Real Time Monitoring for the Most Vulnerable: Pre-Primary Education in Bangladesh

Mahmuda Akhter and Jay Chaudhuri

Abstract One of the most unique examples of real-time monitoring supported by UNICEF is found in Bangladesh in the pre-primary education (PPE) programme operated by BRAC. Randomisation techniques are used for school selection by monitors as well as for intra-classroom sampling to test learning outcomes. Monitoring is a multi-level decentralised learning process that allows staff members to compare actual performance, outputs and results against standards. Monitoring duties are executed by the programme staff themselves as well as by the organisation. The intent is to promote internal programme learning, not just logical framework type reporting, and builds on the recognition that monitoring is only effective if it enables responses to programme implementation. The BRAC initiative demonstrates that monitoring with a real-time component can be central to a strategy emphasising learning outcomes. It also shows that ICTs are not a necessary ingredient of 'real-time' monitoring despite the current fashion in thinking.

1 Introduction

Most people understand adoption of modern Information and Communication Technologies (ICTs) as a defining attribute of 'real-time' monitoring. Logically, an additional attribute is that 'real time' implies some form of faster response; it is not meaningful to label something 'real time' for the mere collection of information more regularly or more rapidly without any impact on speed of response to monitoring results. Literature review (e.g. Lucas *et al.* 2011) suggests that most attention has in fact focused on the first attribute – ICT use – and not the second – improved response to monitoring information. This case study is an example of real-time monitoring that does *not* currently use ICTs but is characterised by rapid response.

In Bangladesh, UNICEF has been operating for 60 years and has an excellent reputation and relationship with the government as well as NGOs and international donors. In the context of the new Bangladesh UNDAF and as a part of the global UNICEF Strategy on Monitoring Results for Equity, UNICEF Bangladesh has developed a set of strategic results areas for monitoring – stunting, early marriage by girls, birth registration and pre-primary education.

Amongst these, pre-primary education (PPE) was selected for study, specifically the BRAC programme of pre-primary education, which is partly financed by UNICEF. This selection fitted well with Country Office priorities and was particularly timely since the new Primary Education Development Programme (PEDP III) started in 2011 and for the first time had incorporated substantial investment in pre-primary education through the Ministry of Primary and Mass Education (MoPME).[1] It was also suitable for the global study since education was not a focus in any of the other five studies.

The next section provides a short background on the development of the pre-primary sector in Bangladesh and is followed by the BRAC case study leading to a set of recommendations.

2 Pre-primary education in Bangladesh: background

UNICEF has been a major supporter of the government on their early childhood development activities for over two decades.

Box 1 Legal and policy framework

By adopting the following global and national policies, Bangladesh has expressed a strong commitment to ensuring education for young children:

- UN Convention on the Rights of the Child (1989);
- World Declaration on Education for All in 1990 and the Dakar Framework for Action 2000: Bangladesh has pledged to reach the Early Childhood Care and Education (ECCE) goal for 'expanding and improving early childhood care and education, especially for most vulnerable and disadvantaged children';
- MDGs: Bangladesh has committed to ensure primary education for all;
- Education For All National Plan of Action (EFA NPA I) (1991–2000) and EFA NPA II (2003–15) identified ECCE as one of the major components of basic education;
- Operational Framework for pre-primary education, 2008, provides a framework for implementing education programmes in Bangladesh for children between three and six years of age. This framework provides a common standard for all pre-primary programmes;
- National Education Policy, 2010 includes pre-primary education as the first component of primary education and specifies that PPE is a one-year education for children age 5+, prior to entering grade 1 of primary school;
- A number of policy and strategy documents – including the curriculum and learning standard – relevant to early childhood education have been drafted and are on the verge of finalisation;
- Comprehensive Early Childhood Care and Development (ECCD) Policy Draft Framework provides an operational framework for developing comprehensive ECCD programmes for children from conception to age eight;
- Guidelines on government/NGO collaboration for universal PPE in Bangladesh identify areas for collaboration between government and NGOs;
- PEDP III, July 2011–June 2016, includes pre-primary education into the broader five-year education planning;
- Sixth five-year development plan, July 2011–June 2016, includes pre-primary as a component of basic education;
- PPE database, 2012 at DPE, MoPME (draft);
- PPE mapping, 2012 at DPE, MoPME (draft);
- PPE Expansion Plan, 2012 at DPE, MoPME (draft).

With the introduction of PEDP III in 2011, there is a new five-year partnership between donors and the government in the development of the primary education sector and for the first time it includes substantial provision for the pre-primary sector. This involves the government and other providers in establishing pre-primary classes in all government primary schools and the approximately 20,000 non-government registered primary schools.[2] It is an opportune time therefore to develop effective monitoring systems for this new initiative. Past attempts to monitor at primary level, involving NGOs and the donors, met with resistance from teachers' unions and whilst there is widespread agreement on the need to address issues of quality of provision there have been tensions in determining the ways in which this can be achieved. The new initiative around pre-primary education builds on a very different set of relationships where UNICEF has been instrumental in forging partnerships between the government and NGOs in the development of the pre-primary curriculum and Early Learning and Development Standards. By building on the goodwill generated here to develop effective monitoring systems for pre-primary education, the aspiration also is that this will benefit the partnership arrangements across the primary sector. The Directorate of Primary Education (DPE) has been responsible for pre-primary education but without funding their scope has been limited to running so-called 'baby' classes at some of their primary schools. Most of UNICEF's advocacy and capacity-building efforts on pre-primary have in fact been with NGOs and with the Ministry of Women and Children Affairs (MOWCA) which run early learning centres.

Number of PPE centres in government primary schools	37,672
Number of PPE in experimental primary schools	55
Total	**37,727**

With funding through PEDP III to DPE for pre-primary classes, UNICEF is well placed to utilise its sub-sector expertise to partner with DPE in developing meaningful and effective monitoring informed by lessons from previous attempts. This may allow for better-focused efforts on the development of meaningful outcome monitoring arrangements, including access of the most vulnerable children, in pre-primary that will influence the primary sector too. Pre-primary monitoring is therefore a timely and important sub-sector for engagement with potentially important catalytic effects across the sector. At the same time, it provides an opportunity for UNICEF Bangladesh to generate data that will allow it both to strengthen its advocacy efforts within the sector and to assess progress on national priorities identified in their Monitoring Results for Equity framework.

