only follow standard prescriptions; it is a dynamic process in itself that requires constant adjustment to changing circumstances. Still, it includes the development of a monitoring design, data collection, and data analysis, drawing conclusions, and taking corrective actions. – In this sense, monitoring is, in itself, a learning process.

2.2 ***Impact*** Monitoring

There are various possibilities of understanding "impact". We will not use the term "impact" in a restrictive sense. While defining the concept of impact monitoring, it is necessary to consider a range of interpretations of "impact". Over all, impact monitoring focuses on changes the stakeholders perceive as associated with the project. They can be intended or unintended, expected or unexpected, positive or negative. Impacts occur during the entire project; they do not only concern the defined target groups, but also partners and intermediaries; they can occur on various areas and levels.

In other words, the question which changes (or: impacts) are relevant for monitoring may be perceived quite differently by local stakeholders and professional outsiders. The latter ones may have more “objective”, technical criteria, but they alone will not necessarily lead to improvement for the affected people. Each group of stakeholders should therefore be encouraged to answer for themselves the question, “Which changes/impacts are, or will be, important for us?”

Accordingly, impact monitoring has to find ways, first, to formulate the kind of questions that are meaningful to stakeholders; next, it has to obtain answers, both quantitative and qualitative; finally, it has to draw conclusions for action.

The role of the beneficiaries in impact monitoring differs according to the nature of the field we are working in. In fields that are strongly formalised and ruled by technical-professional criteria (such as the teaching-learning process, or most aspects of health), the technical and scientific basis provides most criteria for impact monitoring since the intended effects are clearly defined.

In fields without a clear technical-professional foundation, such as community participation in school management, the acceptance and satisfaction of stakeholders at all levels (parents, teachers, school heads, inspectors and other supervisory and advisory personnel) is much more important. Monitoring approaches and processes will have to differ accordingly.

2.3 *Participatory* Impact Monitoring

Participation means, on the one hand, to take part in activities where there is possibility for sharing different experiences, or points of views, or capabilities of all the actors involved or benefited by the project. It also means a process of empowerment of the local people or local authorities, as the development organisation increasingly hands over responsibilities to them. Participation in impact monitoring empowers the stakeholders to reflect on which changes/impacts are desirable for them; it empowers them to present their own view to impact monitoring's central question: whether desirable changes are taking place (or: what impedes them); and to agree, jointly with the project management, on corrective steps to be taken in case of need.
Ideally, it is a mutual growth experience. The local stakeholders discover capacities of their own, they learn to act autonomously and to take over responsibilities; project staff, on the other hand, learn to accept and incorporate other view points, and to hand over responsibilities and power. Participatory impact monitoring brings the project closer to the stakeholders, making the project more transparent and its organisation more accessible; but above all, it reflects the project's advancement. Still, no management tool is participatory in itself; it needs a special attitude and dedication.

As was said before, there are few fixed set rules to be followed in participatory impact monitoring. This allows much leeway for a tailor-made case-by-case approach.

Participatory impact monitoring provides the opportunity to all stakeholders, including the project team, to continuously exchange their point of views and co-ordinate activities, so as to achieve certain commonly perceived objectives. Whenever unforeseen external changes are taking place, it allows the stakeholders to react timely and flexible, which requires communication and co-operation. Learning processes are a consequence for all stakeholders involved.

On the other hand not every element of monitoring is open to participatory decision-making. Issues such as the design of instruments, the nature of instruments, and certain methods of analysis are professionally determined. In that case participation is only recommended when it comes to reaching conclusions and taking decisions based on the results of data collection and analysis.

All this said it is clear that participation calls for quite a degree of mutual acceptance, openness, trust, and confidence. Therefore, resistance is to be expected against participation in impact monitoring from those used to power; this concerns above all community participation, where grass root people are going to be pro-actively involved. - Examples will illustrate this at a later stage.

Summing up, the overriding objective of PIM is to steer the project towards desirable objectives; it also promotes autonomous activities of the people; it improves the interaction between different groups/organisations of stakeholders and it educates everyone to be flexible and to react fast to shortcomings and unexpected change.

2.4 *Process* Monitoring

Following the impact chain, starting with input, activities, results, the utilisation of results and the first impact up to higher aggregated impacts, it is not necessary to distinguish between the different kinds of monitoring modalities such as *process*- and *impact* monitoring. They are carried out at different stages of the impact chain (**Annex-1**) in order to achieve the desired impact expressed in the objectives. Nevertheless we decided to refer to these terms as most professionals are still used to them.

Process monitoring, as mentioned above, checks the timing and quality of ongoing work processes. Only a well designed and professional implementation of project interventions can lead to significant changes. The process monitoring involves the project services such as inputs, activities and the outputs/ results. Its results answer the questions: Are the services well designed and well implemented? Which ones can be improved, and how?

Analysis of past experience has convinced GTZ that a shift in priority focus from process monitoring to impact monitoring will improve its over-all services. The processes originated and supported by the project need to follow technical norms; only then any strong impact can be expected. Process quality is no goal in itself, but is subservient to impact quality! While quality is a must, perfection is not, and in that sense, process monitoring would try to safeguard the minimum quality needed to achieve the desired effects.

2.5 Concluding remarks

Monitoring should be carried out **systematically** at given intervals and in a given manner; it should be **integrated** into the ongoing activities. This is the most effective way the project/programme can be oriented towards its objective.

A very important element of monitoring is that it provides relevant **learning opportunities.** Stakeholders observe the immediate impact of activities, analyse them and draw conclusions for further decisions. They continuously learn from these experiences. Once local stakeholders learn to take over the monitoring and are able to use the collected data for analysis and decision making, they are ready for running necessary measures entirely by themselves. Monitoring also provides essential learning opportunities in the field of *cross-cultural sensitivity* and *mutual respect*.

Since impact monitoring does not focus on adherence to 'The Plan', but supports management according to *observed effects*, it provides the basis for guiding the activities according to "lessons learnt". Although **control** is not the main characteristic of monitoring, in itself monitoring impresses a certain measure of control on everyone concerned**.** The immediate impact of the project activities become visible to all intermediaries, to the project team and the partners, in some cases even to the target group, and this transparency, activated by the different stakeholders involved, leads naturally to mutual control.

Statistical data **analysis** is necessary, especially concerning projects and programmes that are meant to reach a large number of target groups. Reporting of the monitoring results and the recommendations for further actions that is directed to stakeholders, partners, the commissioning partner and target groups, assures cohesion and facilitates collaboration.

In order to institute monitoring on a long-term basis, its quality and effectiveness have to be measurable; this is evidenced best by the extent that management improves the project's **objective-oriented effectiveness**.

Since PIM brings more **transparency** to the individual interventions, it naturally strengthens *self-control and mutual control,* and thereby foments a sense of **responsibility** with all stakeholders.

As a management instrument, participatory impact monitoring has the following aspects:
Verification whether the services provided by the project/programme are suitable for advancing towards desirable objectives. The findings of this verification will be used to further the desired impact.

Participation of the stakeholders in the monitoring process and, thereby, in the steering of the project/programme is an important pre-condition to provide client-oriented services and to hand over eventually the project/programme to those in charge; this refers to the central, the regional and the local level.

Ownership of the project/programme, i.e. the identification of each stakeholder with it, will be improved by participating in responsibilities such as monitoring. This identification assures continuous quality of the measure and even improves its long-term sustainability.

Communication between the stakeholders at each of the different levels of interventions enables them to participate in a qualified way in management. Effective communication among the stakeholders leads to in-depth understanding and to self-esteem.

3. Basic Issues for Monitoring in Formal Education and Community Participation

3.1 Principles

Monitoring responsibilities should be increasingly passed on to the key stakeholders, in effect they should be made *management* partners. This leads to different conclusions in more formal situations where certain governmental organisations are involved (formal school education) and in more informal situations where the community is involved (improvement of local hygiene). Resistance is to be expected in certain quarters but the effort seems to be required. How could otherwise the quality and the effect of the utilisation of the services provided by the project be sustainable? To be not just aware of this fact but to actually fill it with life, calls for some risk taking on *both* sides: the professionals have to acknowledge their *obligation* to share their power position, whilst the local stakeholders have to claim their *rights* to share the decision making.

Objective-oriented monitoring may seem ambitious, but it is a project of mutual give-and-take between partners that will lead, when taken seriously, undoubtedly to improved project impact.

To be *selective* in the data collection is important for various reasons**.** Too much information confuses the issues, and it diffuses the collective impetus. As a management tool, monitoring needs to comply with the requirements of rapidity, relevance and cost effectiveness.

As a tool for *short-term optimisation* of an ongoing work programme, monitoring needs to produce its results fast. Therefore, only those data should be collected which are relevant to what one is trying to achieve; results coming in too late to correct short-comings and errors are next to useless.

It is important to *respond decisively* to the conclusions drawn from monitoring, so that errors can be corrected and the project steered back into the desired direction. If monitoring proves to have no effect on decision making, project staff as well as the stakeholders at different levels lose their interest and motivation to apply it.

Since all program resources have to be used economically, also expenditures on monitoring should be kept at a minimum. The focus of data collection therefore needs to be limited only to those *critical and sensitive points* where transmission takes place from one level to the next one; sensitive points tend to come up in (e.g.) the co-operation of different interest- or power groups.

When designing a monitoring system, the following *basic parameters* should be determined:

- critical points
- objectives and indicators
- database development

Monitoring must not be understood as an add-on to an already burdened work programme. It must not be seen as something imposed from outside against strong resistance, but as an integral part of management. An annual monitoring program should be established that:

- fits monitoring into the overall sequence of operation
- designs and produces data collection instruments
- collects data
- processes and analyses data
- writes reports
- allows for feedback meetings about the results
- designs corrective actions

Before any monitoring is being carried out, general understanding and acceptance of the different monitoring techniques and prerequisites should be assured.

The strategies for monitoring should be introduced in such a manner that they give certain orientation for their implementation; nevertheless flexibility in the use of the strategies is important. They can be standardised only up to a certain point. Beyond that, they have to be adapted to the specific stakeholders and social environment and the locality.

3.2 Requirements

Since resources needed for monitoring are not fully foreseeable in the beginning of a project, they have to be at least roughly estimated under Contingency Planning. Specialists, time to produce the technical expertise of the project, input of material, equipment and financial means, will all have to be taken into account. There are little experiences documented as how many resources need to be allocated for them. As a guiding data for formal educational programs, it is recommended to allocate 10% to 20% of the costs and time at each level. The provision of resources should be about the same once community participation is involved.

3.3 Monitoring as a method to manage quality and feasibility risk

3.3.1 Focus on critical points and/or critical areas

In the usual education system, there are large numbers of pupils and teachers. For equity reasons, educational innovations need to be disseminated to students. This is a huge endeavour and might take a long time. In unified education systems, it involves decision making and taking action from the centre downwards through different levels. Most often it is handled in cascade form. A classical example of the cascade is INSET (In-Service Teacher Education and Training).

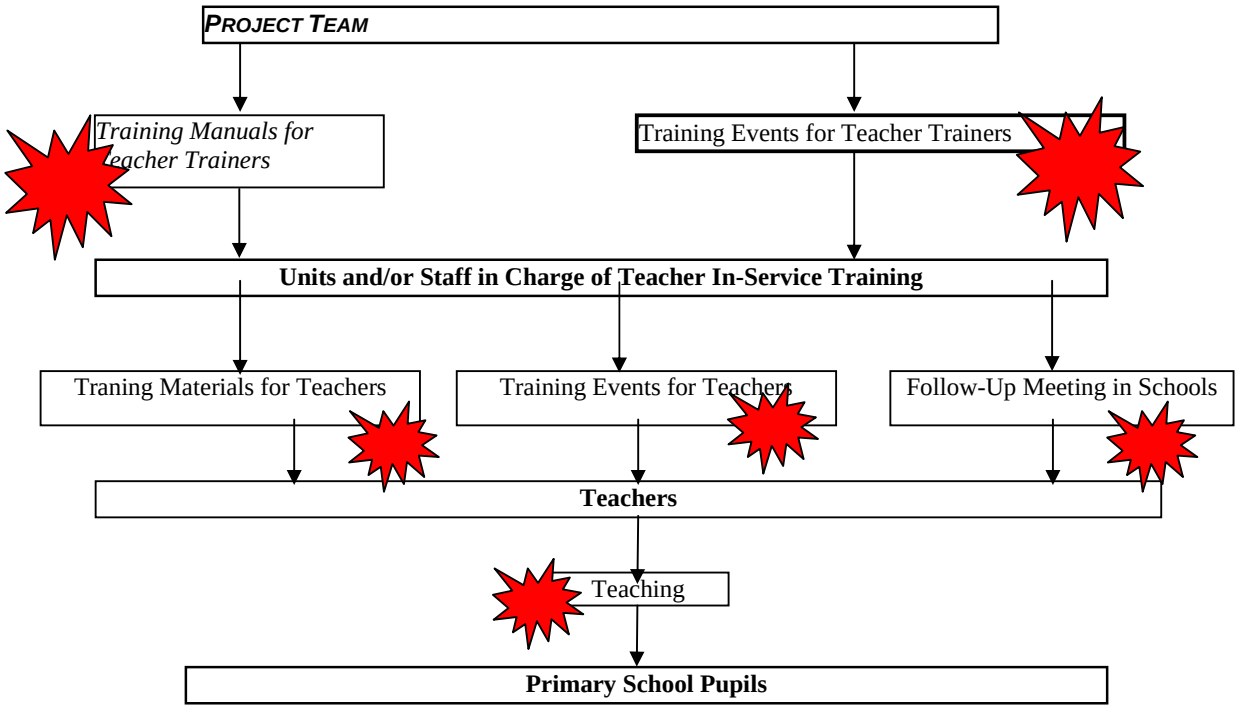
Table 1: Instructor:Learner Ratios in INSET Cascades, Pakistan and Indonesia

	Pakistan		Indonesia	
	PEP-ILE 2000	N	SEQIP 2000	N
Central Level	Project Team	**4**	Project Team	**4**
Level 1	Master Trainers	**46**	Local Consultants	**40**
Central Level : Level 1	1 : 12		1 : 10	
Level 2	Learning Coordinators	**1.550**	Advisory Teachers	**2.640**
Level 1 : Level 2	Ratio 1 : 34		Ratio 1 : 66	
Level 3	Teachers	**27.971**	Science Teachers	**31.680**
Level 2 : Level 3	Ratio 1 : 18		Ratio 1 : 12	
Beneficiaries	Pupils	**962.445**	Pupils	**1.604.679**
Pupil:Teacher Ratio	34		51	

PEP-ILE Primary Education Programme – Improvement of Learning Environment
SEQIP Science Education Quality Improvement Project

Multilevel teaching /learning processes are common, but they are risky and difficult, as there is the in-built danger of quality loss from one level to the next, moving down the cascade of training. They therefore need close monitoring. In the introduction of innovations in the educational field the focus has been, for this reason, towards so-called critical points. Critical points are considered all those elements and steps where the contents of teaching / learning processes are passed on to new and different groups of people. Chances are high that at each level of knowledge transfer essential information gets lost, content is not fully understood, and methods are not properly explained and mastered.

Critical Points in the Cascade



Source: Bergmann, "Monitoring In Multilevel Teaching / Learning Situations"

It is well known that the transfer of material and knowledge passed on in a number of steps provokes easily loss of information, which then leads to even qualitative misunderstanding. Experience shows that the assumption is wrong that learners at each level fully master the curriculum in such a way that they can teach it error-free at the next level.

Quality Loss: Test Results at Three Levels of a Cascade in Pakistan, Grade 3 End-of-Course Assessment, Per Cent of Maximum Score

		Total Score			Mathematics			Language		
Level		**Male**	**Female**	**Total**	**Male**	**Female**	**Total**	**Male**	**Female**	**Total**
1	Master Trainer			82,2%			77,3%			85,7%
2	Learning Co-ordinator	70,1%	71,2%	70,4%	68,5%	65,7%	67,6%	71,2%	75,2%	72,4%
3	Teacher	64,2%	66,0%	64,8%	64,3%	62,7%	63,8%	64,1%	68,3%	65,6%

		Sample N		
		Male	Female	Total
1	Master Trainer			74
2	Learning Co-ordinator	819	359	1178
3	Teacher	2089	1157	3246

Source: PEP-ILE Monitoring Records

All educational programs of national range are complex. For maximum management efficiency, it is important to focus monitoring on relatively few yet clearly defined critical points and/or problem areas.

An example:

1st critical point is reached when the teaching- and learning material is passed on to the master trainers in charge of training the next-level regional trainers. Here, several elements are relevant to be monitored:

a. the teaching- and learning material's quality and usefulness
b. the mastery of the master trainers in understanding the innovations and the educational material
c. the competence of the master trainers to train according to the new methods and material introduced in the training.

