

Competencies Achievement of BRAC School Students
Trends, Comparisons and Predictors

Samir Ranjan Nath

Research and Evaluation Division, BRAC

Competencies Achievement of BRAC School Students: *Trends, Comparisons and Predictors*

Samir Ranjan Nath

*Programme Head, Educational Research Unit
Research and Evaluation Division, BRAC
nath.sr@brac.net*

April 2012

Research Monograph Series No. 51

Research and Evaluation Division, BRAC, 75 Mohakhali, Dhaka 1212, Bangladesh
Telephone: 88-02-9881265, 8824180-7 (PABX) Fax: 88-02-8823542
Website: www.brac.net/research

Copyright © 2012 BRAC

April 2012

Cover design
Sajedur Rahman

Printing and publication
Altamas Pasha

Design and Layout
Md. Akram Hossain

Published by:

BRAC
BRAC Centre
75 Mohakhali
Dhaka 1212, Bangladesh
Telephone: (88-02) 9881265, 8824180-87
Fax: (88-02) 8823542
Website: www.brac.net/research

BRAC/RED publishes research reports, scientific papers, monographs, working papers, research compendium in Bangla (*Nirjash*), proceedings, manuals, and other publications on subjects relating to poverty, social development and human rights, health and nutrition, education, gender, environment, and governance.

Printed by BRAC Printers, 87-88 (old) 41 (new), Block C, Tongi Industrial Area, Gazipur, Bangladesh

TABLE OF CONTENTS

Acknowledgements	v
Abstract	vi
Chapter 1 Introduction	1
Chapter 2 Methods	5
Chapter 3 Trends in learning achievement	11
Chapter 4 Rural versus urban schools	19
Chapter 5 Comparison with government schools	25
Chapter 6 The ethnic minority schools	31
Chapter 7 Formal and community schools	35
Chapter 8 Factors predicting achievement	39
Chapter 9 Discussion and conclusion	48
References	54
Annexes	56

ACRONYMS

AM	Area Manager
BFPS	BRAC Formal Primary School
BNFPS	BRAC Non-formal Primary School
BRAC	A development organization, formerly Bangladesh Rural Advancement Committee
BSEM	BRAC School for Ethnic Minorities
CAMPE	Campaign for Popular Education
DPE	Directorate of Primary Education
GPS	Government Primary School
NCPS	BRAC Community Primary School
NCTB	National Curriculum and Textbook Board
NGO	Non-Government Organization
OLS	Ordinary Least Square
PEDP	Primary Education Development Programme
PO	Programme Organizer
RED	Research and Evaluation Division of BRAC

ACKNOWLEDGEMENTS

This project was initiated with encouragement from Dr. A Mushtaque R Chowdhury, the then Director Research of BRAC. His successors Prof. AM Muazzam Husain and Dr. Imran Matin continued their support throughout the study period. Ms. Kaniz Fatema and Dr. Safiqul Islam respectively former and present Directors of BRAC Education Programme were very keen to the annual learning achievement test of BRAC school graduates and gave access to programme MIS and the field stations. Their colleagues Khondoker Ariful Islam, Monwer Hossain Khandker, AZM Sakhawat Hossain, Tapan Kumar Acherjee, Profulla Chandra Barman, Hyder Hossain and others extended their support in many ways. My colleagues in the Educational Research Unit Mirja Mohammad Shahjamal, Goutam Roy, Rosie Nilufar Yasmin, Tata Zafar and Md. Mahbubul Kabir specifically assisted in training and supervision of research assistants during the surveys. Anwar Hossain's assistance in data management and analysis was an immense help for this monograph. School teachers, curriculum experts, researchers and *Education Watch* members collectively worked in development of the test instrument used and CAMPE shared *Education Watch* dataset with us. Comments of the two anonymous referees were helpful in improvement of the manuscript. We acknowledge the contributions of all of them with due respect.