3 Progress and status of early childhood education in Bangladesh

Children who attend pre-primary education have better chances for a smoother transition to primary school. Pre-primary education results in dramatic improvement in school retention and lowering of dropout rates (Govt. of Bangladesh 2008). It is also linked to higher education and better quality of life (Ahmad and Haque 2011; Nath 2012; Evans *et al.* 2000). But most importantly, the country benefits by generating an educated student body that becomes a productive workforce in the future. In fact, a cost-benefit analysis based on longitudinal research conducted in the US demonstrates a seven-fold increase in benefits for every dollar invested in early childhood education.[3]

The government of Bangladesh recognises the benefits of early learning and the profound importance of preparing young children for primary school and in early 2012 announced that it will include pre-primary education (PPE) as an integral part of the primary education system. The government has therefore demonstrated its support and commitment to PPE by stating its

Table 2 **PPE centres currently operated by Integrated Community Development Project (ICDP), Bangladesh Shishu Academy and NGOs**

CHTDB–ICDP *		3,500
ELCDP (Bangladesh Shishu Academy – BSA)		982
Save the Children (USA)**	SUCCEED	1,200
	PROTEEVA	2,520
Plan Bangladesh**		486
BRAC***		13,054[4]
Dhaka Ahsania Mission		337
FIVDB (excluding PROTEEVA)		452
RDRS (excluding PROTEEVA)		44
VERC (excluding PROTEEVA)		40
GSK		65
Caritas		170
ActionAid		326
Total		**23,176**

Notes *From Bangladesh Shishu Academy. **From Rich-Orloff (2010). ***From BRAC. CHTDB – Chittagong Hill Tracts Development Board; ELCDP – Early Learning Child Development Project; SUCCEED – a USAID-funded project of Save the Children; PROTEEVA – extended project name of SUCCEED; FIVDB – Friends In Village Development Bangladesh; RDRS – a national NGO; VERC – Village Education Resource Centre; GSK – Gonno Shastha Kendro. Source The organisations.

intent to universalise pre-primary education following its earlier commitment to PPE in principle when the new education policy was introduced in 2010. In addition, the government is also mainstreaming PPE into the broader five-year education strategic planning known as PEDP III. The plan is that each government primary school will have a pre-primary class and there will be a national pre-primary curriculum by 2013.

4 Context: the unmet demand for pre-primary education

The Multiple Indicator Cluster Survey, 2009, shows that only 23 per cent of children aged three to five years attended some pre-school programme (Govt. of Bangladesh 2009). Attendance of children from poorer families is far lower. It was found that while 49 per cent of

Box 2 Timeline of activities leading to the current status of Early Childhood Development (ECD)

Phase I

1972 Spontaneous and informal 'baby classes' started in government-run primary schools in a sporadic manner at various times in different places.

1976 Bangladesh Shishu Academy established for orienting children on cultural activities and the performing arts such as songs, drama, poetry, dance, etc.

1981 Needs-based curriculum developed by the National Curriculum and Textbook Board (NCTB) for government-run baby classes but soon became redundant due to lack of interest.

Phase II

1991 Pre-school activities imparting pre-reading, writing and numeracy skills within Integrated Non-Formal Education Programme (INFEP) implemented through NGOs on a limited scale.

1992 Early Childhood Education and Development (ECED) component in the EFA NPA I encouraged continuation of existing baby classes through non-government and community initiatives but did not provide the necessary support to formalise and institutionalise baby classes.

1994 GoB circular sent out encouraging primary schools to organise baby classes but with no provisions for a separate teacher or a structured curriculum.

1995 Bangladesh Shishu Academy started district level pre-school activities in each of their district level offices but limited only to basic reading, writing and arithmetic.

1997 As a solution to shortage of teachers, physical facilities and resource constraints, the National Committee on Primary Education proposed considering the first six months of grade 1 to help children prepare for primary school. But this proposal did not materialise and baby classes continued as before.

1998 GoB planned to expand and support operation of baby classes through PEDP I (1998–2003), 'but no clear information is available about its implementation' (Govt. of Bangladesh 2003).

Phase III

2001 GoB initiated Early Childhood Development Project (ECDP) through Bangladesh Shishu Academy as a pilot project for innovative and comprehensive ECCD model, in partnership with NGOs, as a stepping-stone to create awareness about holistic child development.

2002 Selected NGOs received approval from MoPME to organise pre-primary activities in government primary schools.

2002 Effort to set ECD Network initiated by government/NGO and development partners.

2005 The ECD Network formally launched.

2007 GoB continued its ECDP through Bangladesh Shishu Academy and named it Early Learning for Child Development Project (ELCDP).

2008 Operational Framework for pre-primary education launched by MoPME.

2011 PEDP III started with provision for the DPE to run pre-primary classes.

UNICEF has supported MoPME, the Ministry of Women and Children Affairs (MOWCA) and the Bangladesh ECD Network (BEN) in the development of the pre-school operational framework, and curriculum. In 2012 MoPME approved the guidelines for partnership between the government and NGOs. Currently, UNICEF is supporting 8,487 pre-school classes through BRAC, Grameen Shikkha and Bangladesh Shishu Academy (BSA). UNICEF has also been supporting the NCTB and DPE in the development of the pre-school curriculum framework and in the training of government primary school (GPS) teachers respectively. The DPE has issued circulars to open one pre-school class in each GPS. Although a phased approach to expansion of pre-school was proposed in the PEDP III programme document the DPE is already reporting that about 36,000 GPSs have opened pre-school classes. While an independent longitudinal study has reported transformation of a pre-school class after the UNICEF supported training, UNICEF's field staff members have reported a mixed situation. UNICEF intends to continue its technical support to the government to ensure minimum quality standards in these pre-schools and a draft minimum standards document is now under review for adoption. Besides, pre-school plays an important role in levelling the playing field to the most marginalised children. Hence, it becomes an important ingredient of inclusive education strategy and UNICEF intends to remain engaged in this sub-component. UNICEF will strive to foster closer collaboration between the GoB and NGOs in this sub-component.

grade 1 children who attended PPE the previous year came from well-to-do families, only 22.4 per cent of grade 1 children with PPE experience were from poor families (Govt. of Bangladesh 2011). There is therefore a great urgency to increase and ensure coverage especially for those in disadvantaged situations. The 2010 Household Income and Expenditure Survey (Govt. of Bangladesh 2010: Table 114) estimated the five-year-old population at 2.15 million. Assuming that one pre-primary class or centre will accommodate a maximum of 30 children (as per the PPE Operational Framework) there is a need for over 71,000 classes (Rich-Orloff 2010).