2nd critical point is the training that master trainers extend to the regional trainers where again points b. and c. will have to be monitored

3rd critical point is the training that regional trainer extend to teachers advisors, for example the selected teacher of a local school cluster; points b. and c. will be monitored. It is assumed that the teaching and learning materials are the same throughout the cascade.

4th critical point is the training of the teacher advisor to the teacher; points b. and c. will be monitored.

5 the critical point is the teaching of the pupils by the trained teachers. points b. and b. will be monitored.

In other words, all transition points in a cascade are critical points for monitoring. On the other hand, if the same teacher in-service-training programme is implemented and monitored at each level, it is possible to compare achievements and changes taking place across the cascade level; in this way, also the same monitoring tests can be applied with master trainers, regional trainers, local teachers advisors and teachers; at every level of the cascade above the classroom.

Monitoring instruments will be selected and developed according to individual requirements. Tests (pre- and post), interviews as well as the observation of course work, school visits, and classroom observation can give sufficient insight into the impact quality for both the intermediaries and the ultimate target group.

The example from Pakistan in the table above shows clearly that even after several years' training, the quality loss between level 1 (master trainers) and level 2 (learning co-ordinators) is about 12%, between levels 1 and 3 (master trainers and teachers) about 17 %. In the second table below, master trainers teaching learning-coordinators are perceived by the course participants as being more competent than the learning-coordinators teaching teachers. It can be thus seen that the loss of capacities increases from one level down to the next, so that the actual target group, the pupils, do not receive the benefit one would have expected by only interacting with the master trainers. While a certain degree of quality loss is inevitable, it has to be minimised by corrective action. In order to do this, its magnitude needs to be known.

Table 2: Quality loss in the cascade- assessment of trainers by course participants at two levels

	Item	(1) Topic Mastery by trainers		(2) Co-operation among trainers	
Level	Course participants	Very good	Fair or poor	smooth	Not very good
2	Learning Coordinator	**42 %**	8 %	**68 %**	17 %
3	Teachers	33 %	**17 %**	35 %	**30 %**

Note: Row percentages for items 1 and 2 do not add up to 100%. Differences are due to intermediate categories that have been omitted from the table. Source: PEP-ILE Monitoring Records

As shown, failures in one level will multiply in the next level. And: the higher up in the cascade something goes wrong, the higher its potential for multiplication across the whole system. Participants will, most of the time, not be able to detect the mistakes committed by the trainer, given their low level of initial training. That is why there is very limited chance for correction. Monitoring of the upper level is therefore of utmost importance.

In community participation, the local stakeholders together with the project team must specify objective-milestones in order to assure that implementation of the project/programme is objective-oriented. Nevertheless, it is necessary to keep always in mind that appropriate milestone delineation in itself being important, nevertheless only regular monitoring will tell whether the milestones have been reached! How this can be carried out will be illustrated later.

3.3.2 Focus on objectives

The general focus of monitoring should be persistently towards those objectives of the project/programme that got defined at the start of the project phase (e.g. pupils learn more effectively); all ensuing project services and their milestone effects have to be monitored accordingly.

The objectives of monitoring in multi-level teaching/learning situations of a formal educational project /programme are to sustain, and even to improve, the services during implementation, by detecting risks such as transmission errors at critical points before they cause extensive damage.

At all the levels of training, there are two objectives to be monitored:

1. getting course participants to learn up to mastery (immediate output/ completed services of the project); and
2. satisfactory performance of the instructors (qualified utilisation of the output/ the services of the project)

In community participation within the education system the social and political influences on the effectiveness of individual interventions are so complex that the milestone-objective can only partly be foreseen. Still, the formulation of milestone-objectives is recommendable in order to keep the focus during the implementation on a desired impact. On the other hand this should not restrict the monitoring focus on the pre formulated benefit; it would make us blind for the unplanned, desirable or undesirable, foreseen or unforeseen effects.

Nevertheless, for the sake of keeping monitoring economical and transparent, obviously the focus will be only on those effects that are in direct relation to the project overall objective. The general focus of monitoring should be persistently towards those overall objective(s) of the project/programme that got defined at the start of the project phase (e.g. pupils learn more effectively); all ensuing project services and their milestone effects have to be monitored accordingly.

3.3.3 Focus on quality and effectiveness

As has been stressed before, monitoring the quality of planned activities and inputs does not contribute sufficiently to the effective transfer of innovations.

The achievement of set overall objective(s) for the entire project and objectives for each project phase, such as certain improvement of the learning capacity of children, can be expected to manifest itself only at the end of the project / project phase. In order to find out if we are on the right track, intermediate objectives (=-milestone-objectives), the immediate effects, have to be monitored, such as the capacity of trained master trainers to train trainers on a lower level. Only in this way deficiencies can be detected, analysed and corrected, before they become a major risk.

3.3.4 Focus on action-orientation

The monitoring system that is presented here focuses on activities that have short-term effects. All long-term impacts will be evaluated in a separate monitoring survey, as the desired goals of a complex innovative educational programme can only be evaluated after a time period of several years. Action-orientation therefore means:

- The monitoring system focuses on direct effects, or first benefits for the beneficiaries, e.g. on the learning results of course participants and on their own capacity to teach. .
- As a management tool, it is required to detect errors and weak points as soon as possible, and to be able to implement corrective measures as fast as possible.
- Action research should be systematic, using both quantitative and qualitative methods in data collection and in analysis. Nevertheless, the pragmatic objective of monitoring to support management has to be kept in mind. Therefore, scientifically comprehensive data collection is to be avoided; data processing will take up too much time and resources. Only those data are needed on which immediate decisions can be based.
- Monitoring outputs have to be made available as soon as possible in order to correct errors, and to everyone concerned, so as to facilitate the transparency of the project/programme.
- Collection of data should be avoided that explain shortcomings in the outcome but cannot be acted upon within the specific project. (Ethnicity...)

3.3.5 Focus on essentials

Data collection should be kept to an essential minimum, which means that only those data are being collected which are needed to assure and improve the quality of the project/programme. Mainly we focus on detecting errors and shortcomings in order to correct them with adequate, relevant interventions. This might be sufficient for the introduction of innovations in the area of formal education.

In community participation we focus on the expected as well as the unexpected effects, the positive and the negative ones. The range of effects actually taking place is vast as many social and political factors influence them. Further explanation will be given below.

3.3.6 Focus on participation

GTZ and the partner share the responsibility for the impact achieved by the project interventions. In this context, monitoring is an instrument for testing and for strengthening the quality of shared responsibilities.

At each level, selected actors are involved in monitoring. In the beginning they get guidance from the project experts; they increasingly take over the monitoring tasks, till they are able to do it on their own.

Cascade monitoring needs to be participatory at all levels. This does not mean that professional standards are neglected or watered down. There might be a real danger that certain stakeholder groups object to certain monitoring techniques and instruments. And it isn't just monitoring functions that have to be shared; it is the active sharing of management itself that has to be monitored. In this manner, stakeholders are made aware of the purpose and the benefit of monitoring. Too often this is not sufficiently clear to stakeholders, which leads to careless, and even deliberate 'blanching' of data, even though it tends to make them useless.
In large-scale teacher in-service training, centralized monitoring would not detect all the errors which turn up at different levels and in different districts; they have to be detected there and then, which in turn means that the responsibility of monitoring lies at different geographical and hierarchical positions. This not only makes it easier to detect errors on the spot but also enables local stakeholders to improve the quality of this and of other measures. On the other hand, one must accept that everything de-centralised has its own risks and disadvantages. To mitigate them as far as is possible, the effectiveness of decentralised monitoring itself needs to be monitored.

The degree of participation varies; it depends on the distribution of tasks and responsibilities. Objectives and the scale of monitoring are best determined directly by those who are involved in the organisation and implementation of monitoring. Those, who collect data through interviews and tests should be familiar with the objectives, strategies and methodologies of monitoring as well as the adequate application of monitoring results.

In programmes that involve the community, the responsibility for planning, for implementation, for monitoring and also for drawing up the consequences for further implementation, all should stay with the stakeholders. If they are not sufficiently involved in the process, monitoring might be misunderstood as mere control; this may turn out to be counterproductive, since it leads to fear and rejection. A common reaction would be to hide certain issues. When, as a consequence of monitoring, corrective actions are chosen only by a few stakeholders, or even only by project experts, the decision might not be fully accepted and supported. While focusing on the objectives, local stakeholders are more willing to take over the responsibility of improving the services from which they benefit.

3.3.7 Focus on effective use of resources

At first sight, monitoring may appear a too costly undertaking when it is being carried out continuously; surely, certain benefits are to be gained from it, but it must be questioned whether they justify the expenses. This, though, is a short sighted view. Difficulties and cost in "repair" work tend to go up exponentially the later project shortcomings are being detected. And if they are omitted, the ultimate beneficiaries simply do not get what they could have got.

But also within the task of monitoring it has to be assured that resources are being used economically and that monitoring results are used in a manner that expediently improves the

implementation of the project/programme. Some project personnel, time, material and finances are going to be absorbed by the monitoring activities.

It happens too often that the instruments for monitoring are not properly designed, and in consequence data are inadequately collected. Or the instruments are right, but data are not sufficiently analyzed. In other cases, even analysis is being properly carried out, but decisions for further adequate actions are not taken in time. Each is obviously a case of inefficient use or even misuse of project resources which, obviously, has to be avoided.

In most cases, this is a matter of *optimisation.* The collection of many data is costly and might not always be absolutely necessary for keeping the project on track. When few data are being collected minimal cost accrue, but only little information is obtained to support management decisions; having only few data to process may speed up their analysis, but conclusions may be meaningless. It is the right *cost-benefit relation,* then, that counts.

One guiding principle can be to concentrate on those critical areas where problems are to be expected, such as transfer of knowledge from one level to the next. Costs can also be reduced by choosing differentiating levels of monitoring in stages. In other words, before going into detailed data collection, easily observable data are collected. Only when shortcomings become apparent that call for in-depth monitoring, more detailed monitoring will be carried out in the regions or with the specific groups where shortcomings have been detected. This raises the question of how to detect shortcomings in major operations where monitoring can only be done using samples.

The implicit objective of the entire monitoring exercise is *feedback* of the conclusions drawn from monitoring into the implementation processes. Therefore, every serious cost-benefit assessment must, first, delineate the expected minimum benefit, and based on this, work conscientiously towards optimisation of inputs and outputs.

3.3.8 Focus on social complexity

The changes aimed at by a project/programme are influenced by a number of factors, which can be foreseen only to a certain degree. The socio-political 'rooting' of the project/ programme depends on circumstances that are generally highly complex. Only those which can be identified are mentioned under "assumptions and risks" and monitored accordingly. Monitoring should respect this complexity and leave room for gradual detection of those factors. As mentioned before, only those factors are to be monitored that the project can influence or would need to consider when it devises its intervention strategies.

Furthermore, not all of them work automatically against project interests: quite often, there are windfall benefits that come to the fore only when monitored. We will later point out how monitoring under complex circumstances can be done in the field of formal education and in the field of community involvement.

3.4 Major problems with innovations

In most cases in development co-operation, there is the risk of quality loss, when innovations are introduced on a large scale. Still, the aim is to assure that project objectives are going to be achieved in a sustainable way and to the target groups' benefit. No matter whether it is the introduction of more child oriented learning approaches (e.g. reference to pupil-active joyful classroom interaction, Sri Lanka; group-work-learner-centred, constructivist approaches to

teaching/learning in Peru), or of new topics, such as environmental- and health education (Yemen and Nepal), or of practical subjects such as science education (Indonesia), there is always quality loss taking place as the project/programme is being expanded through the institutional levels, towards the classroom. Other project innovations may introduce innovations such as new methods and procedures concerning school management, school based management and school development, equipment material for experiments (Science Kits in Indonesia), or teaching and learning material (Sri Lanka), or new equipment in schools and the community (Nepal). What they all have in common is that they are measures new to the concerned country/community.
In the following, three major difficulties with innovations that are disseminated through teacher in-service training may be pointed out:

1. Instructors lack experience in how the innovations work in their specific school environment; they therefore fail to address certain key issues and, in consequence, are unable to convince course participants, be it trainers or teachers.
2. Fear of not having clearly understood the innovation, of lacking the capacity to implement it, or of not being accepted by the students, or of being over-tasked, all can lead to resistance by teachers to accept the otherwise well-designed innovation. In this context, technical difficulties that concern the handling of new teaching methods, are easier to overcome than more intangible personality aspects, such as insecurity due to perceived infringement on the status of teachers, on their professional identity, or their value system in respect to education. At first teaching/learning innovations that are more child-centred than the traditional teacher-centred approach, can easily be taken as an attempt to undermine teachers' authority.
3. The innovation might contain design flaws that only become apparent during implementation.

3.5 Training and Guidance

Training of those involved in monitoring is of vital importance. Competence has to be built up so that the partner organisations, the target groups, as well as the concerned professionals of the project are able to work and monitor towards achieving objectives.

In order to assure qualified, efficient and effective monitoring, representatives of *all* stakeholders involved in the monitoring should receive relevant training and introduction workshops. These introductions contain a general part suitable for all, and a specific, technical part focusing on the relevant tasks of those who monitor different issues at different times in various ways.

It is important to assure that the logic and purpose of monitoring: to steer the project towards success of the project/programme, is being appreciated by the stakeholders. Activity plans, designed in the beginning of the project phase, are often too rigidly followed and monitoring is all-too easily mistaken as a medium to reprimand and to assign blame! **Annex-2**

Those responsible for data collection need to fully understand that they themselves will not be measured and judged by the monitoring results; theirs is merely to collect data and to analyse them up to a certain extent in a manner that assures their reliability, punctuality timeliness and readability.

3.5.1 Training of professional staff

The professional project staff needs to master the philosophy, logic, and techniques of monitoring. It therefore needs to be convinced and motivated to use objective-oriented monitoring as a tool to improve the quality of the project/programme. The new focus of GTZ concerning AURA, as outlined above, puts a premium on monitoring, and impact monitoring in particular. It is to be expected, though, that staff members having worked in development projects for some time will demonstrate certain resistance towards any change of working modalities.

It is for this reason that even training of professional staff in the technical modalities of monitoring is better being seen as a slow *learning* process, that will only gradually bring the professionals to observe closely, to investigate in depth, and to motivate local stakeholders to express their differing points of views, to analyse them objectively, and to draw decisions for further actions.

It is advisable to choose a coordinator for monitoring who accompanies the professionals in the learning process of active monitoring and the facilitation of monitoring. The coordinator should not take over the monitoring him/herself but rather guide the professionals to facilitate the stakeholders in monitoring.

Another aspect of objective-oriented monitoring that is new and may be disturbing at first, is its all-inclusiveness: ideally, *all* stakeholders take it as their co-responsibility to monitor the project/programme's advancement, - not only their particular share in it, but the whole project/programme. The project/programme's success depends to a good extent on its being *owned* by all stakeholders. This will be later demonstrated in the field of community participation.

3.5.2 Training of partner(s)

Within a project's playing field, whether at the national, the regional or the local level, all key actors are to be considered and dealt with as *partners*. In teacher in-service training, accordingly, the key actors are: project professionals, master trainers, regional trainers, local training coordinators such as teacher advisors, and teachers as well as the national and regional department of education.

When it comes to community participation in education, the key actors depend on the project focus; within health and environment education the main actors could be teachers, parents, local NGOs and CBOs, the pupils as well as the local department such as municipality or village/ district centre and the project professionals.

The project strategy must be to get all relevant partners actively involved in the monitoring dynamics. Depending on the local culture in its political and administrative aspects, monitoring, and participative monitoring in particular, could mean a break with current ways of doing things. Training would therefore have to strengthen understanding on the one hand and the demand for transparent decisions based on rational, technical argument on the other hand. They can be made to collect and analyse relevant data as well as support other stakeholders in their own monitoring task. What kind of training individual partners requires is a sensitive issue that must be decided from case to case. They may, or may not, need a similar training as the professional staff; they may, or may not, be trained together.

In this context, it is important to see monitoring not merely as being a GTZ requirement. These skills should give people the chance to practice monitoring independently as a general means to improve the quality of any measures that is meant to improve their lives.

Another important aspect of *objective*-oriented monitoring that should be kept on any training agenda is the fact that monitoring is no end in itself, but is a management tool for pro-active project management.