The government has stated its commitment to expand pre-primary education. In fact, the government has immediate plans to open one pre-primary centre in every government primary school (GPS) as a component of PEDP III. In addition, the government also plans to open one pre-primary centre in Registered Non Government Primary Schools (RNGPS) and community schools at a later date. This will contribute significantly to increased pre-primary school coverage. However, in the immediate future only the GPS and experimental centres will be started.

Pre-primary education is being provided in the Chittagong Hill Tracts by the government through the Integrated Community

Development Project (ICDP), a joint initiative of Chittagong Hill Tracts Development Board (CHTDB) and UNICEF. In addition, NGOs are also implementing pre-primary education in Bangladesh. But these total only 23,176 centres or less than a quarter of what is required.

NGO operated centres are heavily dependent on donor funding. Given the unreliability of this funding, it should not be assumed that these centres would continue indefinitely.

As noted above, along with the government, national and international NGOs have been involved in ECCD, specifically pre-primary centres, and have developed and implemented quite a few innovative ECCD models by involving parents and communities. They have structured ECCD programmes for different age groups and promoted parental education. Through staff training and research, organisations such as BRAC, Save the Children and Plan Bangladesh have contributed to the design of an appropriate curriculum, low-cost learning materials and trained professionals.

Additionally, over the years, rich and exciting resources on ECCD have grown within the country with at least five specialist research and training institutes, including the Institute for Education Research at BRAC University. They have gained the expertise and the capacity to

provide technical and professional support, as well as to participate in the policymaking dialogue of ECCD at the national level.

5 Programme interventions and standards

Programme intervention standards include standards for teachers and parents, and standards for monitoring children's development and programmes. These will be developed based on the Early Learning and Development Standards (ELDS). The ELDS will provide direction and a common guideline for all standards.

5.1 Early Learning and Development Standards (ELDS)

ELDS is a tool to monitor the development and learning of children (zero to eight years) and includes a range of indicators encompassing different dimensions. These include tracking physical and motor development, social and emotional development, language and communication skills, and cognitive development (incorporating knowledge, comprehension, logic, reasoning and creativity). After validating the standards, it will be a resource for all caregivers, parents and teachers, and the basis for integrating services to young children to ensure effective curriculum development, teacher preparation, parenting education and public information.

5.2 Recommendations and challenges for developing pre-primary education[5]

- Implementation of planned PPE activities under PEDP III in partnership with NGOs and other actors requires quality monitoring;
- Making ECCD services inclusive – especially developing and expanding programmes for early detection and care of children with special needs;
- Early Learning Development Standards Validation;
- Mapping, database and expansion plan (increasing coverage from 23 per cent to 100 per cent);
- Ensuring early literacy for *all* children in their mother language;
- Implementation of government–NGO collaboration guidelines;
- Professional capacity building and institutional strengthening;
- Monitoring and supervision;
- Commitment of the government through policy must lead to funded programmes supported

by workable mechanisms, adequate resources, trained human resources, quality developmental packages, monitoring tools and follow-up;
- Minimum standards for PPE in particular will have to be adopted as a guide for all service providers;
- Appropriate agencies and organisations who are experienced in pre-primary education should be engaged to work in partnership with the government;
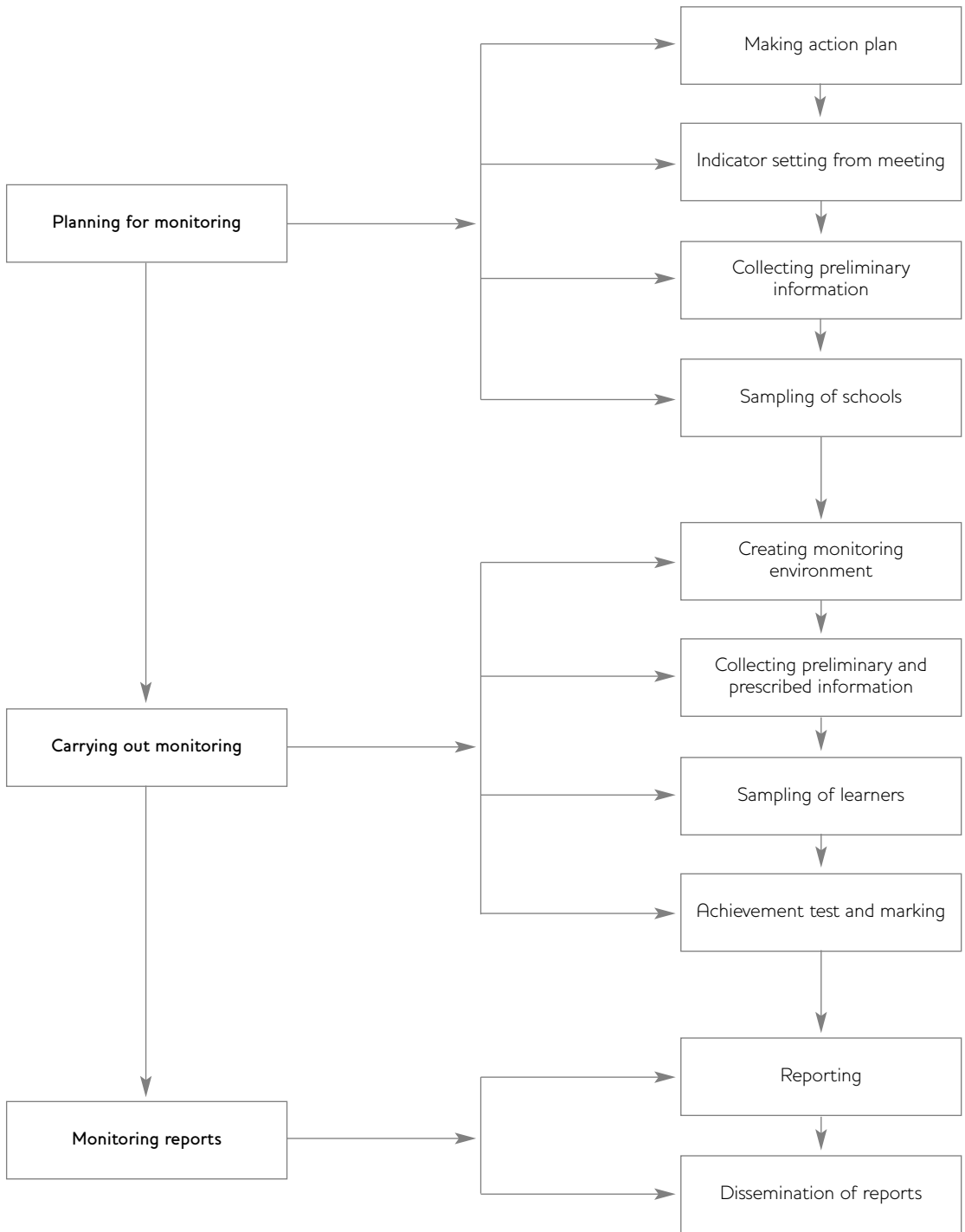- Making pre-school services universal with quality.

For the last ten years, UNICEF played a crucial role in Early Childhood Development (ECD), including pre-primary education, with both NGOs and the government. UNICEF started advocacy with the MoPME to mainstream pre-primary education based on more than five years' practical work experience with the Ministry of Women and Children Affairs (MOWCA), the Institute of Child and Mother Health (ICMH), and different NGOs (including Plan Bangladesh, BRAC and Grameen Shikkha). Through this activity, a one-year pre-school model including pedagogic materials and a training module was developed and implemented through a partnership of NGOs, UNICEF and the government. This formed the basis for sector advocacy. In fact, UNICEF was playing a vital role to link government and non-government activities in this field. The NGOs have a substantial track record in providing pre-primary education and their work had informed the development of sector strategy. However, historically, working relationships between the government and non-government sector had not always been smooth, including in the education sector, and UNICEF has played a critical facilitating role enabling the development of the national pre-primary strategy to be informed by the expertise of the NGOs in the sector.

6 RTMMV case study: Bangladesh – BRAC[6] pre-primary education monitoring system

6.1 Introduction and background[7]

Recent research has shown that early learning outcomes are especially important to monitor as these factors have been shown to influence significantly (lower) dropout rates in primary school (Nath 2012). The government of Bangladesh has made the expansion of PPE a major national priority. Bangladesh performs well with respect to national averages on enrolment

Planning for monitoring

- Making action plan
- Indicator setting from meeting
- Collecting preliminary information
- Sampling of schools

Carrying out monitoring

- Creating monitoring environment
- Collecting preliminary and prescribed information
- Sampling of learners
- Achievement test and marking

Monitoring reports

- Reporting
- Dissemination of reports

Source 'BRAC Education Monitoring Unit and School Performance Monitoring Tools', unpublished report.

and gender parity at primary level. However, more improvement is needed in educational quality to improve learning outcomes. Emphasising learning outcomes, and monitoring intra-classroom learning in early childhood development, helps ensure subsequent investments during primary and secondary will address these quality issues. As well as the immediate gains from cognitive development in ECD, value for money in primary education is boosted via investment in pre-primary. However, as with the primary sector there are challenges in ensuring universal coverage. The barriers to exclusion in Bangladesh for early learning and pre-primary are various but usually related to: (a) a rural–urban divide; (b) the preponderance of second rather than first generation learning; and (c) poverty dynamics.

Pre-primary education is often seen as a complex sector to monitor as there are indicators that require continuous monitoring, such as enrolment or early learning outcomes. One of the most unique examples of real-time monitoring supported by UNICEF is found in Bangladesh in the pre-primary education programme operated by BRAC. In this programme routine real-time monitoring is conducted to improve outcomes and improve programme implementation. For BRAC, the impetus behind monitoring is for the sole use of improving programmes and fine-tuning implementation. The BRAC initiative is unique due to the usage of monitoring data by multiple users. In many programmes, M&E functions are operated centrally for longer-term course corrections; fundamentally, this is an evaluation function. In traditional monitoring, data are collected in a routinised manner over specific intervals (quarterly, monthly, etc.) and used centrally to spotlight trouble areas or assess overall performance metrics. The monitoring and evaluation functions are quite distinctive within the BRAC structure because the monitors provide data to all levels and functions of the institute. The evaluation function is still served through this monitoring data to provide monthly feedback and longer-term analysis. However, the design of the data collection ensures a local response.

6.2 Objectives

Monitoring is one of the most important elements to improve the quality of the BRAC Education Programme (BEP). The monitoring system is effectively a random sampling exercise to track quality and outcomes. The BRAC pre-primary programme aims to:

- Supplement government efforts in reaching EFA and MDG goals in education;
- Create inclusive provision to good quality pre-primary education to first generation learners/disadvantaged children;
- Ensure regular attendance; learning; and completion of primary cycle in time with good track records;
- Achieve at least 95 per cent completion and transition of all graduates to mainstream primary schools.

The BRAC approach in its pre-primary real-time monitoring system is to recognise that:

- Monitoring is a multi-level decentralised learning process that allows staff members to compare actual performance, outputs and results against standards;
- Monitoring is only effective if it enables responses to programme implementation;
- Monitoring duties are executed by the programme staff themselves as well as by the organisation. (The intent is to promote internal programme learning not just logical framework type reporting.)