3.5.3 Training of local stakeholders

Ownership of the project is an important goal of each project/programme; participation of different actors in the monitoring process has a strong *capacity building* effect to this end. Stakeholders involved in monitoring should be trained in these aspects, so as to avoid 'face-lifting' of data; whenever this happens it is due to their lack of deeper understanding the purpose of monitoring, mistaking it for mere control.

Theoretically, it will take three distinct training sessions to field staff and stakeholder groups, containing

- the discussion of field observations, followed by general ideas and experiences in monitoring, in impact and in participation;
- detailed discussion of PIM, if possible supported by handouts with visualisation, pictures and examples
- adaptation of the general concept to the actual work requirements.

Local stakeholders should not be over-burdened with too many theoretical explanations, as regard the general concept and its specific terms (like monitoring, impact, participation), since this only tends to intimidate them. Rather, they should be encouraged to share their own experiences and ideas. They need to know that their experiences and their point of views are valued. They should be asked about specific effects, or benefits, they expect from participatory impact monitoring, and also about the indicators to measure these effects. If it is culturally appropriate to introduce visualisation, pictures and graphs, these can be important aids for explaining participatory impact monitoring: it stimulates learning processes to call for cognitive and emotional responses. Humour and enjoyment help to reduce stress, boredom and resistance. All the tasks of monitoring facilitation will have to be launched by project professionals, but will have to be handed over increasingly to the partners with their local expertise. Project management must make sure that PIM does not rest in the hands of experts, who use it as another means to sustain their control. During the project phase the professionals will guide the key stakeholders and assist them in the decision-making process for further actions to be taken on the basis of the monitoring results. (Example: AC of local stakeholders in Nepal).

4. Formal Education

There are basically three options in teacher in-service training to reach large numbers of teachers:

1. Distance education with, or without, occasional face-to-face interaction.
   A large number of people can be reached by distance education via media programs. Nevertheless, the effect of such a teaching as formal education is doubtful and rather difficult to measure
2. Direct instruction through a team of trainers.

It takes a lot of time and travelling, if a team of trainers is to teach large numbers of teachers in a region or even the whole nation.

3. Indirect face-to-face instruction through trainer teams in a cascade.

In large-scale programmes, only the first and the last options are feasible. The cases presented here are instances of the last option.

Through multi-level teaching /learning a large number of the target group can be reached. The project cannot address the target group directly and needs intermediaries at different levels who work as multipliers, thereby reaching a growing number of intermediaries/multipliers who, in the end, reach the target group, the pupils.

Multilevel teaching /learning situations form a cascade of direct face-to-face instruction, with trainees of one level being the trainers at the next level down. At the top level, a professional team designs curriculum elements such as content, teaching- and learning materials and teaching methods, and at the bottom level, there are students, pupils, or adults as the ultimate beneficiaries of the project/programme. In between, there are the multipliers.

Examples are:

1. country- or province-wide teacher in-service training
2. adult education, e.g. literacy programmes with large numbers of participants
3. In-service training of professional staff in any sector that employs large numbers of staff, e.g. health or rural development.

This handbook focuses on the first example, teacher in-service training.

4.1 Aspects of formal education monitoring

4.1.1 Monitoring integrated into ongoing activities

This is a de-centralised monitoring approach. Partners and other actors monitor on-site, i.e. there where teaching and learning take place. Monitoring is integrated into the ongoing project activities, not a separate, add-on activity. It focuses on immediate impacts at the different levels of the training courses meant to reach teachers working in schools of a large geographical area.

4.1.2 Systemic monitoring

The monitoring system is designed to orientate teaching- and learning processes at multiple levels, in a cascade form. It serves the introduction of innovative educational programmes on a national, or at least on a regional level.

Data sets for monitoring need to be well structured, so as to permit statistical methods of multi-level analysis of the immediate impact of the project interventions, - e.g. by pre- and post tests at the different levels - , such as the distribution of newly designed books, the training of teachers, improvement of classrooms, or the instruction of school management and district administration. Before the effects of these interventions reach the local target group(s) they will have to be systematically monitored on various levels. Any instance of learning (courses for master trainers, instructors, and the final INSET courses) should be monitored by pre- and post tests.

4.1.3 Type of monitoring

The monitoring system that is presented here aims at reforming centralised processes in public education. This could regard e.g. the transfer of innovative pedagogical methods and new subject-matter for daily teaching in public schools. All pedagogical processes take place in a given context; resources are most often limited, which necessitates monitoring of the pedagogical and also of administrative processes.
Like in other cases, data collection must be reliable and representative; their analysis must be thorough and yet speedy; and the feedback of findings into the steering management must be decisive.

4.1.4 Participatory impact monitoring on different levels

Usually, measures of innovation in the sector of education involve a great number of persons, such as directors of educational organisations, consultants working as national master trainers, regional trainers, students of the educational department, teachers and pupils, as well as units, such as entire classes, school clusters, national and regional educational departments, and seminars in universities.

Table 3: Number of target groups and beneficiaries

Target groups and beneficiaries	1999	2000	2001	2002	Total
Local consultants	40				
PBS – Advisory Teachers	420	600	1.200	420	**2640**
Science Teachers	5040	7200	14400	5040	**31680**
Classes covered by newly trained teachers	10080	14400	28800	10080	**63360**
Additional pupils covered	255322	364745	729490	255322	**1604879**
Headmasters	2520	3600	7200	2520	**15840**
Inspector	84	120	240	84	**528**

Source: SEQIP

The great number of stakeholders involved and the geographical distances make it imperative to design a comprehensive monitoring system that facilitates data collection on the spot. This requires participation of different stakeholders in the monitoring process. Qualitative and quantitative data should be analysed as soon as possible and then presented in a form easily understandable for the different key stakeholders. This way monitoring results can effectively contribute to the quality of management of ongoing project interventions at the different levels.

4.2 Application of Monitoring as a Management Tool

First area of application: teacher in-service training
In order to react to shortcomings in the current primary in-service-training, each level of the training / teaching (master trainers, regional trainers…. teachers, pupils) will have to be monitored:
At the first level, master trainers are trained at the national or at the provincial level by the project or by consultants. At the second level, these master trainers train in-service advisors at the district level. The in-service advisors train the principals and one senior trainer in school clusters; in Sri Lanka head plus one (HPO) teams train teachers, who finally teach pupils. (Example: Sri Lanka)

Introduction of educational reforms through a cascade form contains major risks at all levels of transmission of knowledge. Prior attention should be given to the transmission points at higher levels, e.g. to the training of master trainers following their training of trainers, in order to avoid mistakes to be committed already at the first levels of transmission. This would multiply the errors at the levels below.

Certain criteria are relevant for the determination of critical points:

- They must be relevant for the achievement of the objective.
- They are known, or, at least, expected, to contain difficulties.
- There is insufficient experience on how to master the difficulties.
- They are permanent elements of the project/programme. Aspects that only occur once and do not last long do not need to be considered in the monitoring process.

According to our experiences, quality risks occur frequently in large-scale teacher upgrading programs. In order to detect shortcomings as soon as possible, before the transmission errors are multiplied on the way down the different levels, objective-oriented monitoring is needed on those levels.

If at the top-level the activity is to train master trainer, then the result / output would be improved master trainers' competence. The milestone-objective of this activity would be that master trainers use the services and train trainers in a qualified way and thereby utilize the services they received. The first expected benefit would be accordingly that the trainers' competence improved; they are now able to teach the next level.

Further down the levels, the following objective-milestone concerning the utilisation and first benefit can be aimed at and monitored:

Activity: master trainer train trainers
Result /output: Trainer's competence improved
Utilisation: trainers use the output and train teachers
First benefit: teachers' competence improved.

Activity: trainers train teachers
Result / output: teachers' competence improved
Utilisation: teachers use the output and teach students effectively
First benefit: students' achievement increased having received innovative lessons.

Activity: teachers teach students
Result / output: students achievement increased, students enjoy learning
Utilisation: students participate actively during lessons
First benefit: students learn more easily, more motivated and effectively; they visit schools more regularly, improved self-confidence, personality development towards more critical thinking, enhanced learning capacity.

Looking back at the experiences of different educational project/programmes in large scale teacher in-service training, the critical points usually are the following:

- Preparing the training manuals for teacher trainers;

- Instruction during training events by the project team for teacher trainers;
- Instruction by project staff in charge of in-service training to teachers by teacher trainers;
- Preparing training materials for teachers;
- Running training events for teachers;
- Teaching pupils.

Major risks that occur frequently are:

- The training message as received at the next level contains errors and omissions;
- The training message is not understood;
- The intended skills are not sufficiently developed to be ready for application.

These risks could lead to the following:

- No desirable change at all
- Change for the worse
- Serious content errors

Second area: teaching- and learning material

There are only few, qualitative (a,b) or quantitative, attempts on monitoring the improvement of learning capacities provoked through the introduction of learning material as well as teaching materials or by the school management. Within classroom observation and group/individual interview to teachers one section is mostly dedicated to the usefulness and effectivity of educational material.

This should be added when available. Criteria for evaluating educational material are to be found in the **Annex-3 .**

4.2.1 Clarification of framework

It is necessary to clearly delineate the framework of a given monitoring task. This requires the following clarifications:

1. What is the kind of information that the different stakeholders need?
2. What is the focus of monitoring? (e.g. the curricula, teachers' guides, teaching- and learning material, organisation of the programme, teaching- and learning processes)
3. What is the structure of the processes to be monitored, and who exactly are the target groups?
4. What are the critical points of the process under review (e.g. the cascade)?
5. Which quantitative aspects have to be considered concerning the number of courses and seminars, trainers, trainees and training workshops?
6. Are there different mechanism and instruments for data collection available? Has their practicability already been tested?

4.2.2 Stakeholders

Depending at the level (national, regional and/or local), different groups of relevant stakeholders carry out monitoring activities. The training of master trainers can be monitored centrally (1,2,3,4,5,6) with the support and facilitation of the project team. The training of trainers should be monitored by the master trainers themselves and the regional educational offices, with indirect support from the project team. The participants (1,2,3,4) of the training are monitored by the trainers. The monitoring of the training of teacher advisors (1,2,3,4,5,6) and principals should be carried out by the trainers themselves, again with indirect assistance and support from the project team. The classroom observation can be done by different

stakeholders, such as project team, consultants and competent trainers (a,b,c), principals and teachers' advisors, as well as the local authority of the district educational offices or teachers (1,2,3,4) themselves.

4.2.3 Timing and frequency

The planning of monitoring frequency and -intervals depends on the answer to questions, such as the following ones:

1. When and where are critical points to be expected in transferring knowledge, skills and attitude?
2. When can changes be observed? (The changes according to milestones, or sub-objectives of the project objectives.)
3. When does management require monitoring results to steer the project/programme towards the objectives?
4. When should decisions be taken, for example about training courses, meetings, field trips?
5. When do the partner organisations and intermediaries need relevant oral or written feedback?

4.2.4 Resources

Monitoring includes observation, reflection, situational analysis, discussions with other stakeholders, decision making, planning, budgeting, co-ordination, taking notes and keeping records. A few positions, those of a coordinator or - in bigger projects/programmes a team - working full-time on monitoring, will have to be created. But they are not the only ones using time for monitoring. Time is needed to design tests and to carry them out before and at the end of training courses, to analyse them. Classroom observation (and the observation of training courses) needs the time of one or two observers. Project managers and professionals need time to read monitoring reports, time is needed for team meetings at various levels to discuss findings, draw conclusions, and prepare decisions. Beneficiaries and other stakeholders need time to participate in monitoring.

Monitoring activities are integrated into the activity plan as an important part of the implementation. There are annual plans of operations, broken down by major components (e.g. teacher in-service training) with critical points. Data collection is done at those critical points. Then, there are deadlines for monitoring results in order to improve the next steps in the sequence. For practical purposes, one would insert a separate line for monitoring in a planning document.

4.3 Methodological Steps

4.3.1 Monitoring design

When designing monitoring systems the following conceptual preparations have to be considered:

1. Objectives and interests of the different actors for monitoring are to be clarified and defined as being valid for all parties.
2. Monitoring topics, the stakeholders to be involved, and monitoring methods and strategies are to be clarified and agreed upon. It should be defined who monitors whom or what, in which ways and in respect to which characteristics.

3. Indicators are to be defined that refer to the objectives and milestone-objectives of the project/programme.

4. Different aspects of surveying have to be planned, such as the sources of monitoring certain themes, the number and the scope of random tests, as well as the frequency of monitoring activities.

5. Time schedules and implementation modalities have to be determined, in detail for a few months only, and in broader terms for the entire project phase.

6. The deadlines for full and partial monitoring results have to be determined when monitoring results must be available, and when part-results are sufficient.

7. A concept on how to utilise already existing data banks has to be designed (MIS, EMIS).

8. A half-yearly implementation plan including the relevant monitoring activities, in line with the projects cycle of activities (quarterly, half-yearly, yearly, as the case may be) needs to be prepared.

4.3.2 Indicators

Indicators have to be chosen that define impacts at the level of utilisation of the project services, as well as at the level of immediate effects/direct benefits. (see charts) They provide overall orientation and make the impacts measurable. Exact data, target values – with determined numbers or percentages (e.g. 50%) - or target corridors, – giving some space in providing a range of values (e.g. between 40 and 65 %) - should be included for those levels the project can monitor. Usually, a target corridor is more realistic. Target values make sense only if they can be derived based on theoretical considerations and if they can be attained. Thus, the indicator for gender parity is: percentage of girls among pupils/students at any level of education: 50%. It is usually prudent to specify a corridor. It has a lower limit (40% in the above example). If the observed value falls below this level, the objective definitely will not have been met. As long as we cannot predict the dynamics set in motion by a project's intervention, we cannot specify how much further we can get above and beyond the lower limit. We might know that 100% is definitely out of reach, and we might have a hunch that we might get at 65% if all goes well. Any indicator value between the two limits would be acceptable, and of course any value beyond the upper limit.

Basically, there are two major indicators in multi-level teaching and learning such as in-service training: the learning results of the learners at each level and the performance of the instructors/teachers at each level.

The following table gives an overview of the indicators to be reached by all those in charge of securing the quality of multilevel teaching/learning processes. They are vital for reaching the final objective to improve the learning capacity of pupils:

Table 4: Indicator Sets

Level	*Actors*	*Indicator Set I*	*Indicator Set II*	*Indicator Set III*
Project Unit	*Local and international expert team*	*Quality of suggested intervention / innovation*	*Performance as trainers*	*Benefit for Master Trainers*
Intermediate I	*Master Trainers*	*Learning results (degree of mastery)*	*Performance as trainers*	*Benefit for INSET Instructors*
Intermediate II	*INSET instructors*	*Learning results (degree of mastery)*	*Performance as trainers*	*Benefit for teachers*
Intermediate III	*Teachers*	*INSET learning results (degree of mastery)*	*Performance as teachers*	*Short term benefit for pupils*
Beneficiaries	*Pupils*	*Baseline data Learning results before teachers got INSET (degree of mastery)*	*Learning results of pupils*	*Long term increase in motivation, knowledge and skills*

Indicator Set I refers to the result of the training; the trainees achieve a certain degree of mastery of the knowledge and skills provided by the training. - Indicator Set II refers to the utilisation of the knowledge and skills obtained; it calls for measuring the trainees'/pupils' performance at the next level, the master trainers to the trainers, the INSET instructors to the teachers and the teachers to the pupils. - Indicator Set III refers to the effect this utilisation has; it invites to observe and measure to what degree the trainees/pupils benefit from that type of training/teaching. At any given level, it is assumed identical with Indicator set I at the next level below.

Indicators need to be developed according to the respective situation, the subjects covered, and the type of innovation. Baseline data have to be collected for the areas of the intervention in order to establish the effect of the intervention on the ultimate beneficiaries. The objective of all interventions is to benefit the ultimate target group, i.e. to improve pupils' learning results. The indicator for this principal objective is obviously the most relevant one. In case pupils' learning results have not improved, the cause and its location have to be detected. Several indicators have to be formulated to track down where the shortcoming occurred.(example of an indicator map)

It is important that data collection concerning the learning- and teaching results have no effect on those involved in the data collection and analysis as that might hamper an efficient and honest data collection. This needs to be communicated effectively to all concerned. Nobody collecting monitoring data should be judged according to the content of the data (good or poor learning results), but rather on the quality of the data. The question would be: Are the data complete and reliable, do they come in time?

4.3.3 Instruments and methods for data collection

When the concept for monitoring is agreed upon, concrete proceedings should be developed. A certain specialised knowledge about empirical social sciences is required, and also some skills on the utilisation of computer software for statistical analysis of large data sets. This literature should be used with precaution, keeping in mind that this monitoring is action-oriented. Time consuming exploration or sophisticated analytical techniques are usually not required. The following steps describe briefly the different issues to be considered in monitoring:

1. Instruments for data collection have to be developed. One important principle for data collection is to collect only those data which will be utilised for assuring or improving the

quality of the interventions. Hence there is the need to have a decision-making model and a general set of indicators beforehand!
Technical, administrative and manpower capacities for the analysis and interpretation of the data have to be taken into consideration already at the beginning. Capacities for data collection and their analysis need to be balanced. As a consequence, data collection parameters should be kept within manageable limits; still they are defined by the objective(s), the indicator(s), as well as by pertinent methodological reflections. Apart from that limitation, the general rules for social sciences apply.

2. The objective(s), sources and modalities of application, as well as those who apply the monitoring instruments should be identified. Instructions should be provided on how to fill out questionnaires, and/or how to handle other types of surveys that are going to be used. Here again, it isn't the mere quantity of survey items that counts. Rather, each item (e.g. each question) should focus on one essential element to be observed. The items are chosen so as to get data for relevant indicators, thus answering relevant questions. Some of the items already serve as indicators; others only refer to specific elements and need to be combined in order to build indicators. The different items as a whole fully determine the indicator. In order to define the items of an indicator they first will be classified by themes. Usually first the themes will be defined and then the adequate item chosen.

3. In the questionnaire, each question and the possibilities for answers should be unequivocal.

4. Methods for monitoring instruments are: tests, which focus on the knowledge acquired, interviews, including group interviews and individual in-depth interviews, course assessment by participants, group discussion, classroom observation, analysis of documents, case studies in form of texts, videos or theatrical presentations.

5. The various monitoring instruments should be adapted to the specific task that each one is supposed to accomplish within several months

6. long plans should be avoided, it should not extend half a year; additional instruments might have to be developed to probe into shortcomings detected by the first round of monitoring system.

7. It is recommended to apply the same instruments or data collection at each level in multi-level teaching/learning, in order to identify the quality loss in the cascade. To be able to compare the changes taking place in a period of time and to facilitate mid-term and final evaluation, equivalent test forms (a,b,c) should be used.

8. The selection of monitoring instruments depends also on the requirements of the stakeholders for monitoring and their expectations of qualitative and quantitative information.

9. Test forms concerning the course content and observation sheets (a,b) for classroom observation should be developed by the course writers. This forces them to focus on the course objectives in an observable form, when new content is not sufficiently well taught, or recommended teaching methods are not or wrongly practised.

10. If further analysis is needed, e.g. to find out why new content is not, or not sufficiently, taught, or why trained teaching methods are not or wrongly practised, then in-depth

interviews should be carried out as individual interviews or group interviews. This can be done after the course or after visiting teachers in school clusters.

It must be noted that data for quality monitoring, as described above, are scarcely available! They most often have to be introduced as an innovation. The following example is taken from a classroom observation sheet in Indonesia (the form used for monitoring is in Bahasa Indonesia and contains 54 items):

Table 5: Quality Monitoring

The teacher conducted the activities				
1. According to the lesson plan	Always	Sometimes	Hardly ever	Never
2. In a pleasant atmosphere	Always	Sometimes	Hardly ever	Never
3. Creating pressure on pupils	Always	Sometimes	Hardly ever	Never
4. The teacher paid attention to pupils	To all	To most	To a few	To none
The teacher observed the following rules in Science teaching				
5. Respecting the sequence suggested in the teacher's guide	Always	Sometimes	Hardly ever	Never
6. Motivating pupils by telling a story	Very well	Well	So-so	Not at all
7. Motivating pupils by presenting a phenomenon	Very well	Well	So-so	Not at all
8. Motivating pupils by doing an experiment	Very well	Well	So-so	Not at all
9. Motivating pupils by using their previous Knowledge	Very well	Well	So-so	Not at all

Source: SEQIP Monitoring Records, Indonesia

In order to push the analysis further, e.g. to find out why new content is not taught or teaching methods presented during INSET are not practised, in-depth interviews would be used. These could be individual interviews. Often, however, it is more useful to conduct group interviews, e.g. with course participants right at the end of the course, after the course evaluation data have been analysed, or after visiting teachers in a school cluster.

4.3.4 Data Processing and Analysis

In the time available, data will have to be processed (example of process monitoring: *Sri Lanka*; impact monitoring: *workshop observation, Peru* and *classroom observation. Sri Lanka*, *case studies for participants. Peru)* and analysed sufficiently well that they show, without exceeding their time allocation, to what extent the indicators have been reached. Information that cannot be made available when needed, e.g. before beginning a training cycle, will not be useful.

When the same instruments are chosen for all units and levels *(a*,*b*), the results can be jointly presented; this shows best the quality loss in a cascade and allows the identification of common difficulties on all levels. The items of each instrument refer to topics, elements, problems and innovations. As a first step, the items will be arranged according to their degree of difficulty from the most to the least difficult. In this way, the areas in need for immediate corrective actions can be easily identified.

Regarding the learning results, it has to be decided on the basis of actual results what level of knowledge and skills will be accepted in terms of a value corridor. Indicators will be built from the test items as simple scores or using more sophisticated techniques: overall scores, sub scores according to subjects and/or learning areas and competencies. Next, all groups that participate in the monitoring will be analysed as regards their opinions and attitudes as well as their objective level of knowledge and skills.

All data analysis aims at the provision of adequate information in order to steer the project towards its objectives; this can be done in various ways:
Comparison of the actual situation and a former situation, e.g. the capacity to teach in the beginning of the training course and at the end. This is an obvious way to find out whether the project/programme is on track.
Comparison with a control group that did not receive benefits from the innovations.
Benchmark comparison with a situation considered satisfactory, be it in another project, a different country, or international assessment data.

Findings and data analysis are oriented towards decision-making, preparing the ground for further actions. Therefore, conclusions/ findings should be made available to management as soon as possible; at the least, they should be kept available for the moment when they are needed as a basis for reflection and/or decision making. Time consuming exploration or sophisticated analytical techniques are not required and to be avoided where possible, in order not to postpone corrective actions and address shortcomings as fast as possible. They could be interesting in their own right but must not be allowed to interfere with deadlines for decision making. One option is to invite education scientists to analyse the data along scientific lines.
Analytical tools could be limited to simple scoring techniques, the use of percentages, presenting results by relevant subgroups (boys, girls, teachers by gender, ethnic groups or mother tongue). The following tables illustrate different ways of presenting the same data from classroom observation under different angles. As a consequence, they give rise to different conclusions and recommendations. They are taken from the Science Education Quality Improvement Project (SEQIP) in Indonesia.

Table 6: Results of Classroom Observation by major topics and by Item

The teacher conducted the activities	**2.52**
1. In a pleasant atmosphere	2,87
2. Without creating pressure on pupils	2.76
3. The teacher paid attention to pupils	1.94
The teacher observed the following rules in Science teaching	**1.82**
4. Quality of motivation	1.70
5. Explore the pre-knowledge of the student	1.61
6. Direct the attention of the students towards the main problem	1.73
7. Guide the students how to make observation	1.77
8. Guide the students collecting data	1.58
9. Guide the students making the conclusion based on the data	1.47
10. Follow the steps that are suggested by the Teacher's Guide	2.79
11. The teaching procedure is suitable to achieve the lesson objectives	1.88
12. The teaching is connected to the daily live and the living environment of the pupils	1.84

Note: The observation form contains a total of 54 items. Only 12 are shown here. Scores range from 0 (unsatisfactory) to 3 (very good).

The table shows that

1. teachers master the two areas to a different extent. The general conduct of the lessons was much better than the adherence to the principles of modern science teaching.
2. In each area, there are differences among different types of behaviour.
   a. Thus, in "general lesson conduct", they were much better in creating a pleasant atmosphere without undue pressure on pupils than on paying attention to individual pupils.
   b. Concerning the application of rules of science teaching, they were best in following instructions (item 10), while there is room for improvement concerning systematic use of pupils' previous knowledge (item 5), help with data collection (item 8)., and help with conclusions from observations (item 9).

This is no surprise since these behaviours differ most from the rote learning teachers usually promote in class. They lack experience and routine, and probably do not feel comfortable. Thus, these are behavioural areas in need of reinforcement through further training.

Another way of presenting data is simply ordered by frequency, using arbitrary criteria to identify items that are satisfactorily mastered, items that need some attention but point towards potentially satisfactory performance, and items that would need to be taken up seriously in subsequent training courses. The table below is divided into three sets using cut-off points. Items with means of 2, 00 and above have been considered. They can be mastered by the majority of teachers and need not be taken up in future courses for the same teachers. Items with an average below 2, 00 but above 1.69 are considered average. However, a sizeable number of teachers do not master them, and therefore, they need some reinforcement in future courses. Items with an average below 1.70 are considered poorly mastered; others need to be addressed with corrective actions, as they seem to harm the achievement of the objective(s). For easy reading, these groups have been colour-coded.

The table shows the standard deviation in addition to the averages. The standard deviation measures how close the individual cases (data points) are to the average. The larger the standard deviation in relation to the average, the more the cases scatter, and the more of those who were observed or took the test might be below acceptable standards. Large standard deviations are shown in red. Individuals with particularly low scores can be identified and, if the group is large enough, they could be a target group for corrective action.

Table 7: Items According to Mastery

Item	Mean	Std. Deviation
Teaching in a pleasant atmosphere	2,87	0,61
Follow the steps that are suggested by Teacher's Guide	2,79	0,72
Enthusiastic	2,44	0,65
Teacher without misconceptions	2,41	0,81
Using the appropriate components of the Kit	2,39	0,66
Time was used according to the plan	2,29	1,28
Proper appearance	2,03	0,42
Using relevant examples	1,99	0,89
Writing and picture are readable	1,93	0,53

Item	Mean	Std. Deviation
Able to assemble the experiment	1,93	0,52
The teaching is connected to the daily live and the living environment o the pupils	1,84	0,66
Teacher asks relevant questions	1,84	0,62
Teacher gives positive reinforcement	1,80	0,80
Guide the students how to make observation	1,77	0,57
Quality of motivation	1,70	0,80
Returning the instruments back in good order	1,64	1,02
Guiding the students in assembling the experiment	1,57	0,81
Teacher able to link one concept with another	1,51	0,79
Guide the students making the conclusion based on the data	1,47	0,69
Teacher is current with the development of the latest knowledge	1,24	0,81
Students complete gaps in sentences	1,06	1,12

Note: this is a selection from 54 observational items.
Source: SEQIP Monitoring Records

Looking at the poorly mastered items, the problem with key behaviours and skills of the new approach to science teaching becomes clear: Neither are all teachers sufficiently familiar with subject content, nor do they refrain from using the old practices such as having students complete gaps in sentences, and this in chorus, for an answer. Concept mastery, guidance in drawing conclusions, and simple help in assembling the experimental equipment needs a lot more of effort and practice.

In order to detect shortcomings, each item has to be analysed thoroughly. Only then the monitoring results provide useful guidance for corrective measures to be taken. The example of a pre-test for INSET instructors in Indonesia shows how such guidance could be understood in an intermediate level in the cascade. The pre-test was administered at the beginning of a course in order to (1) know the profile of the initial difficulties of participants, and (2) be able to assess the gains during the course, since the same test would be administered right at the end of the course.

Table 8: Results of a Pre-test for INSET instructors, in descending order

Test Item	Mean	Std. Deviation
Identify the right way of using a thermometer	0,740	0,44
Diffusion of light in space	0,630	0,48
Science concepts-identify those to be taught during an outing	0,610	0,49
Water in our breath	0,480	0,50
Importance of air for human respiration	0,380	0,49
Evaluate a teaching sequence for discovery learning	0,270	0,45
Electricity - bulbs in series	0,220	0,41
Evaluate the pedagogical properties of a teaching sequence	0,200	0,40
Direction of blood circulation in a diagram	0,140	0,34
Growth of Plants - steps in observation	0,120	0,33
Thermometer - repairs	0,079	0,27
Magnets - Energy and size	0,075	0,26
Growth of plants- conclusion about the importance of light	0,070	0,26
N	558	

Note: Items were scored 1 = right, 0 = wrong.
Source: SEQIP Monitoring Records

The table indicates that the instructors did not yet master the more complicated science contents and principles for primary grades, and even less so the pedagogical skills required for motivating teaching.

4.3.5 Adequate software

Different types of programmes are required for monitoring:

a) data bank programmes, in case data banks are established over a longer period of time; for this purpose, ACCESS, dBASE, FoxPro, FileMaker or other well-established data base software could be used;
b) statistics programmes for data analysis, from the simplest to the most sophisticated; good results have been obtained with in SPSS (Statistical Package for the Social Sciences); it also produces simple graphs.;
c) EXCEL should be used for further analysis that goes beyond statistical analysis and which cannot be handled by SPSS; e.g. simulations using statistical results; planning and budgeting exercises, etc; it is also ideal for more sophisticated graphs that cannot be produced by the software used for statistical analysis;
d) POWER POINT would be used for presentation.

4.3.6 Reporting and Documentation of Results

The objective and purpose of each report should be clarified first. The results should be presented to the different stakeholders in such a form that it facilitates their participation in decision-making and management. The report should support and guide those in charge of the implementation of the project/programme. The focus should be on essential results, and they should be presented in a short and understandable manner; this may very well differ for the different actors involved.

Various software programs, such as SPSS or EXCEL, can be used for the presentation of results, preparing tables or graphics. (example for findings according to items: Peru; SEQIP, Indonesia findings according to factor analysis (1,2,3,4,5,6,7,8): findings according to questionnaire: Peru .

The same holds true for the text. It should be precise and specific. What this means as regards content and presentation depends on the requirements of management. Generally speaking, it is the purpose of all data collection and analysis to facilitate appropriate decision taking. This action-oriented focus of monitoring should be kept clear at all times.

Reports too often contain too many details and are presented in a way that makes reading difficult and tiring. Report writing should keep in view the interest of the different stakeholders; they should 'enjoy' reading it as a stimulating paper that invites using it. Samples of result presentation concerning entirely the progress: Sri Lanka and progress and first impact: Peru, level 1 and 2 and Indonesia (1,2,3,4,5,6,7,8,9,10,11,12, 13,14, 15, Sri Lanka)

Also the report layout should not be under-estimated. Intelligently organised, it helps the reader to feel comfortable. Too often, though, those who prepare reports either are not concerned about reader comfort, or they fall into the trap of 'layout over-kill' for the sake of impressing the reader, whilst unwillingly distracting him.

In fact, it may be helpful to take the report, itself, as a milestone; like any other milestone, this too depends on objective-oriented monitoring. Rather than asking, "Is it a good report?", the relevant question to be asked here would be, "Is the report being properly used?" According to

the result of monitoring the effect of the report, the next report should be adapted and improved in style and selection of content.
As far as necessary and feasible, the different users of the report, such as programme managers, training teams and teacher-training centres, should receive specific reports that focus on their needs, or at least find segments that specifically address them.
Examples for a structure of the report:

a) the programme manager receives a summary that concentrates on the need for further action. The entire report he will find in the annex;
b) the training team gets a report, or report chapter, that focuses on those areas and issues that need to be corrected during training. It may also identify the training centres that need additional support;
c) the training centres receive a summary of all results with specific concentration on those aspects relevant to them: results of each training centre, compared with the best, the weakest and the average results.
d) the outline of the report to local actors could be as follows:

-Executive summary
-Purpose of this specific report
-Critical points that got monitored
-Modalities of monitoring worth mentioning
-Results of monitoring
-Consequences
-Recommendations for corrective action.