6.3 Programme structure and functions

BRAC runs approximately 38,000 primary and over 15,000 pre-primary schools throughout Bangladesh. BRAC has worked within the pre-primary space since 1985 though the early attempts did not develop smoothly and following the Jomtien conference (1990)[8] and the EFA, a perverse outcome was that only primary schooling received emphasis and BRAC, for a number of years, retained its focus only there. Then from 1997–2001 BRAC again experimented with models of pre-primary delivery before adoption of its current approach (Shahjamal and Nath 2008). The monitoring system in its current form has been used since 2006 and shows that the pre-primary expansion since 2003 has had lasting results. In 2007, the pass rate for pre-primary graduates in the grade V examination was 97 per cent and the completion rate was 79 per cent, well above national averages and clearly demonstrating the effect of investing in pre-primary education. The goals of BRAC work in the sector emphasise student learning outcomes and these priorities
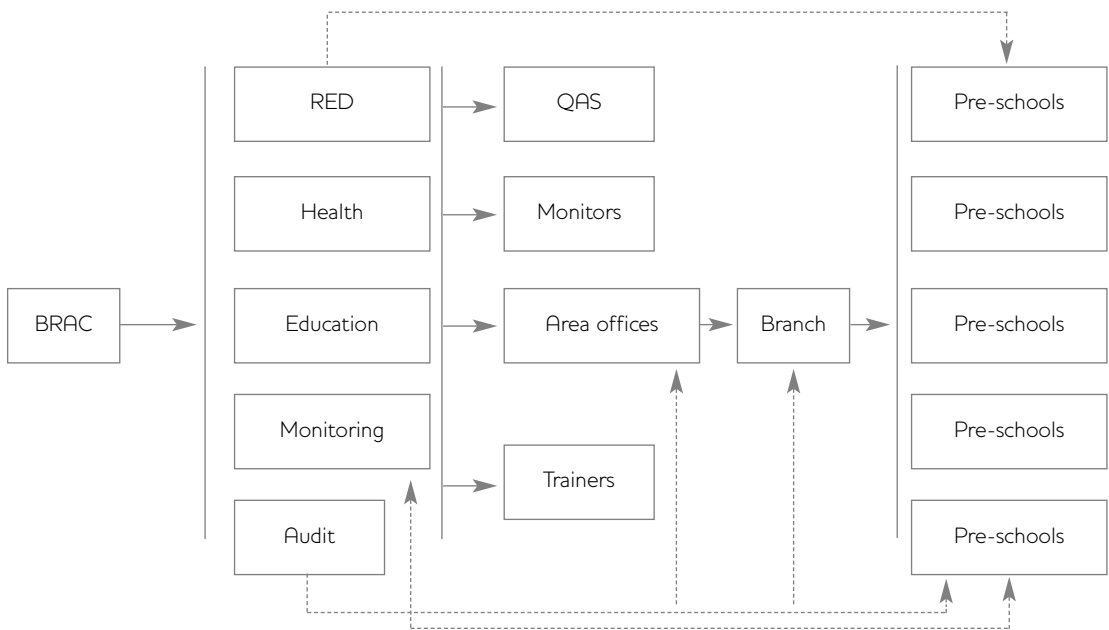
are reflected in the monitoring and evaluation systems implemented by the organisation.

6.4 Monitoring at the programme level
- Line management staff – programme officers, branch managers;
- Independent monitors – quality control;
- Trainers and community development unit members – educational development.

There are multiple users of monitoring data for different purposes including:

- BRAC monitoring department and programme officers (local);
- Research and Evaluation Division (RED) (central);
- Audit.

6.5 Functions and responsibilities
- *Quality Assurance (QAS)* – takes the lead in promoting quality teaching–learning and learning outcomes. These are typically branch managers (BMs) who have been promoted. QAS monitors help develop teachers through in-service training and training programmes. In addition, they train programme managers and branch managers. They look to use monitoring data from the quality/pedagogical perspective;

- *Independent monitors* – these monitors sit at BRAC's headquarters and are randomly assigned to check an area and monitor to ensure quality and accuracy. They serve to verify monitoring results;
- *Monitors* – routine monitors who collect and disseminate monitoring data;
- *Research and Evaluation Division (RED)* – RED contributes to the indicator selection and undertakes studies of performance, quality and impact assessments. RED will analyse the findings from the previous year and suggest ways to overcome potential challenges and barriers that the programme faces. Larger studies are also conducted by RED including impact evaluation of pre-primary, completion/graduation in primary, and transition of BRAC students from primary to secondary for example.

6.6 Coverage
There are 45 monitors for 37,882 BRAC schools. 15,162 of these are pre-primary schools (making the ratio of monitors to schools as 1:800, covering 12–15 branches). Each monitor will cover at least ten pre-schools per month, making a minimum of 450 (approximately 3 per cent of total). This sample size is determined by central office. On average, an estimated 4,500 pre-schools are

Figure 3 **Functions of branch office**
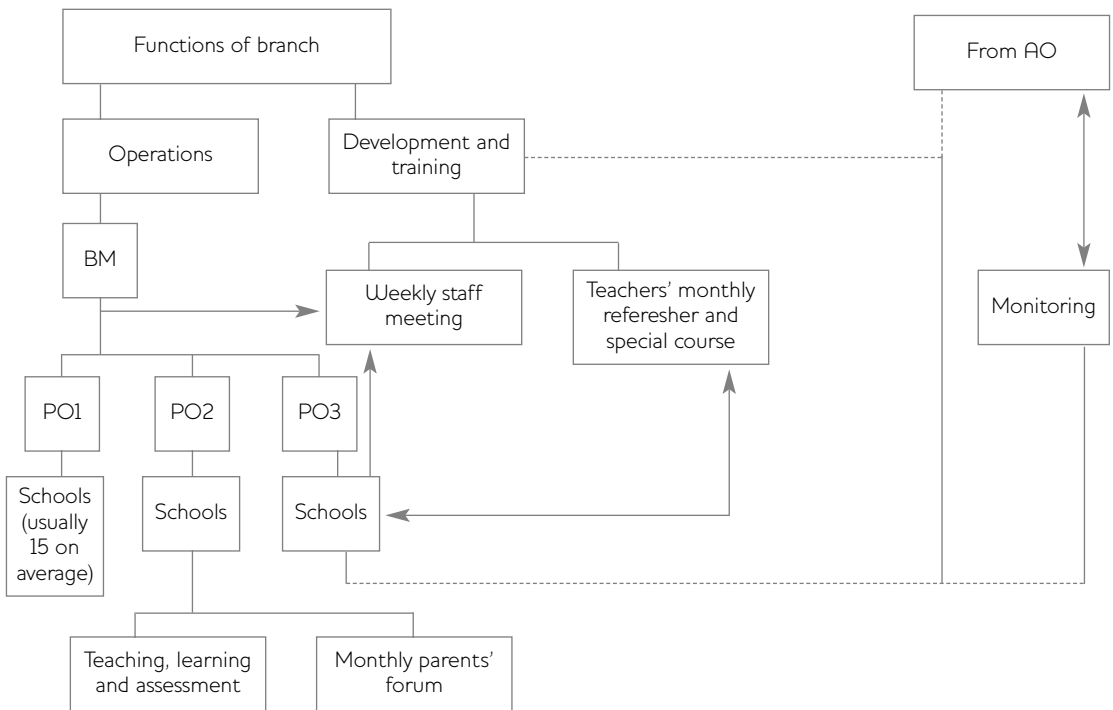
Source BRAC presentation at UNICEF–IDS workshop on Real Time Monitoring for the Most Vulnerable, 14 May 2012.

monitored over a school year, with special consideration to covering diversity (a monitoring emphasis on ethnic areas, disability, difficult/remote locations, and new branches).

Each month, at least four branches are covered (one per week) in the sample. All branches are covered over the period of a quarter. BRAC divides its programme areas into region, area and branch (see Table 3). There are 46 areas in Bangladesh. Each area has one monitor. Over the course of three months, all branches in the area are covered by the one designated monitor. A typical monitor visit will mix primary and pre-primary school visits, making typically two visits per day for three days. On the fourth day the monitor will meet with all of the stakeholders before moving on to the next branch.

On each visit a monitor makes to a branch 10 per cent of the schools under the branch will be sampled. For example, in the area known as Mirpur where the field visit took place, there are 28 schools. The monitor therefore chooses three schools (rounding upwards) based upon a random number generator. The school list is split between BRAC pre-primary schools and specifically those that receive funds from UNICEF. In the Mirpur example, numbers are generated[9] until at least one UNICEF school is selected among the three.

The monitor will then visit the chosen schools. In the visit, the monitor observes classroom behaviour and student–teacher interactions, making notes. Then the teacher will test students around the class asking basic arithmetical and reading questions. The monitor will randomly ask children similar questions and mark responses, ensuring equal girl and boy responses are recorded. The student–teacher interaction is also closely monitored. Needs-based follow-up and teacher training is conducted as determined by the programme staff at the branch office.

Monitoring primary (first or second grade in particular) has many of the same functions of pre-primary, but the monitoring of first and second grades differs slightly. The classroom monitoring typically will involve a short written

Table 3 BRAC Education Administrative Units and purposes

Unit	Size	Purpose
Region	2–3 areas for a region	Oversight and management
Area	About ten branches to an area	Administrative branches
Branch	A branch will have both pre-primary and primary schools	Respond locally
School	Pre-primary school has approximately 30 students per classroom	Responses to teacher–student interactions and will determine teacher training

test to monitor learning outcomes. The teacher will randomly distribute children within the classroom into groups. For example, every child counts a number and sits in respective lines to the number that was called. By row, the child does arithmetic or a writing problem. All books are checked by teachers and monitors. But only a predetermined row will be recorded and entered by the monitor. Games like this will ensure seating/grouping of students will not bias test scores. Similar to pre-primary, upon leaving, the monitor will ask and record information from the teacher about his/her training, as more teacher training may be needed depending on observations by the monitor.

Common examples of follow-up from the branch office can concern attendance or teacher training. For example, a monitor looks at attendance rolls and asks why a child has not come for three days. Because attendance is recorded every day, the monitor looks at the last two weeks to see if there are any recurring attendance issues. The teacher or programme officer will then be required to take up the single or multiple issues based on a stakeholder meeting at the branch office.

Sampling
The sampling of the schools ensures the integrity of representation via an accurate random sample. Randomisation techniques are used for school selection by monitors as well as intra-classroom sampling to test learning outcomes. Within the classroom the monitor sits with children and plays basic games such as looking at drawings and asking questions about the pictures. Basic questions such as on picture and colour identification are asked. In addition, basic arithmetic and literacy questions are also asked (alphabet/number identification and writing).

6.7 Post-visit reporting
A monitor will complete a report for the branch and four copies will be made and distributed to: branch manager, area manager, regional manager and the central head. The area and regional managers that receive the report are education programme staff. The rationale is that the information should not be limited to M&E functions but also used by programme staff who are responsible for implementation and need to learn and act upon the report at all levels.

The central office in Dhaka compiles all the monitoring data at the end of the month. The central office enters the data into an SPSS file for the monthly report. Starting on the first of the month, it takes about ten days to write the report.

There is also a Monitor's Forum held quarterly at the central office with senior managers of the programme. Experiences are shared among the monitors including lessons learned with an objective to improve monitoring as well as provide inputs to indicators that may get preference for monitoring in the next two to three months. Monitoring staff have therefore developed a stake in the programme quality and outcomes. In this manner, monitoring staff can be seen as not passive recorders or inspectors, but rather as active contributors to the overall programme.

Future plans (within one to two years) anticipate that monitors will enter data into a computer located in the branch office. The data can then be sent to the central office immediately and aggregated quickly. It is estimated that a computerised system will shorten the timeframe (as the aggregation done for the monthly reporting will then be done on a weekly basis).

Monitors have a high level of responsibility both in terms of reporting and area coverage. The responsibilities are commensurate with the training and education monitors receive. Monitors usually have five to seven years of work experience, usually with a postgraduate degree.

6.8 *Monitoring schedule and activities*
There are two monitoring components during the school year; a beginning of the year stocktake and routine monitoring done throughout the school year.

Beginning of the year survey
There is an initial stocktake of all schools and available resources. The opening questionnaire does not change over the course of the year; it is only for a baseline and stocktake of the schools. A stocktake of inputs:

- Learner selection;
- Teacher selection;
- Sanitation;
- Environment;
- Materials.

Annually there is revalidation of a checklist to be used to determine how all schools fare in these areas, which is followed by data collection. Student selection and admittance is locally decided from the branch office. There is a criterion for child selection. There is a survey of the area for eligible children for admission.

Reporting a few examples of multiple reporting based on monitoring data
- In December there is a year-end report. All schools get a full accounting that solely looks at attendance issues;
- Quarterly report – UNICEF receives the quarterly report and not the monthly report. This reporting is required due to UNICEF financial support to many BRAC primary and pre-primary schools;
- Monitors also provide direct feedback to teachers and record teacher experience (i.e. years of training, etc.). Follow-up in terms of additional training if conducted will be recorded and reported;
- An Action Plan is decided from the weekly meeting. For the branch visited, there are 13 adolescent centres, 65 primary schools, and 28 primary schools. The action plans will determine if there is a need for a follow-up visit and any other future returns.

6.9 *Criteria for effectiveness*
The desk study that preceded the country studies identified four critical criteria to assess the effectiveness of real-time monitoring initiatives in the various country studies.

Inclusiveness
BRAC will typically seek to enrol all children of the right age. Children with disabilities are accounted for within the classroom (identified with the teacher and monitors will follow up to make sure disabled or special needs children receive special care). Within data entry[10] – physical condition, sight, hearing, conversation and 'other' will be marked by the monitor. Indigenous and tribal students are also accounted for within the survey (in the start of year stocktake).