Another, even more straightforward table of contents would be the following:

Introduction
- Objectives
- Scope
- Methods

Results by Monitoring Issue (1 … n)
- General Results
  - Presentation
  - Conclusions
  - Recommendations for corrective action
- Results by key factors (e.g. gender, region, ethnic group)
  - Presentation
  - Conclusions
  - Recommendations corrective action

Summary of conclusions and recommendations

4.4 Use of Monitoring Results in Decision-Making

Even if sounding trivial, it must be stressed over and over again: *all monitoring is **action-oriented***; it only makes sense if the monitoring results are utilised. **The need for informed decision making drives all monitoring.** The data need to be collected, well presented and diligently analysed, so that decisions can be taken for further actions. Results direct the attention to specific shortcomings, e.g. showing (via process-monitoring) that training programmes are not carried out in a sufficiently qualified way or not even correctly , or (via impact-monitoring) that they do not produce the intended effect. Concentrating on

objectives/impact as a priority, certain external issues will be identified that need increased attention; focussing additionally on internal processes, such as organisational, administrative, financial or similar bottlenecks, will help. Optimisation of any given project/programme is possible only when the findings of both are correlated. (examples of recommendations from Peru (a,b,c);

In response to monitoring results the following range of decisions is possible:

a. In case the course participants at the different levels of the cascade achieve an overall satisfactory degree in mastery of the course, the program will continue, and the achievements will be further consolidated. The main relevant indicators are the MEAN scores. At the same time, the overall standard deviation indicates whether a majority of participants remain above or below the means. The analysis of the results divided by sub-groups indicates whether the achievement of all sub-groups can be considered satisfactory, or whether there are groups that perform particularly well or particularly poorly. This is not only evident in the tests after the training, but can also clearly be noticed during the observation of the classes they teach, when they apply what they have learnt. The programme implementation seems to be successful, as the design of the training courses, the material provided and the training skills is done in a way that those provided services and products lead to the achievement of the objectives. In this case, no further data analysis has to be done; the data and the results simply serve for further reference.

b. In case the overall average results are low and the overall standard deviations indicate that results of a large number of participants differ extremely from the means, it becomes obvious that the course participants are not fit to serve as instructors, trainers or teachers at lower levels. The reason could be that subject knowledge and teaching skills are missing or that pedagogical skills are lacking all together.

c. In this case, further in-depth data analysis is required to find out at which level more or different services, training or other inputs, have to be provided to specific groups of participants. This means that the distribution breakdown of the results, as to the performance level of different sub-groups, should be studied in detail by gender, ethnic groups, educational background, level of experiences, etc..

Example from Pakistan:

Table 9: Average Test Results by Gender and Participation in the Programme

	Total			*Male*			*Female*		
Years with project	*0 yrs*	*I year*	*2 yrs*	*0 yrs*	*I year*	*2 yrs*	*0 ysrs*	*I year*	*2 yrs*
Pakki									
*Score **Urdu***	*22.5*	*28.8*	*38.2*	*26.3*	*35.0*	*38.4*	*14.1*	*19.5*	*38.1*
*Score **Maths***	*34.1*	*44.3*	*57.2*	*40.2*	*50.9*	*59.5*	*20.7*	*34.4*	*53.8*
Grade 2									
*Score **Urdu***	*18.4*	*23.8*	*35.1*	*18.7*	*26.3*	*30.8*	*17.7*	*20.1*	*41.5*
*Score **Maths***	*32.1*	*40.4*	*56.0*	*36.5*	*46.6.*	*60.9*	*22.6*	*31.2*	*49.9*
N	*335*	*350*	*540*	*230*	*210*	*320*	*105*	*140*	*220*

Source: PEP-ILE Impact Study 2000, unpublished manuscript

Notes: Schools are organised by gender, this concerns pupils and teachers alike. "Year" refers to the number of years schools have participated in the PEP-ILE.

Pakki is the second year of Grade one.

Every item should be analysed separately: the test items, the observation items, and also the interview questions. In this way, topics, themes, and issues can be detected which are particularly difficult for course participants. In some cases, poor results are found across all areas and topics. (see table: Results of a Pre-test for INSET instructors, page 38). Depending on the outcome, decisions have to be taken to take corrective actions.
Often, additional analysis of the existing data is not enough; further data have to be collected. Frequently, self-assessment of participants is overoptimistic and needs to be cross-checked through achievement tests. Experience shows that expert panels and group interviews with representatives from different groups of participants are most effective in analysing perceived difficulties, finding their probable causes and providing suggestions for corrective actions to be taken.

d. In case weak results are restricted to certain topics, themes (see table: Items According to Mastery, page 37), and certain areas only and in case they are relevant, more or less, for all groups of participants (gender, ethnic groups, educational background and level of experiences) a number of corrective actions can be taken:
   1. Reinforce certain issues and areas in the next training/teaching cascade.
      An ad-hoc program focusing on weak areas should be developed and offered to the course participants.
   2. Develop material in the respective areas and distribute it to all course participants.

e. In case weak results are restricted to identifiable groups of participants (see table: Items According to Mastery, page 37) the following corrective actions can be taken:
   1. Assess whether these groups really have to remain in the program. This concerns at least the level of instructors, who can be exchanged, if they prove not to be sufficiently capable of teaching. It is obvious that teachers cannot be replaced because of a perceived lack of competence to teach according the innovations.
   2. Assess in further details the particular difficulties the identified group(s) have with the course programme. Limited to the identified group(s), the reasons for the weakness of each item should be analysed, in order to identify the specific difficulties.
   3. Develop an ad-hoc program for the specific group, addressing the reasons for failing to master certain items.
   4. Develop reading material in the respective areas focusing on the differentiation of selected groups of participants and distribute them to all course participants.

5. Community participation in the educational process

There is no question that schools, even the academically 'good' ones, do not suffice to support children to grow up into autonomous individuals and conscientious members of their community. Much depends on the wider socio-cultural context in which the school is imbedded. In other words, the school needs the support of its community, just as much as the community needs its school.

Family is the nucleus, and the foundation, of any community. It is also the social interface between children and adults, between the private and the common, the vernacular and the communal. A 'good' community environment naturally supports school objectives. A 'good' school system knows this and therefore aims at building a strong linkage into the community, mostly via the families of its students.

Sustainable improvement both in the capacity and the willingness of the children to learn can be expected when there is a degree of active parent participation and community contribution. This is in the interest of all concerned parties. Still, in 'real life', it has been proven difficult to mobilise that interest. It is a fact that parents and local communities in most developing countries become increasingly aware of the importance of school; but more often than not, they have not yet recognized their responsibility to support school objectives actively.

What exactly is the scope of community involvement in school, and where does it end? The following are areas where the community and its constituent families have a vital role to play: (list1)

- Enrolment of all school-age children in areas where demand for education is weak
- Supplying resources – funds, land, building materials, and labour for the school building, its upkeep and its maintenance, but also for teacher housing; this is the most prominent role of Parent-Teacher Associations (PTA) or "Associations de Parents d'Elèves" (APE) in francophone countries;
- Participation in school management, particularly with regard to teacher behaviour and teacher absenteeism;
- Definition of local curriculum content[2] and participation in teaching such content.
- Support and involvement regarding subject matter taught in school which is community concern, such as hygiene and environmental education.

Community participation plays an even more significant role in development projects that focus on given communal problems, such as hygiene- or environmental improvements. Objectives of this kind can only be tackled when they are backed and actively supported by local groups, organisations and institutions, including schools.

On the other hand, there are areas regulated by the national authorities. The role of local communities is practically non-existent. At times it could be limited to a supervisory function concerning norm compliance if narrowly defined professional areas are left out for which community members usually lack competence. These areas are: (list 2)

- Achievement standards
- Quality standards of education

[2] In many countries, the national curriculum leaves room for local content – up to 25% of teaching time, depending on the subject. Local curriculum content would have to be developed by decentralized parts of the sector administration, and parents could very well participate. (Nepal)

- Managerial standards such as weekly and annual teaching time, qualification requirements for teachers, and other professional sector personnel.
- Contents and methods concerning the core curriculum;
- Standards for and management of in-service training programmes.

The elements of the first list are legitimate areas for participatory impact monitoring involving the community, parents and others alike. The elements of the second list are not since community members usually lack the required skill, knowledge, and mandate. However, it would be a good practice to include them in periodical reports of school management to the community.

5.1 Specific requirements

For the community to be able to address issues that are of its immediate concern it is necessary to be involved in planning and implementation, as well as in project monitoring, being the basis for project steering. Monitoring carried out by community members allows that relevant data can be continuously collected, and management response will be faster, more decisive and more appropriate for the concerned community.

5.1.1 Pre-conditions

- Certain attitudes that facilitate participatory impact monitoring are of special importance when involving the community: (GATE 1, 1996)
- A certain extent of mutual trust and mutual desire to manage the project together is needed.
- The project team, or the consultants, facilitate monitoring, rather than actively take it over. Their task is to provide methodological support. Group decision processes are strengthened; once decisions have been taken within the group, they are respected.
- Once the groups of different stakeholders are convinced of the benefit of participatory monitoring, they must be ready to invest some extra time and effort into steering the project jointly; this includes planning, implementation as well as monitoring.
- Before introducing a new monitoring system, any monitoring practices that have been applied so far should be identified and analysed. As far as they are useful for impact monitoring, they should be respected.
- The project team, the different organisations such as local and national institutions, NGOs and CBOs and other local stakeholders, all have to be flexible (or must learn to be so), since objective-oriented project implementation depends on a monitoring system that checks whether project implementation has to be modified, so as to match changing reality.
- Project steering easily loses its effectiveness when it is based on too detailed planning. The basis for further actions should be, therefore, modified according to monitoring results.
- Suggestions from stakeholders regarding project shortcomings and changes should always be taken serious and analysed accordingly.
- The organisations and different target groups (NGOs active at school/community level, parents, community members without children in school, mothers in societies with a strong bias against female participation in public life, education administrators at the nearest administrative level) must be trained in participatory impact monitoring in order to apply it efficiently and use its results effectively.
- Proper design of a monitoring system is rather taxing when key stakeholders are spread over wide geographical areas, as in educational projects that cover a large region.

- Literacy of stakeholders is not a pre-condition for their inclusion in monitoring processes. All too often, illiteracy is an excuse used by stakeholders in power to exclude those with less power, even though they are generally the ones most affected, e.g. school attendance of girls and boys / improvement of local hygiene.
- Promotion and strengthening of people's participation must be high on the agenda of the project team.
- Instead of trying to cover up mistakes in misunderstood self-defence, acknowledging them leads to further learning. A pre-condition for doing this is self-confidence.
- The principal focus of any project must be on its objectives whether they go on being desirable, whether implementation leads to them, whether monitoring gathers adequate data, and whether further actions are planned accordingly.
- Since projects are usually not permanently on track, participatory impact monitoring is a good tool to find out what can be done to bring it back. But this is only possible when respect between the different stakeholders is being practiced.

These are some of the crucial pre-conditions for qualified participatory impact monitoring. But that does not mean that participatory impact monitoring can only be started when all of them are in place. More often than not, they won't be. Yet they can, and will be learnt during training and the implementation of monitoring.

5.1.2 Specific needs for participatory impact monitoring

Involving the community members in impact monitoring empowers them, especially those who normally have little say. Planning can be seen as a formal compromise between different key stakeholders. Nevertheless, in order to deal with unforeseen development of circumstances, and to adapt project interventions accordingly, a form of management is preferable that is well connected into the community, as the potential source of 'trouble'.

A point to keep in mind is that local stakeholders are primarily interested in quick tangible changes that relate directly to their living conditions, whereas organisations are interested in long term sustainable changes. The tool of participatory impact monitoring brings differing interests to overlap that otherwise tend to be contradictory.

The 'conventional' project tends to be managed by outside parties. Involving the community in monitoring and thereby in the project steering guides them to the point that they increasingly manage their own concerns.

Cooperation within stakeholder groups needs to be fostered. Before a project can plan its activities, within the community, there must be a process activated that brings the internal interest groups to agree on what kind of change is desirable to them. To create awareness of the fact that different actors with different points of view are better off agreeing on common objectives, the intra-community decision-making process needs to become transparent. A monitoring system that is built on transparency helps those involved in the measure to get convinced of its long-range benefits.

It has to be kept in mind that different stakeholders in general, and also those within a community, will inevitably promote those issues that, subjectively, are relevant to them. The project's responsibility, therefore, is not so much to pursue decisions that seem 'objectively' right, but to help the different local stakeholders to clarify and to share their subjective points of view, some being more professional, some more personal. A project that wants to stay in touch with reality needs to keep in touch with the delicate internal community processes that constantly re-evaluate what is important to them, and promote externally set objectives that the

community or important stakeholder groups do not readily accept but which are in its best long term interest or simply national goals set at the highest level, e.g. girls' education. Involving the community in monitoring seems to be a good way to keep abreast of these dynamics.

The participation of parents in monitoring mobilises and systematises their knowledge; they get the chance to become capable to cooperate in the management of the school. If there are conflicts, they are brought to the surface, by supporting dialogues to resolve misunderstandings. This is a learning process; in the beginning, benefits from applying participatory impact monitoring tend to come in rather hap hazardously, data are being collected unsystematically and are difficult to analyse, which teaches stakeholders to be even more observant and reflective. Experiences show that on average, parent members of well-functioning school committees appear to play an active role and have a say in school affairs. However they are not well informed about their responsibilities.

Involving the community in monitoring is also helpful to focus the project on objectives and activities that are within realistic reach of stakeholders; it guides them, including the project professionals, to avoid too ambitious innovations, and plans that are so 'adapted' that they are no valid contribution to improvement. (Chart) The more congruent the different expectations and means of the stakeholders are, the smoother and more efficient participatory impact monitoring will be; otherwise the participatory approach can have a corrective function.

In community projects, culturally and socially sensitive participation methods have to be developed that will, most likely, vary from community to community. To develop them is an art in itself. But it can be learned, and in this sense participatory impact monitoring itself can be considered a tool for community improvement.

Experiences from Nepal in projects with different stakeholders, like the municipality, NGOs, CBOs, mother- and youth-groups, and teachers, show clearly that participation in monitoring tasks, from critical observation, to data analysis and modifications in decision making, steadily increased. In the beginning, it could be observed that some were reluctant, others even got angry for being asked to take up responsibilities towards hygiene improvement in their town, again others admitted to be confused because they were not used to being asked anything.
Particularly interesting was the observation that at the outset most of the stakeholders had serious prejudices against other groups; they were unwilling to listen to each others' view points and suggestions. Slowly though, as they were encouraged to express themselves, first within their own group and then among the different groups, they became aware that the others, too, had valid contributions to make. The recognition that one needed each other gradually pulled mental barriers down and raised respect for each other. As synergetic benefit became apparent, willingness to participate generally increased.

Including the point of view of the different stakeholders improves the chances to address different causes of the problem and therefore increases the chance to solve them. Gradually (or not so gradually), most monitoring by external experts must be replaced by monitoring of local stakeholders simply because the cooperation with the development agency does not go on forever. Those stakeholders involved in the project, need to be increasingly capable to steer their own project(s).

The fact that corruption is a disturbing factor in including the different stakeholders of a community in project steering should not prevent their participation. It is natural that all of

them have their self interest - often, unfortunately, not for the benefit of the community but for their own individual interest. That is reality! Including all key stakeholders in monitoring and make their different points of views more transparent meets this challenge, increases the peer control and has the possibility to make corruption of the individual stakeholders more difficult.

5.1.3 Ways to overcome obstacles

Projects need to avoid formulating highly abstract goals and objectives but rather formulate objectives, which are considered reachable and feasible and which are tangible changes the stakeholders can identify with.

The participation of local stakeholders sometimes meets with resistance. Often, local professional staff in projects / programmes show a decided reluctance to include local stakeholders in monitoring tasks. The reason for this reluctance seems to be mainly professional snobbism: to know better, combined with the fear not to know sufficiently, or to lose their image as "experts". Cultural values also play a role and tend to make it more difficult to ask. Community members, on the other hand, tend to expect that their problems will be solved best by experts from the outside. They are, thus, all-too ready to hand over their own responsibilities.

It is a challenge for the community to get actively involved in innovations that, at first, only provide promises of future benefits; for the 'expert' it is a challenge to cooperate with inexperienced, unruly 'lay people'. Still, it is important to convince the local professional staff that the project objectives will be more safely reached once local stakeholders are included in monitoring. Instead of having to work more, staff eventually will find that delegation of tasks to the community actually reduces the workload.

Example from Nepal: - The municipality didn't want NGOs getting involved, believing that they were only interested in money; CBOs seemed not sufficiently aware and educated; teachers, being seen as lazy, were considered unreliable and uninterested; women in the low income areas could not even write and read…
On the other hand, nearly all other local stakeholders mistrusted the municipality for being corrupt and not really interested in the concern of the people. They expressed little hope that the municipality would really cooperate.
But even among the other local stakeholders mistrust for each other was the predominant issue.

There exist power differences in most communities; resistance to innovations that threaten to tilt that inequity are therefore to be expected from those in power. Disrespect from one group to the next is common, from the advantaged to the less advantaged, and the other way around. Hence, participatory impact monitoring will affect the prevailing power structures and their ensuing habitual prejudice, since it gives more decision-making power to those who are normally not asked, be it teachers, the youth, women, low-cast.

We cannot pre-suppose that different actors are all eager to let others participate in the monitoring process. Still, including the key stakeholders can contribute to build up respect among the different groups. Once stakeholders have the possibility to express their concerns and their ideas for improvement, and even partake in steering matters, the stakeholders in power, such as heads of educational institutions or village elders, learn to accept power sharing, because the stakes in gaining from the measure and from monitoring its positive advancement are high for all concerned parties.

A team that is used to follow the ZOPP logic of planning and implementation with only occasional monitoring back-stopping, will need persuasive reasons to be convinced that the basis for their intervention should be changed. They will require some intensive training and supervision in participatory monitoring (see page 24), and constant positive reinforcement when they fail. The best means to convince them are positive results coming from practical experiences.

5.1.4 Resource provision

- Manpower: a monitoring coordinator, or a monitoring team, trained professional staff, trained stakeholders at different levels, national, regional, and local.
- Sufficient time for training, and for implementation.
- About 10 to 20 % of the overall finance volume.

5.1.5 The monitoring coordinator

As mentioned under Training and Guidance (page 24), a monitoring coordinator, and in large-scale programmes even a monitoring team, is essential to act as a direct assistant to the project/programme manager. The monitoring coordinator will not carry out the monitoring him/herself. This could lead to separation of monitoring from the actual steering and implementation of project activities; rather, he provides support to professionals to make impact monitoring more systematic and participatory within the project's specific context, and to assure that it becomes fully integrated into ongoing activities. It is up to the professional staff to prepare specific guidelines based on the overall principles of participatory impact monitoring, and to facilitate the stakeholders to carry out monitoring accordingly. Management in turn supports and supervises them via the monitoring coordinator.

The coordinator should carry out the following tasks:

- Organize regular meetings among all professional staff, in order to familiarize them with monitoring aims and methods in general, and to discuss the specific methods of their measure. Discuss with them current monitoring initiatives/difficulties in the field.
- Organize regular exchange between professionals, based on concrete case situations, as regards facilitation of data collection, analysis of stakeholders' perceptions of shortcomings, and collection of suggestions, as regard further actions.
- Facilitate debate on how to use monitoring results for further implementation of project activities.
- Support the professionals to incorporate monitoring into orientation, training and into the different follow-up measures, all meant to enable stakeholders to monitor the ongoing activities.
- Undertake regular on-sight visits that monitor the monitoring activities. Practical experiences should be discussed and analyzed on how participatory impact monitoring is/is not being integrated into ongoing activities.
- Organize platforms for the examination of ways to train stakeholders in participatory impact monitoring systematically and convincingly.
- Give orientation on monitoring strategies and methods to local, regional and national stakeholders.
- Analyze incoming data documentation, and give feedback.
- Organize every 6 months a workshop to assess the changes affecting the measure in relation to the desired objectives.

5.2 Methodological steps

The following steps and a number of instruments are suggested for carrying out impact monitoring with community participation:

Table 10: Overview of instruments

Step	Instrument
Preparations for Participatory impact monitoring	• **Situation analysis** • **Stakeholder analysis** • **Selection of impact areas** • **Selection of indicators**
Implementation of Participatory Impact Monitoring	• **PIM-Chart** Participatory Impact Monitoring Chart • **AIM-Chart** Activity-Impact Monitoring Chart • **AC-Chart** Achievement Chart • **Report Card**

The instruments will be described in the following text

5.2.1 Preparations for Participatory impact monitoring

5.2.1.1 Situation analysis

Stakeholders air the problems that the measure aims to tackle; they are encouraged to express their understanding and their concerns regarding the underlying causes and implications, as well as their propositions regarding potentials for solving the problems.

The more stakeholders feel respected when expressing their fears and expectations, the more spontaneously will they come up with subjective yet highly revealing interpretations and suggestions. Even if their presentations may be long-winded and seemingly not to the point, in the end they are always fruitful and sometimes even essential for defining the desired objective.

Depending on circumstances, there are many ways feasible to bring about these brainstorming encounters. In relatively small and/or just a few project areas the project itself can continuously facilitate the process. One way could be to invite representatives of different stakeholder groups who in one way or the other are affected by the problem, and/or are in charge of solving it. In an informal discussion they get an opportunity to express their views and opinions. In the case that some of them do not accept the group method, further meetings should be held individually. More data can be collected by neighbourhood surveys, to be carried out by different stakeholders.

In a large project areas addressing the community of a large number of schools, community participation will have to be initiated locally by the headmasters and teachers. Community participation, an integrated issue of the training, can be initiated by informal meetings among selected teachers, headmasters, parents and concerned NGOs and CBOs. Selected pupils can also be invited to select concerns and a strategy how to address them jointly.

All findings are categorised and carefully analysed in order to systematise relevant insight into differing and often conflicting interests; this way those stakeholder groups most affected, the roles they play, their strength and weaknesses are identified; it structures first insights into the options regarding distribution of future responsibilities for participatory impact monitoring.

5.2.1.2 Stakeholder analysis

The key stakeholders of a measure are encouraged to participate actively and continuously in impact monitoring, collecting data from selected key areas to be monitored, and getting involved in any decision-making that corresponds them. Key stakeholders are those who are most affected by the problem to be addressed by the project, those directly benefiting from it, and those being in influential positions. For all of them it is of interest to having the problem solved. They are therefore the ones most suited to participate in the observation-, the reflection- and the decision making processes. An analysis is required to identify the key stakeholders among the stakeholders. Obviously they will require some training, or at least guiding instructions, from the project team.
(The key local stakeholders in the component "Hygiene and Environment Education" in Nepal were identified in a workshop)

5.2.1.3 Selection of impact areas

The stakeholders decide together with the professionals, which areas need to be monitored. Due to their differences in expectations concerning the measure it can be assumed that they will focus on different areas to be monitored. An example follows from Nepal, where *teachers* were supposed to teach environmental hygiene.

Teachers' expectations	Teachers' fears / doubts
• that the school compound and its surroundings get cleaner, • that children's health and class attendance improves, • that the municipality cooperates with the schools, • that headmaster supports their new action-oriented teaching/learning approach.	• that other teachers and the school administration will not participate in cleaning programmes, • that children from higher casts will be reluctant to participate in waste removal, • that parents will not fall in with the new action-oriented learning practices concerning waste reduction.

The different interests and concerns need to be prioritized. The project / programme only focuses on a few key aspects, so as to be able to handle data collection and their analysis efficiently and to make fast decisions. Those selected aspects will be the areas to be monitored during the project phase.

If over time it becomes apparent that between stakeholders, including the partner organisations and project team, there is only little overlapping of interest in a measure, putting thus strain on agreeing on common denominators, it is recommendable to adjust the project framework to the point that it will be limited to the area where the interest is in fact overlapping.

The Participative Impact Monitoring Chart (*PIM-Chart*) (1,2) gives an overview of the key stakeholders involved in monitoring (the vertical column), and the areas to be monitored (the horizontal column). The middle field indicates the ways of monitoring which have to be discussed and decided upon by the concerned stakeholders.

5.2.1.4 Selection of indicators

Having selected the key concerns, their characteristics should be defined in a way that permits identification of desirable changes as they are expected from the measure's interventions (=indicators). They indicate whether the project is on track towards the desired objectives, and what effects/impacts have been achieved. The key stakeholders are involved in the selection of indicators, because they are the ones who will assess the measure's advancement. They can do this best by checking on indictors that are easily recognizable and relevant to them.

Teachers' expectations	Indicator
• that the school compound and its surroundings are cleaner,	• % of the paper waste and lunch leftovers from school children is disposed in the boxes/containers by... • The children from grades…. carry out twice a month a cleaning campaign in and around the school from…. onwards.
• that headmaster supports action-oriented teaching/learning approach,	• …% of the headmasters of the schools involved in the measure provide time, tools and space to prepare compost, recycle paper and carry out cleaning campaigns from…. onwards.

Nepal, 2000

According to the needs and interests of the stakeholders, qualitative and quantitative indicators can be selected. The indicators need to have a target value or, if exact numbers are not required/obtainable, a target corridor. Indicators need to be simple; they illustrate essential tangible changes to local stakeholders. It is more important that the stakeholders identify with the indicators than that the indicators fulfil the requirement of precision. Simple indicators will be easily manageable by all stakeholders involved.

Indicators should quantify/qualify as tangibly as possible the concerns and expectations of stakeholders. According to the answers of stakeholders to fulfil the demands of "indicator", they can later be further elaborated by the group.

5.2.2 Implementation of Participatory Impact Monitoring

5.2.2.1 Relation of activities to intended impact

PIM supports objective-oriented project implementation. In order to focus each activity on an intended impact, a *milestone-objective* is selected in consultation with the stakeholders/partners. Only the following expected milestone-objective per planned activity is formulated, - not a series of milestones. Those would, once again, invite linear planning of activities and of anticipated effects, with monitoring following suit

Example from Nepal: The focus used to be only on fulfilling the expected milestones in 1999 (a), which did not bring out relevant changes having taken place and therefore did not provide sufficient basis for adequate actions.

accordingly, focussing 'logically' on The Plan, rather than on the real impact within its evolving context.

An *Aim-Chart*, usually prepared for a one-to-three months phase of movements and activities, relates each planned activity to an expected milestone-objective.

Table 11: Sample of an **Activity - Impact – Monitoring (**AIM**) Chart**

January & February 2001

Time of movement	Place	**Activity**	**Milestone**
15th – 22nd Jan. *Carried out on 5th – 13th Feb'01*	**Biratnagar**	**Orientation Workshop with ward chairmen** Orientation workshop with public school headmasters Training for public school teachers Orientation workshop with female ward members	At least 3 ward chairmen actively involved in the campaign and regularly develop and follow their respective action plan by April 2001 At least 10 schools initiate sw teaching in primary level by April 2001 At least 10 schools initiate sw teaching in primary level by April 2001 At least 10 female ward members actively involved in the campaign and educate the local residents through door to door campaign by April 2001

UHEEP, Nepal

(example: AIM-Chart Nepal 1, 2,)

The Aim-Chart states the purpose of each activity. This helps professionals as well as local stakeholders to design each activity so as to be objective-oriented and to pursue some benefit that contributes to the overall objectives. The Aim-Chart is thus a good tool to carry out *impact* monitoring.

Example from Nepal: - When teachers were asked to give their points of view, their reaction was often: "Ask those who know more and can judge better." They were even more reluctant to name reasons why expected impacts had not been attained, and to draw conclusions for further actions. This was clearly due to lacking self-confidence as well as fear, but was nevertheless socially accepted behaviour.

In the beginning, the project team will most likely have to facilitate the key stakeholders' monitoring process. The team inspires and encourages the stakeholders to sharpen their awareness for changes taking place in the area that have been determined beforehand, and presents their observations faithfully, be it in groups or individually. In particular lower income groups, most often the less educated stakeholders tend to enter only hesitantly any kind of group discussion, even when it concerns their immediate concerns; they are simply not used to being asked for their opinion, and even less so to pro-actively initiate change. Accordingly, they are risk-adverse and shun responsibilities; they need constant encouragement and discrete handling of their data.

The stakeholders are invited to monitor those changes that are particularly important to them; after all, each stakeholder defines differently the problem s/he is confronted with, and therefore also defines possible solutions differently. The findings in the selected areas therefore depend on who is observing them; still, computing those prismatic views they provide in sum quite an 'objective' picture.

5.2.2.2 Data collection, assessment and analysis

The observed changes can be discussed in the group; a homogeneous group of stakeholders – in case they feel more confident to express themselves being alone among themselves as do often women, pupils, youth clubs or / and a heterogeneous group of stakeholders, representing

different gender, age groups, organisations and different interests. If the indicator only requires an answer of YES or NO, the stakeholders are asked whether there is a need for further details, in order to substantiate the ambivalent yes/no.

All monitoring should avoid limiting its attention to the anticipated impact only. It is important to keep an eye on the unforeseen and, more often than not, undesirable factors that come up and influence the planned path of action, in order to mitigate in time possible shortcomings, as they tend to diffuse the objective increasingly, though unnoticeably. On the other hand, even potentially positive effects go often unnoticed, and no advantage is taken since they were not foreseen. By focusing on changes *actually* taking place, deficiencies can be detected quickly and corrective actions taken accordingly. They need to be recorded; one way to record them is an *Achievement Chart*.

Table 12: Achievements in … to be continuously collected in every field visit**, Jan - June 2000**

Stakeholders: **A**= teachers, **E**= committee **F**= municipal staff, **H**=ward chairman; **J**=female ward members; **L**=municipal sweepers; **N**= mayor, **O**=peon; **Pl**= population; **S**=shopkeeper; **Bs**:Business group; **u**= udle,

Milestone-Indicator	Services provided by the project	Positive Findings (planned and unplanned) Concerning utilisation of the services and first effects	Deviations from desirable effects	Reasons for deviation	Corrective actions
By May 2000, at least 5 selected groups of the urban population express/ demonstrate their concerns and preferences regarding hygiene and sanitation.	The municipality carries out awareness building with different stakeholders, municipality, shopkeepers, chamber of commerce, women groups, in the municipality	U: 15 stakeholders expressed / demonstrated their interests concerning hygiene and sanitation in different ways. 5 out of 8 visited people in the neighbourhood are preparing compost and reduce waste considerably; they also produce items out of waste, mats etc. (April) N: some changes in the environment are certainly visible in ward 8; in shopping area the majority of people bring bucket with waste to the container. (April) F: people, in general, become more aware, especially in ward 8. (April) J: Most inhabitants are happy about the improvement but…. (April) S: 12 out of 15, shopkeepers appreciate the efforts of the committee and cooperate…. (April) L+U: The majority of householders started collection of used plastic bags on hooks in three wards. (April) Bs: The group of hotel managers initiate cleaning campaigns. (May)	E: Most people in bazaar area do not respond to campaign; committee members feel frustrated. (April) J: ….there are some people who do not care and do not cooperate. (April) S:….some, 3 out of 15, react provocatively or complain that there is no place for them to dispose of waste collected in their buckets (April) Bs: Local people still dump waste as before(May)	E: Indians doing business and people from the villages do not care, as they feel it is not their place; (April) J+N: most people do not live in the area, they just come and go; 90% are Indians; it seems hopeless. (April) S+H: the number of community level waste containers are inadequate (April) Bs: lack of awareness among the people (May)	E: firm rules and regulations should be announced; breaking them should lead to penalization. (April) J: a committee of shopkeepers should be formed and mobilized to reach those who did not care. (April) U: ward chairperson of ward # 8 should explore possibilities to get additional waste containers (April) Bs: all authorities / actors should collaborate (May)

The Achievement (AC) Chart should be continuously filled in for the duration of 3 to 6 months. It should be kept in mind that continuous observation/reflection is more important than meticulous data gathering. Information derived from group discussions or from individual talks generally provides more insight than questionnaires. Nevertheless, any group discussion should adhere to the different issues monitored (according to PIM-Chart). Without having to 'coax' them much, the stakeholders should bring forward their findings, possible deviations, their analyses as well as consequences for further actions to be taken. As far as possible, these discussions should be arranged around different sub-groups, such as teachers, NGOs, municipality staff, women living in low income areas. Other preferred forms of recording monitoring results are to be found in the **Annexes-4; -5; -6** (1 , 2 or 3)

The Achievement-Chart will be gradually developed during the discussion, while collecting data from participants. In most incidents, local stakeholders are not used to work with charts. The facilitator, the project experts or partners, collects the data randomly and then arrange them on a pin-board, adding headings as required. Individual informal talks, on the other hand, should not be interrupted by filling out the charts. The facilitator has to be well prepared to have the PIM chart and the Achievement-Chart present in his/her mind, guiding the stakeholder as necessary. Immediately after the meeting, the collected information should be tabulated in the chart.

The column 'Milestone Indicator' shows the effect to be expected of an activity in the near future. The indicator for the entire project phase could also be of guidance for impact monitoring, but experience shows that it is more motivating for stakeholders to have a tangible milestone-effect 'in sight', even if it is only a minor one. Correctly chosen, it will indicate in the near future whether the project is on track towards achieving the desired project objective.

Second column: Services provided by the project are selected in order to achieve the Milestone Indicator. The selection will have to be verified or falsified at a later stage in order to provide the basis for corrections towards an objective-oriented project implementation.

Under the column 'Findings, unplanned and planned', observations of positive effects are registered, both caused by our own activities or by those of others, no matter whether expected or unexpected. 'Findings' investigate actual changes that have in fact occurred.
Any negative effects will be placed under the following heading: 'Deviation' from desirable effects. This column registers problems and unexpected effects. In case that not enough negative effects have been mentioned when generally asked for findings, the stakeholders are encouraged to identify any. They are important enough to be addressed when planning the next steps. The guiding questions are: What has changed? Then: In what ways has change taken place? How has the change affected you? What other changes occurred? Do you consider any change negative? Which one?