Timeliness
The speed with which data is collected and aggregated centrally allows for changes to programme implementation. Similarly, local data is kept locally for an immediate course correction (i.e. teacher training or follow-up with an absent child, more attention to children with disabilities, etc.). The local response is immediate as programme staff are briefed on findings at the end of every monitoring visit.

Typically, teachers and branch staff will have access to monitoring findings within a day or two. Regional and area managers along with quality assurance specialists receive findings within a week and other programme managers within a month. Information management throughout the system ensures timely action and helps the management improve performance and achieve results.

Cost and sustainability
While actual figures have changed for pre-primary education due to the recent scaled-up coverage of the programme, the costs (of the real-time monitoring initiative) as a percentage of the overall budget have remained in the range of 15 per cent of the programme budget. This is high compared to 'normal' M&E budgets. However, the fact that there is increased timeliness of data, in addition to the multiple purposes of data collection goes a long way to justify the cost. It is sustainable for BRAC but these costs no doubt represent a serious challenge for direct emulation.

- Monitoring staff salary (apportioned) of 50 programme officers, 15 branch managers, 1 monitor and 1 trainer for 800 schools = Tk. 8.900,000;
- Per child cost per year is Tk. 2,500 x 24,000 = Tk. 60,000,000 (for 800 schools with 24,000 children);
- 8,900,000/60,000,000 = 14.83 per cent of total annual programme cost is the cost of monitoring.

Relevance to users

The monitoring system generates information on a wide set of indicators that are important measures of performance assessment including students' profile, learning outcomes, graduation rates, etc. This information is objective, based on randomisation of the sample, and results are reconfirmed by monitors sent from the central office. The monitoring results are used at multiple levels. Local monitoring information is of immediate use to branch and area offices. The data is also used centrally for various evaluation and research purposes (RED unit), including trend and cross-section analysis. There is a high degree of flexibility in this framework, so the concerns of multiple users can be addressed.

7 Conclusions and final thoughts

Random sampling enables monitoring a large-scale programme without over-committing resources. Furthermore, quality control ensures the validity of the information and data collection. Lessons for real-time monitoring are significant in several respects. Based on a wide scan of real-time monitoring initiatives, routine real-time monitoring of outcomes that also incorporate a rapid response is rare.

Inclusivity – BRAC takes care to ensure that vulnerable groups and children with disabilities are included in every school. Diligent follow-up from monitors to tell teachers which children with disabilities will need extra help is documented. The stocktake of the local community also ensures enrolment of vulnerable groups and minorities.

7.1 *What are the main lessons from the BRAC real-time monitoring initiative?*
The monitoring system continuously monitors outcomes (which is difficult). Many other real-time monitoring initiatives only monitor project outputs. When outcomes are monitored, such as

national level impact monitoring of the economic crisis, these instances are *ad hoc* and not routine. In the case of Vietnam or Romania it was observed that impact monitoring was done either at one point of the year or at intervals of a year or longer. The BRAC example demonstrates that routine monitoring of outcomes, in real time, is possible with a few enabling factors critically, the organisational intent and structure and the human resource capacity.

Some of the factors are: (a) the design of the monitoring system fully utilises randomised sampling. This not only reduces biases in sampling but also ensures that monitoring resources are not over-committed (as they can be for administrative data, which mandates collection from every branch/school); (b) monitors are active participants, acting as significant change agents in improving the outcomes of the programme; (c) monitoring is not a perfunctory function, which is for reporting or research there is an organisational commitment from BRAC which emphasises the critical role monitoring can have in short and long-term objectives. An additional factor would be the organisational intention and structure that possesses capable human resources to execute the (at times) complex and technical components such as the sampling and aggregation in a routine and straightforward manner.

Monitoring is designed for improving outcomes and BRAC utilises monitoring information as the change agent in improving student learning outcomes. By monitoring student–teacher interactions and student testing (within the classroom) monitors are actively providing feedback to ensure programme corrections, such as teacher training.

Multiple users: The BRAC example in many ways is a model case for how a monitoring and evaluation system should be designed. For example, the data the monitoring system generates also enables longer-term implementation changes as well as independent evaluation. The data are also used for multiple users at almost every administrative and functional level. The branch manager uses the monitoring information to implement changes at the local schools. Sitting in Dhaka the programme staff can aggregate all the monitoring data to see if programme objectives

are being met at a national level. The quality assurance monitors will collect their own information to verify the data of the routine monitors. Additionally, the independent RED (Research and Evaluation Division) also uses the information to conduct independent evaluation and other research initiatives. The multiple users of the monitoring information provide a model case for how routine data collection can be useful for various purposes. Cost remains a challenge but perhaps the most important feature of the BRAC approach is their organisational commitment to deliver quality and their willingness to support this through investment in a highly functional RTM system.

7.2 *Value for UNICEF and recommendations*
The BRAC initiative has several lessons for UNICEF. It demonstrates that monitoring with a real-time component can be central to a strategy emphasising learning outcomes. It also shows that ICTs are not a necessary ingredient of 'real-time' monitoring despite the current fashion in thinking. For engaging government partners on technical issues these types of tools and methods, already proven by BRAC, can demonstrate potential ways forward on improved monitoring in public schools. Second, the full utilisation of randomisation techniques and commitment to independent evaluation reaffirm existing M&E best practices. We have highlighted in particular the immediate use of the data for strengthening early learning outcomes.

In a country such as Bangladesh where the poor face many shocks, routine real-time monitoring has great value. Impacts of shocks (such as floods/monsoons, food price increases, etc.) can be ascertained quickly when a real-time system is already operational. Impacts can be measured based on existing indicator selection in the areas of early learning and attendance. But as previously mentioned, indicator selection is constantly refined. Therefore, additional indicators can be added based on evolving risks. In addition, these additional areas to measure can be monitored within a short period of time.

Similarly, because the research and evaluation infrastructure are already in place, BRAC is well positioned to monitor unobserved correlations and 'silent emergencies' which might be emerging in a particular location. To anticipate and detect emerging threats to children is of priority to

UNICEF and BRAC school level monitoring is a resource that can potentially serve wider purposes.