The following column, 'Reasons for deviations' (with the reminder 'deeper'), needs special attention. Here, conclusions are registered that follow from the analysis of the problems at hand; diverging view points of different stakeholders are duly recorded. It is important here not to be easily satisfied with the reasoning of participants, since they tend, most of the time, to adhere to standard formula ("It's *the others'* fault…"), which leaves analysis on a superficial level until you probe deeper. (This is comparable to the 'problem tree', where one needs to go deep down to the roots in order to really understand the problems at stake which consequently leads to appropriate activities.) Usually stakeholders tend to project their own ambivalence as wrongdoings of 'others'; they are declared accountable for the lack of progress. Accordingly, everybody comes up with recommendations what others should do, instead of trying to strengthen a sense of joint responsibility. Still, one should not discard these 'accusations' outright, since there is most often certain truth in them. At the same time it brings out the different expectations of stakeholders. Nevertheless, it is recommendable that the moderator discreetly helps all parties to come up with suggestions as to what each of them can do to improve the situation. This will not only move the measure ahead, but will strengthen the stakeholders' commitment and a sense of partnership and, thus, bring more sustainability to the measure. The guiding questions are: What has caused the changes? What might be the reasons for any deviation from planned impact?

The next column is called 'Actions to be taken'; this is, together with 'Lessons Learnt', another important issue of participatory impact monitoring, since it calls for *participatory* decision making or, at the least, for joint recommendations towards management's decision taking which gives all the reasoning to carrying out monitoring. The guiding questions are: What needs to be done as a following activity? How could you yourself contribute?

The exchange of viewpoints among different stakeholder groups should be guided, and structured, by a qualified *moderator*. With her/his help stakeholders will learn, over time, to distinguish between their specific interests and subjective interpretations and the overall picture, which in the long run strengthens the general impetus of participatory impact monitoring.

Data collected by the different stakeholders are discussed regularly. This is necessary to incorporate monitoring results into objective-oriented implementation processes of local stakeholders. Furthermore, this way a sense of project ownership among all stakeholders will be established. For this to bring forth it is necessary, to correlate and integrate the assessments of the different sub-groups. In this way, conclusions can be optimised, intra-project communication improves; stakeholders enrich their understanding of the benefits of monitoring to all parties.

Example: Achievements in …. based on milestones to be achieved at the end of the working period, March 1999

Milestones reflecting the status	Stakeholders: a,b,c,d,…. *DEO(a), teachers(b), NP(C) udle (u)*			
	Deviation from planned results	**Reasons for deviation**	**Corrective actions**	**Lessons Learnt**
15 teachers started to conduct classes as an optional subject by March 99.	*b) 10 teachers conduct classes, most of them as supplement in health and environment education teachers only teach theoretical* *c) 8 schools conduct classes* *u) All 6 schools visited conduct classes, only 3 as an optional subject. Other 4 assured during follow up meeting that they conduct classes*	*b) 5 teachers will start in the next academic year after 2 months teachers do not have tools to teach composting and recycling* *c) NP only contacted 8 schools, all of them teach* *u) Headmasters did not agree to choose the topics for optional education*	*b) school headmaster, municipality and uheep decide on provision of tools* *c) other schools have to be contacted* *u) Meeting with headmasters, DEO and mayor to discuss the benefits for teaching swh as an optional subject*	*u) monitoring focuses on negative aspects only: all findings, direct and indirect, positive and negative should be collected to address the situation adequately monitoring should not only be directed to the milestone defined at an earlier stage, that also limits the observation*

Their most relevant experience may be that being *pro-active* does break the old deadlock, making change possible. Teachers need to be trained to motivate children to focus on the impact of their activities. Initially, this may be sabotaged by the teachers; they are used to have children follow obediently their orders, rather than having them cooperate. In the same vein, children will have initially their own difficulties with the call for individual initiative, rather than being told by superiors. Still, in-built dynamics of participatory impact monitoring foster people's motivation to take responsibility for their actions - no matter whether being a child or a grownup, a teacher or an NGO member.

Example Nepal: Those teachers who adopted the innovative teaching style of including pupils in monitoring the effect of their actions, experienced: students became pro-active and more motivated than those who only followed the order of the teacher. This became obvious with the two schools where children were asked to do cleaning campaigns: the children of one school followed the order of the teacher and did one cleaning campaign after another without checking if that brought them closer to the desired benefit.(it didn`t) In the other school the teacher focused on the desired benefit inviting the pupils to see for themselves if that was the right action for achieving the impact. The pupils found out why the places they had cleaned up became more dirty afterwards (the whole neighbourhood happily disposed their waste at the place where finally it got picked up); the pupils came up with some suggestions for corrective actions, like neighbourhood gatherings, door to door visits etc., which improved the neighbourhood eventually.

4.2.2.3 Actions to be taken

The principal objective of any monitoring exercise is the support of management in regard to the optimisation of its decisions towards reaching the project's objectives. The logical way to bring this about is to get the key stakeholders, in their position as collaborators, in the ongoing decision taking on the basis of monitoring results. Once they have collected data and analysed them, once they have duly registered possible deviations, these deviations determine, at least to a considerable degree, what corrective actions have to be taken

In the Achievement-Chart or the Report Cards, an overview is provided as regards to the monitoring results, including the recommendations for further actions given by different stakeholders. Obviously, only when the individual stakeholders come to terms with the responsibility towards the project they can expect to be taken serious as partners in decision making.

4.2.2.4 Documentation of results

Participatory impact monitoring implies that all relevant project activities and their impact are being documented. The data thus collected, in form of tables and achievement charts are the basis for the analysis of whether the measure is in a qualitative sense on track, whether expenses and efforts are justified and which further actions are recommended.

Documentation is important, so as to keep a record on progress, pitfalls and deviations, and to make that valuable information available to the key stakeholders. The data should be documented according to source. This allows transparency, both in terms of who - not the individual names but the name of the stakeholder group - provided the information and also who did not share their point of view. Documentation in the form of an Achievement-Chart

gives a good overview of the status, both for stakeholders and outsiders. Such charts have to be continuously updated in order to sustain their usefulness, specifically for the half yearly and yearly report. With these charts in place, field visit reports which document how the services have been provided are no longer required. They tend to enumerate activities and do not focus sufficiently on the effects of activities.

There are different forms of documentation, like graphs, charts, and also discursive texts; they are all prepared on the basis of the collection of data, and should always be presented in an expressive, clear and easily understandable manner. Quantitative indicators should be visualised with graphs and charts. Those responsible for documentation have to be familiarised with these different forms of data presentation.

Development organisations and funding agencies need more/different information than individual stakeholders do. Some information should be given to external organisations such as funding agencies; others to development organisations or to government authorities, intermediaries or even representatives of the target groups. On the other hand, there will be certain information that is of interest only to the stakeholders themselves. It is therefore necessary to clarify beforehand who needs what kind of information. In other words, differing reports will be needed at different times and for different purposes. It should be kept in mind, that monitoring reports are not made to impress but rather to inform and to make quality management possible.

5.2.3 Selection of working modalities

5.2.3.1 Before each field trip

1. Check the respective Achievement-Chart, in order to become familiar with, and/or get re-acquainted with the status observed in the last visits. *(Example Nepal: the Achievement-Chart for the selected component of the respective municipality (example: Siddhartanagar)*
2. Select the expected effect(s) to be monitored; decide which local stakeholders should monitor the relevant current status. The PIM-Chart is a good guideline for asking the right questions.
3. Decide on the modalities of monitoring, whether to be executed as part of the programme, e.g. in regular meetings, or as an extra activity. Discuss with the monitoring coordinator, if needed.
4. Take the relevant PIM chart and the Achievement-Chart to the field trip.

5.2.3.2 During the field visit

1. Following the PIM-Chart, note down observations with reference to the respective milestone-indicator in the Achievement-Chart.
2. Hold informal dialogues or formal meetings with various target groups, intermediaries, and officials in district offices or the municipality; follow the sequence as indicated in the Achievement-Chart (general findings, positive and negative, reasons for shortcomings and corrective actions); look after the issues that have to be monitored according to the PIM chart. During informal talks we should ask open questions, again being guided by the PIM chart. Professionals should be familiar with the questions in advance, so that they do not have to interrupt the flow of expression.
3. The same day still, transfer the gathered information into the Achievement-Chart; check whether there is meaningful information under 'Findings', 'Deviation', 'Reasons for Deviation' and further 'Actions to be taken'. If not, it is important to consider

whether this is due to insufficient information gathering. If so, then it will be necessary to go on substantiating your data during the same field trip, if possible.

5.2.3.3 After each field trip

1. Update the Achievement-Chart(s) for the concerned area and component. (Example Nepal: school involvement in a specific municipality)
2. Present and discuss the findings to all professionals, starting within the same discipline, so that the team can profit from the experience.
3. Discuss possibilities of integrating further actions into the planning of the next visit and the preparation of the next AIM-Chart (compare page: 52).

5.2.3.4 Tasks for the last week of each second month

The main purpose of this meeting is to provide a general overview of monitoring experiences and monitoring results to staff members, in particular to the management.

1. The monitoring coordinator coordinates the meeting.
2. In preparation, the professional staff completes updating the Achievement-Chart, by editing the data in a way that allows others to understand the short notes on the current status, on particular problems and their causes as perceived by the stakeholders, and on their suggestions for further actions.
3. The different teams in a programme/project present achievements and non-achievements as observed/gathered during the current month in the different project areas; only significant achievements should be selected for discussion that highlight the changes, or difficulties, taking place in the project area. The selection should include negative and positive findings.
4. There should be enough room for discussion on status, problems and suggestions.
5. AIM-Charts are prepared, by filling in the planned activities for the following two months, always with an eye on the desired milestone(s). It is recommendable to formulate milestone-indicators which the planned activities can attain; a milestone-indicator is always more tangible and 'nearer' to stakeholders than an indicator is.
6. The expected benefit of each activity should be identified in accordance with the involved stakeholders. Once again: what management and/or professionals consider 'benefits' may not, automatically, be considered so by stakeholders!
7. One case study of a monitoring exercise, with positive or negative results, should be presented alternating components, including Lesson learnt, in order to add one practical and more detailed example to the general overview.

5.2.3.5 Planning activities for the following two months

1. The professionals present their AIM-*Charts* to each other and discuss possible cooperation between the components and integration of monitoring into the ongoing activities,
2. In Programmes with different components or projects a movement chart is being developed and necessary adjustments made in the AIM-Charts.
3. The component-wise (or project-wise) AIM-Chart needs to be transformed into a town/village wise AIM-Chart - and distributed to the management and monitoring coordinator.

5.2.4 Revision of the monitoring system

The monitoring system has to be revised from time to time, in case:

- the chosen indicators or milestone-indicators have proven not to be helpful;
- previously neglected, or unforeseen changes within the measure's environment call for additional attention;

- a substantial shift has taken place in clients' expectations, resistances and/or fears.

Conscientious data collection, their analysis and ensuing decision taking will gradually increase the know-how on how to upgrade systematically the monitoring quality. (See yearly revision udle 1, 2, 3) The effectiveness of monitoring depends on adaptation to the culture of the stakeholders. Its methodological approach is best seen as a continuous process of revision of its compatibility within the culture it wants to serves. In other words, effective participatory impact monitoring needs to include effective *self-monitoring*. Those in charge should be ready to assume that considerations of important issues in the past may have been missed; this does not call automatically for revisions at all cost, but it keeps everyone concerned alert and open to the possibility of upgrading the system. It is obvious that system changes must be agreed upon by all stakeholders before being instituted. Relevant questions would be: Which criteria and indicators should be improved? Which ones are no longer necessary? How could the observation and assessment system be improved? Who has objections, and why? It is good to remember for everyone concerned: Change thrives on mistakes that are taken as relevant learning experiences.

6. Concluding remarks on Monitoring

All project activities are meant to have positive 'impact'. Monitoring, as delineated above, focuses on the quality of that impact. This involves the monitoring of the impact in relation to the objective(s) of the measure –the learning results of pupils as the ultimate beneficiaries and consequently the monitoring of adequate processes such as educational materials, trainings etc., leading to these impacts. How sustainable the project's impact in the longer run is, can only be monitored at a later stage, by independent monitoring capacities. Short term impact, on the other hand, can be quite accurately measured already during the project phase. Whether that short term impact ends up being sustainable in the long run, depends on many factors (variables). With participatory impact monitoring continuously practiced, there is a good chance that all sorts of unforeseen challenges will be met. A systematic database will allow analysis and evaluation also after the completion of a project. Which kind of monitoring activities are required overall will be decided by the results of monitoring of the first level, as it looks at all critical events, mainly the transmissions of material and training of knowledge, attitude and skills in the cascade, at the different training/teaching courses on different levels (master-trainer, co-ordinator – teacher – pupils), as well as at coordination of activities among groups of stakeholders of different power structures. Once first level monitoring has detected the weak points, an in-depth analysis of problem areas will be required which often requires additional data collection.

Any project that is determinedly impact-oriented will carry out participatory impact monitoring as one of its central tools for quality management. At every level, it uses immediate effects (learning effects of instructors, trainers, teachers and pupils); within the management logic, it uses social sciences research tools; beyond the narrow scope of in-service training, it gathers multi-level up-to-date information and feeds it right back into the system.

7. Appendix

7.1 Monitoring instruments

7.1.1 Monitoring instruments applied in formal education

7.1.1.1 Monitoring the quality of the INSET cascade

Test form for training events - entry tests

To find out the level of knowledge and skills of the participants, and to compare the achievement of the gains in knowledge and skills through the training workshop, an *entry test* should be run with the participants of the different levels of INSET cascade:

1. the master trainers trained by the project team
2. the regional trainers trained by the master trainers
3. the teacher-advisors trained by the regional trainers
4. the teachers trained by the teacher-advisory

Test form for training events - exit tests

To compare the entry test results with the training results, an exit test has to be carried out with the same group of participants. This can be done as the same test as the entry test or as a separate test (Peru: survey of opinion , case study for participants; Pakistan:; monitoring results of District Educational Officer(1,2,3,4) Sri Lanka: end of course evaluation forms (1,2,3,4); feedback on level 1 and 2 of the INSET cascade 1,2,3,4,5,6,7,8,9,10) to be compared with a control group

Monitoring the workshop on M&E

Feedback on the workshop on M&E to the trainers and teachers as a tool to monitor the knowledge and skills of the participants in carrying out M&E themselves. Example: Sri Lanka (1,2)

Classroom observation

The classroom observation can be done by different stakeholders, such as

1. project team, executive entity
2. consultants(1,2) and competent trainers,
3. principles and teachers' advisors, as well as the
4. local authority of the district educational offices.

- It should be started as early as possible, in order to obtain baseline data depicting the conditions before project intervention;
- It should be carried out continuously, in order to record changes due to project intervention;
- It should be carried out in schools not affected by the project, in order to permit comparison.

Classroom Observation Sheet qualitative:(a, b); quantitative results: (a) ; results (1,2)

7.1.1.2 Monitoring the quality of the teachers' working group

These observations should be carried out by the

1. project team,
2. the consultants o by the
3. local authority of the district educational effects

7.1.1.3 Learning results

Learning results can be verified from the

1. official list of qualification for results collected at school level
2. competition results collected with a special form by teachers
3. special tests developed by the project and carried out by teachers, advisory teachers or principles

7.1.1.4 Distribution of material

The initial distribution of educational material will have to be carried out concerning:

1. teachers' guides
2. learning material
3. demonstrational material, such as science kits.

The availability and the use of the educational material can be monitored by:

1. records about lending certain material (advisory teachers to teachers)
2. records about repairing certain educational material, carried out by advisory teachers
3. group interviews with teachers, carried out by advisory teachers

The quality of the different educational material can be monitored:

1. within the classroom observation/a*
2. within the group interview to teachers*
3. in individual interviews with teachers to be carried out by advisory teachers or consultants / project team*
4. by analysing the repairs record
5. by analysing the lending-to-teachers record
6. in individual interviews with teachers, to be carried out by advisory teachers or consultants / project team*

* the teachers' guide only will be monitored under 1.; 4 and 5

sample of results collected by

- SEQUIP/Indonesia, 2000, 2001, 2002 concerning the different areas to be monitored;
- BESP / Sri Lanka, 2002
- PLANCAD, Peru

various forms of monitoring results gathered monthly by different stakeholders, suggested by BESP,

7.1.1.5 Data input: Access

Once the instruments are available in their final form, a highly experienced database specialist should be contracted to establish a relational database and the data entry forms. Since data entry forms could vary from one year to the next, this person should train project staff in how to set up and modify such forms. Since the office computers are all equipped with Microsoft Office, ACCESS would be the obvious choice for database management.

7.1.1.6 Data Analysis: SPSS, EXCEL

It might be necessary to build up technical competence in the use of SPSS and the interpretation of results.