With the undoubted strengths of a system that UNICEF is already supporting, the major recommendation for UNICEF is to seek to build on their BRAC partnership and use it to advocate the adoption of similar methods as the government develops its pre-primary programme. BRAC[11] as an organisation consciously develops and supports a learning culture and requires its head office staff to spend considerable time in the field to help ensure that the service commitments they make to the poor communities in which they work are honoured, and wherever feasible improved upon. BRAC constantly works to maintain this deep culture of service, and respect, to the poor but it is not one that is easily reproduced, whether in other NGOs – though many are excellent in this regard – or in government.

The key feature of the BRAC approach to monitoring that has been emphasised is that it serves multiple users. Amongst these, it is the local feedback provided by monitors, which is critical to the 'real time' element of the monitoring programme. It is this element that could most usefully be advocated for the rollout of the national pre-primary education programme though cost and organisational culture are potentially serious constraints. The BRAC monitoring forms are extensive and it is likely that shortened versions could be developed which would focus on the most significant results from an equity perspective. It is also possible that the exploration of the use of ICTs could help reduce that cost and perhaps help contribute to strengthening commitment to improved learning outcomes. Certainly the current monitoring does provide a basis for UNICEF to refine its own indicators for the Equity Framework. Though they would not be nationally representative the 20 'convergence'[12] districts on which UNICEF Bangladesh focuses in its Equity Framework feature prominently in the BRAC pre-primary education programme so there is considerable scope for direct use of their monitoring results.

It is questionable whether a smaller, resource constrained NGO would be able to undertake a similar monitoring system with this degree of complexity and multiple objectives. In addition, BRAC has developed this system organically over

time, building upon an existing programme structure. As a result, any effort at replication by another organisation would not be straightforward and would have to be tailored to specific contexts. However, there are many specific features of the monitoring system which are autonomous and self-sustaining that can be utilised elsewhere with little difficulty, such as the intra-classroom sampling, feedback to communities, teacher training, and multiple usage of data, which are notable examples. These features could be readily replicated and would serve as a suitable point of entry for other organisations seeking to strengthen the quality of their PPE delivery through Real Time Monitoring.

Notes

1 The research team are very grateful for the support provided during the country visit in May by the UNICEF Country Representative, Pascal Villeneuve, and his colleagues. We are especially grateful to Luzma Montano, Monitoring and Evaluation Specialist, for facilitating the team's work both prior to and during the visit and to Nabendra Dahal, Chief, Education Section, for guiding the team throughout their visit. The team also received important support from Isa Achoba, Chief, Social Policy and Monitoring and Evaluation and from Mohammed Mohsin, Education Manager, who is an expert on Early Learning. The example of Real Time Monitoring identified for study was the pre-primary monitoring system developed and used by BRAC and we are very grateful for the enthusiasm and insights shared by BRAC's Dr Safiqul Islam, Director, Education. We would also like to thank all those who presented and participated at the workshop on Real Time Monitoring held in Dhaka on 14 May at the end of the field visit.

2 According to the May 2012 Annual Sector Performance Review produced by the DPE, there are 37,672 government primary schools and 20,168 registered non-government primary schools.

3 *ECCD Briefs – Calculating Cost Savings: The High/Scope Perry Pre-School Project*; www.ecdgroup.com/download/bhiccshu.pdf

4 This figure varies according to funding and programming decisions and at the time of the country visit was 15,162.

5 This list is based on diverse sources of identified challenges and needs.

6 BRAC is the world's largest NGO and has pioneered developments in many fields related to development in Bangladesh with a strong focus on gender and on poverty reduction: see http://www.brac.net (accessed 1 February 2013).

7 The research team are very grateful to Dr Safiqul Islam, Director, Education and Mr Hussein, Chief, Monitoring for Education programme for sharing their expertise and organising the field visit.

8 The EFA Declaration refers to early learning but talks mainly in terms of 'basic' education and puts the main emphasis upon primary schools.

9 A random number generator is used to randomly select schools. The number generator used is from a printout from EvaluationWiki.com.

10 The monitoring forms for pre-primary are consolidated with those for primary schools; they are extensive so have not been incorporated here but are available from the authors.

11 There are other NGOs, including Plan Bangladesh, that also operate detailed monitoring systems but BRAC is far and away the largest operation.

12 These are the districts, just under a third of the country's districts, which have the worst poverty indicators and have been identified as priorities in the new Bangladesh United Nations Development Assistance Framework (UNDAF).

References

Ahmad, Alia and Haque, Iftekharul (2011) *Primary Education in Bangladesh: A Study of BRAC Interventions and Mainstream Schools*, Research Monograph Series 48, Research and Evaluation Division, BRAC

Evans, J.L.; Myers, R.G. and Billfold, E.M. (2000) *Early Childhood Counts: A Programming Guide on Early Childhood Care for Development*, Washington DC: World Bank

Government of the People's Republic of Bangladesh (2011) *Program Document (PEDP III)*, DPE, January, Dhaka: Govt. of Bangladesh

Government of the People's Republic of Bangladesh (2010) *Household Income and Expenditure Survey Report, (HIES)*, Dhaka: Govt. of Bangladesh

Government of the People's Republic of Bangladesh (2009) *Multiple Indicator Cluster Survey*, Pogothir Patahey, Dhaka: Govt. of Bangladesh

Government of the People's Republic of Bangladesh (2008) *Operational Framework for Pre-Primary Education, Ministry of Primary and Mass Education*, Dhaka: Govt. of Bangladesh

Government of the People's Republic of Bangladesh, Ministry of Primary and Mass Education Government of Bangladesh (2003) *Education for All, National Plan of Action (NPA II) 2003–2015*, Dhaka: Govt. of Bangladesh

Lucas, H.; Batchelor, S.; Berdou, E.; Greeley, M. and Roelen, K. (2011) *Real Time Monitoring for the Most Vulnerable: Desk Review*, prepared for UNICEF, Division of Policy and Strategy, New York, November

Nath, S.R. (2012) 'The Role of Pre-school Education on Learning Achievement at Primary Level in Bangladesh', *International Journal of Early Years Education* 20.1: 4–14

Rich-Orloff, Wendy (2010) *Mainstreaming Pre-Primary Education in Bangladesh: Bringing It Together*, UNICEF–DPE

Shahjamal, Mirja Mohammad and Nath, Samir Ranjan (2008) *An Evaluation of BRAC Pre-Primary Education Programme*, Research and Evaluation Division, Dhaka: BRAC