7.1.1.7 Data presentation: EXCEL, PowerPoint

Result presentation needs to be effective. This is a skill that can be trained. The person in charge should get some hands-on training by project staff and locally available specialists, while preparing the presentation of the first set of results.

7.1.2 Additional monitoring instruments applied in Community Participation

7.1.2.1 Beneficiary Assessment

Generally, projects target specific user groups, or target groups. They need to be clearly defined, in order to observe whether the project has been able to reach them or not. To this end, information has to be obtained on changes that are not only quantitative and measurable, but also qualitatively determined by subjective perceptions and behavioural aspects.

Depending upon the nature of the expected impact (quantitative, qualitative, or both), information needs to be collected. Some techniques that can be applied for the collection of information on beneficiaries are interviews on key subject areas, focus group discussion and/or direct observation. Interviews are carried out with individuals, while focus group discussions are carried out within specific groups. As to observation, it can be applied to both. The content and process of target group assessment should also emphasise gender inclusiveness.

7.1.2.2 Cost Effectiveness Analysis

All parties involved in a project have to be concerned about cost effectiveness, to assure that the project manages its scarce resources to the optimum. This requires weighing constantly benefits to be obtained against resources to be invested (time, money and human capital). In development cooperation, cost effectiveness may not be the principal criterion to determine whether the project is worth to be continued; nevertheless, its regular and conscientious analysis is important, because it focuses management's attention on the crucial issue of 'wastage' and, in consequence, on the consistent challenge to optimise its interventions. Cost effectiveness is also meaningful in light of the fact that project support will be withdrawn eventually, and its impact will be sustained best if stakeholders and users become cost/effect conscious.

7.2.1.3 Photo Monitoring

The physical changes brought about by the project's interventions can be recognised by comparing visual aids. This involves taking photographs of a location before and after the project interventions. Such photographs should be carefully chosen, because the change of information content has to be clearly visible and must reflect different time spans. The information generated by the photographs can be of three types: a) immediately recognisable by different persons, without much difference in their interpretation; b) seeking interconnections of the objects presented; c) contextual (having potential for a comparison of observations)

7.1.2.4 PRA Instruments

The use of PRA tools is subject to the relevance and demand of the situation in the field. For example, the following tools could be relevant and demanded in most field situations:

1. During *Direct Observation,* the monitoring team can observe important indicators, which can support and crosscheck the findings. The indicators can form a basis to interact with the target groups and the community members. In the process, the team members can systematically observe objects, events, processes, relationships and people, and keep a record. The team members need to identify what indicators they want to observe for assessment, and prepare a checklist. After the observation, the team needs to review its exercise on the following frame:
    - What can be learnt from the observation?
    - What conclusions can be drawn?
    - What hypotheses can be formulated?
    - What were the dangers of observation (weaknesses)?
    - How could this observation be improved?

2. *Semi-Structured Interview (SSI)* is a guided interviewing tool. It works in a more journalistic manner and on the basis of a predetermined yet flexible checklist of questions. It assumes that new questions will come up during the interview. The common types of SSIs are:
    - *Individual interview*, which is conducted with a selected individual representative (man, woman, old, young, boy, girl, farmer, shopkeeper, trouble-maker, and the like). These interviews aim at revealing a wide range of individual opinions, attitudes, and strategies. The attempt is to reveal what the interviewees think of themselves, the change in their group or community, a change in their knowledge, behaviour, and life pattern. Information gathered from social critics and trouble-makers in the community can work as a cross-check and 'niche' insight into various social issues, problems, their nature and solutions. - It is obvious that this type of interviews can be quite misleading, and must be evaluated with care.

    - *Key informant interviews* help obtain special knowledge from knowledgeable persons on particular topics/indicators (midwife on birth control practices, a business person on transportation and institutions, etc.). School teachers, knowledgeable persons from a neighbouring community, persons who have married into the community, etc. can be very appropriate persons for interview. This is useful to interact on sensitive issues.

- *Group interviews* help obtain community level information; they access to a large body of knowledge and an immediate cross-check of information. However, this is not a useful way to get information on sensitive issues, particularly when the group is heterogeneous.

- *Focus group discussions* help clarify in detail certain specific topics. The participants are knowledgeable persons on the topic. The discussion requires a facilitator and a reporter.

- *Random interviews* help reveal useful information and innovative viewpoints. They are conducted in a journalistic manner with street-walkers/by-passers during cross-walks.

3. With *Ranking*, information bits are placed in order and sequence. It generates structured information that, in turn, can lead to more focused direct questioning. The tool complements the information derived from the SSI tools. The target groups themselves develop the criteria for the ranking. There are preference ranking (ranking by voting), pair-wise ranking (determining the main problems/preferences of individual community members), direct matrix ranking (understanding the reasons for local preferences), and wealth ranking (investigating the perceptions of wealth differences and inequalities in community, and establishing the relative position of households in a community). – It must be kept in mind that in most local communities, there exist gross inequalities and differences, which influence the group members' behaviour, perceptions, and coping strategies.

4. *Diagrams* can help present in a diagrammatic manner the project service utilization and its effects.
   - Seasonal calendar. - The design of a seasonal calendar for the major activities helps understand conditions across the seasons varying (e.g., rainy / dry), and their connection with the working environment. This generates information on price fluctuations, labour availability, monthly workloads, the occurrence of diseases that fluctuate with the seasons, etc. The information thus obtained can be qualitative (types of seasonal diseases etc.), and quantitative (number of working days during the rainy season etc.). Seasonal calendars help the project understand better the pitfalls and opportunities of particular seasons.
   - Mobility Map. - Mobility maps are used to highlight changes in the participation process. It is particularly important tool to detect changes facilitated by awareness and empowerment programmes. It helps understand what changes have occurred in people of different strata (poor and non-poor, male and female, Dalits and non-Dalits etc.), following the provision of access to services.
   - Venn Diagram. - It is a tool to understand people's diversity in accessing service organizations. It identifies changes in accessing institutional resources. Information collected through this tool is marked on a Venn Diagram, by indicating the intensity of relationships. The thickness of arrow used in the flow chart is an indication of the access to the organization concerned, which in the project's context could be access of resources and the relation of control and power.

     A mixture of information, derived from Mobility Map and Venn Diagram, is useful to see whether perceived changes on social empowerment has recurred or not. (Example: The women who, because of restrictions posed by their family members and society, were lagging behind in participating in the development programmes,

have now been empowered and started coming forward after the project's intervention.)

In another form of Venn Diagram, circles of different sizes are placed in relation to each other according to their importance. They show, for example, the 'intensity' of linkage between different key institutions or/and persons within a community, and their importance in decision making processes. Being guided by an experienced moderator, the diagram can be developed with different stakeholders.

5. *Analysis of group discussions* is an intensive and semi-structured session, wherein the field information is analysed and strategic plans are recommended for further action; this is done in a participatory way and in a local informal environment between, for example, community members, field team members, teachers, midwives, extension workers, students, old men and women.

6. *Sustainability analysis* is useful for regular impact monitoring of project activities, without additional collection of information. The tool sharpens the target groups' analytical skills and forces them to ask questions, based on which decisions are taken regarding the continuation and/or modification of project activities. A helpful frame of questions may concern:
   - project activities
   - project goals and objectives
   - output indicators
   - impact indicators
   - project's strengths: - what was done well
   - project's weaknesses: - where lie the problems
   - what activities should be continued?
   - what should be started?
   - what should be stopped?

7.1.2.5 Problem Tree

The identification of relevant causes of a problem area, or of a vision regarding the future, are illustrated in a 'tree' with different branches (effects) and roots (causes). Thus, the interconnection between causes and effects gets investigated in brainstorming sessions with stakeholders.

7.1.2.6 Self- Evaluation

Individually or in groups, the stakeholders carry out autonomously an analysis of their own behaviour, the development processes they are involved in, and the relationship with other stakeholders, their expectations and fears, resistance, conflicts and motivation.

7.1.2.7 Stakeholder analysis

In order to identify the interest of stakeholders and their function and influence within the project, a stakeholder analysis is carried out in the beginning of the project or the beginning of the project phase. A table of possible stakeholders is being prepared; the significance of their function in the project, as well as their power and influence, is assessed.

7.1.2.8 SWOT analysis

The *s*-trength and w-eaknesses, the o-pportunities and t-hreats that planned project interventions face, are put into relation with each other. This facilitates the decision making process.

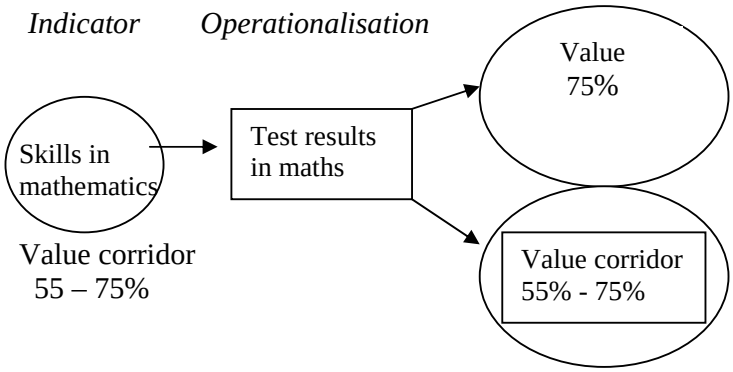
7.2 List of Tables

7.3 Abbreviation and Definitions

Auftragsmanagement	The new conceptual orientation of GTZ's project management
AURA	AUftragsRAhmen, The new framework for the Commission of the German Ministry of Economic Cooperation and Development
BEN	Basic Education Network Asia (the professional association of education projects)
Calibration	Standardisation of a measuring instrument; calibration assures that the new instrument is measuring correctly.
Covariates	Factor analysis is done from covariates. – Example: 'Children in the age of 6 to 12': 2 children are 6 years old, 4 children are 7 years old, 7 children are 8 years old, 12 children are 9 years old, 12 children are 10 years old, 7 children are 11 years old, 2 children are 12 years old. The individual main values are covariates (the age: 6,7,8,9,…..). The question to be answered is whether there are differences in the learning results as compared with the control group. In order to achieve better effects, the conclusion can be that the focus should be placed on other factors.
Dichotom Questions	Questions which permit YES / NO answers. These question should only be asked in the initial project stage; later questions should always have qualitative und quantitative elements.
Effect*	The benefit derived from the utilisation of a given service
Evaluation *(professional definition)*	In comparison to monitoring analysis evaluation is the less frequent form of reflection. It is deeper and leads to more fundamental adjustments. It involves a comprehensive analysis of the operation with the aim of adapting strategy and planning, and even objectives, to circumstances. It greatly profits from databases established by monitoring as a basis.
Factor Analysis	An extraction method to find out whether all items measure the same or different factors. Factor analysis attempts to find out whether each item can be analysed individually or only in the context with others. The question is: which items appear together?
GATE	German Appropriate Technology Exchange, a programme of GTZ
Impact Monitoring	'Impact' can be understood in various ways. In a non-restrictive sense, all changes associated with the project that are perceived as important by different stakeholders, are impacts.
Indicator	Signals that reveal progress towards objectives (or the lack of it); indicators help to measure/evaluate what actually happens in terms of quantity, quality and time, against what has been planned.

Input	Inputs are means, such as man power, technical instruments, cars etc., that the project provides.
INSET	teacher in-service training
Key Factor	A factor that has essential influence on the result
Means	As a fraction, a ‘means’ is only meaningful as a statistical average. Example: Medium test qualification has been 2,7. This grade does not exist in real school life; it still requires standard deviations. This way, questions can be answered, like: "How many children got which grading?", or: “Did most children receive a qualification around 2? Or did a few children perform very well, whilst others very badly?”
Multiple regression	A statistical method to find out the potential influence of several factors on one variable, e.g. test results.
Outcome	It can be used above the line on the impact level, **Annex-7**; the outcome of an intervention is its first effects and first benefits.
Output and result	In GTZ terminology, output and result refer to services or products that the project / programme has provided; they do not refer to the effect or impact of project interventions, neither to the utilisation of the services rendered.
Parsimonious data collection	‘thrifty’ data collection, with an eye on cost
PCM	Project Cycle Management
PIM	Participatory Impact Monitoring
PraSuPE	Practical Subjects in Primary Education
Process monitoring	The focus is on the implementation quality of project activities, provision of services and products; it is necessary but should not be seen in isolation from impact monitoring: each type of monitoring should focus on the impact of the intervention.
Regressions analysis	It is recommended when many factors are to be considered, and when it is not clear which ones are important. This analysis validates the factors. Comparison with a control group is not recommended.
Standard deviation	It measures how close the individual cases (data points) are to the average. (as to the example under ‘Covariates’, the age of the children is between 6 and 12 years old. The question is: in which age group fall most of the children? (=standard deviation)) The larger the standard deviation in relation to the average, the more the cases scatter, - of those who were observed or took the test - the more might be below acceptable standards.

Value	Quantitative and/or qualitative data expressed in the indicator specifying the objective; they can be numbers (e.g. 20 master trainers conduct training…) or a percentage (e.g. 55% of the trained master trainers conduct….), indicating the desired achievement as expressed in the indicator.
Value corridor	It is a frame of quantitative and/or qualitative values of the objective; it can be numbers or percentages (e.g. 55% - 75% master trainers….), indicating desired achievement.



Variance analysis	It names priority factors that contribute to learning. E.g. if the following factors contribute to learning: qualification of the teacher, quality of teaching and learning material, quality of the classroom, then the variance analysis indicates priority factors encouraging learning. Variance analysis is recommended, if the important factors are known; in that case it is better than a regression analysis. It clarifies priorities. (see the example given under Covariates: 66% of all children are in the age group of 8 to 11.)
ZOPP	An instrument of objective oriented project planning; ZOPP has been abandoned as an instrument for communication with GTZ a BMZ.

Bangladesh

APE	Association de Parents d'Elèves
CPEP	Comprehensive Primary Education Project
LC	Learning Coordinator
MT	Master Trainer
PTA	Parent-Teacher Association
SMC	School Management Committee, backed by parent-teacher associations

Indonesia

Gugus	School cluster of about 6 schools
HT	Head Teacher
KKG	Teachers working group
PBS	Advisory teacher in a school cluster
SEQUIP	Science Education Quality Improvement Project

Nepal

AC-Chart	Achievement Chart
AIM-Chart	Activity - Impact - Movement Chart
CBO	Community Based Organisation
FHVs	Female Health Volunteers
HPSP	Health Promoting School Program
Kawadis	People who collect and sell waste materials (scavengers)
MLD	Ministry of Local Development
NGO	Non Governmental Organisation
NP	Municipalities in Nepal (nagar palika)
PIM-Chart	Participatory Impact Monitoring Chart
Riksha	Tricycle used for carrying baskets for waste
Swh	Solid waste handling
Udle	Urban Development Through Local Efforts
UHEAP	Urban Hygiene and Environment Action Plans
UHEEP	Urban Hygiene and Environmental Education

Pakistan

LC	Learning Coordinator
MT	Master Trainer
PEP-ILE	Primary Education Project - Improvement of the Learning Environment
PITE	Provincial Institute for Teacher Education

Peru

DINFOCAD	Direccion Nacional de Capacitacion
PLANCAD	Plan Nacional de Capacitacion Docente
SISCAP	Sistema de Capacitación
UFoD	Unidad de Formación Docente

Sri Lanka

ADE	Assistant Director of Education
ADEE	Assistant Directors of Education
BESP	Basic Education Sector Programme
CP	Central Province
DDE	Deputy Director of Education
HPO	Head Plus One
ID	Identification Number
ISA	In-Service Advisor
ISAA	In- Service Advisors
IT	Induction Training, aiming at providing Primary ISAA and primary teachers the skills, knowledge and technology of the New Primary Education, in spite of the existing constraints.
JL	Joyful Learning; the first book of a series of trainers' manuals, with the topics: • Understanding of the child • A lively class • Affected child • Conflict resolution
M&E	Monitoring and Evaluation
MT	Master Trainer
MTT	Master Trainers
NEP	North Central Province
SBAR	School Based Action Research

SBED	School Based Educational Development; a manual that contributes to the implementation of the current education reforms, containing: • Participatory approach to school-based trainer development • Preparation, use and maintenance of (low-cost) teaching-learning materials • Successful school-based management practices in a learning-centred class
TIP	Teacher In-service Project
ZPC	Zonal Primary Coordinator

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7.5 Annexes

Annex-1: chain of causes and impacts

Annex-2: creative tension

Annex-3: criteria for evaluating instructional material

Annex-4: AC-chart for local stakeholders

Annex-5: AC-chart 2 for local stakeholders

Annex-6: report card

Annex-7: level of monitoring