RED is supported by BRAC's core fund and funds from donor agencies, organizations and governments worldwide. Current donors of BRAC and RED include Aga Khan Foundation Canada, AusAID, Australian High Commission, Bill and Melinda Gates Foundation, NIKE Foundation, Campaign for Popular Education, Canadian International Development Agency, Charities Aid Foundation-America, Columbia University (USA), Department for International Development (DFID) of UK, European Commission, Fidelis France, The Global Fund, GTZ (GTZ is now GIZ) (Germany), Government of Bangladesh, The Hospital for Sick Children, ICDDR,B Centre for Health and Population Research, Institute of Development Studies (Sussex, UK), Inter-cooperation Bangladesh, International Committee of the Red Cross, International Research and Exchange Board, Manusher Jonno Foundation, Micro-Nutrient Initiative NOVIB, OXFAM America, Plan Bangladesh Embassy of the Kingdom of the Netherlands, Royal Norwegian Embassy, SIDA, Stanford University, Swiss Development Cooperation, UNICEF, University of Leeds, World Bank, World Food Programme, Winrock International USA, Save the Children USA, Save the Children UK, Safer World, The Rotary Foundation, Rockefeller Foundation, BRAC UK, BRAC USA, Oxford University, Karolinska University, International Union for Conservation of Nature and Natural Resources (IUCN), Emory University, Agricultural Innovation in Dryland Africa Project (AIDA), AED ARTS, United Nations Development Program, United Nations Democracy Fund, Family Health International, The Global Alliance for Improved Nutrition (GAIN), The Islamic Development Bank, Sight Saver (UK), Engender Health (USA) and International Food Policy Research Institute (IFPRI).

ABSTRACT

The National Curriculum and Textbook Board in Bangladesh specified 50 terminal competencies which are supposed to be achieved by the students' throughout the cycle of primary education. The competency-based test instrument which was developed for *Education Watch* 2000 was administered on a sample of BRAC school graduates of each year during 2000-2010. This monograph is an outcome of analyses of all these test results.

Although the rural BRAC non-formal schools were common in each year, samples from BRAC's non-formal urban, formal and community schools and the schools for ethnic minorities were taken in some years. Sometimes, the government primary schools were also included. Taking all these test data into account, this monograph presents a repeated cross-sectional analysis of performance of BRAC schools. Comparison of various types of BRAC schools, rural and urban schools, and with government schools are also provided. Separate analyses for boys and girls were done as a cross-cutting issue.

The findings reveal that the performance of BRAC non-formal school students increased over time. The students did best in environmental studies (science and social studies) followed by Bangla, mathematics and English. Urban students did better than the rural students and the Bangalis than the ethnic minorities. Best performance was observed in BRAC formal schools followed by community schools and non-formal schools.

Variation among schools and students persisted although reduced over time. Three major predictors of both types of variations were quality of teachers assessed by the area managers, proportion of contents taught in the classrooms and religion of the students. The former two positively influenced the achievement of competencies and the Muslim students performed better than the non-Muslims. If the programme organizers were frequently changed or they were given more schools to supervise, the students performed poorly. Contribution of the school and teacher-related factors in predicting learning achievement was more than that of the supervisors and students background characteristics.

The BRAC school students were more likely to do well in the test compared to those in the government schools. Magnitude of difference was more among the girls than the boys. However, in both the cases, boys outperformed the girls.

INTRODUCTION

Background and objectives

Available frameworks for analyzing quality of education comprised of a number of indicators. These may be categorized as input, process and output/outcome (Nath and Chowdhury 2009, Nath 2006, UNESCO 2005, Chowdhury *et al.* 1997, Govinda and Varghese 1993). As a result of interaction between input and process factors, immediate output is produced which influence expanded outcome. Although sustainability of learning and impact of education in social and professional life are the major concern of any education provision, learning achievement of the students is the most popular and easily understood immediate output. Students assessment during and at the end of education programme are the ways to know their learning achievement.

Duration of compulsory primary education is five years in Bangladesh. Primary education can be earned through formal or non-formal schools and also through religious schools called madrasas. All primary schools are supposed to follow the curriculum adopted by the National Curriculum and Textbook Board (NCTB). NCTB has adopted 53 terminal competencies in 1989 which are intended to be achieved by the students throughout the cycle of primary education (NCTB and UNICEF 1989). The competencies were broken down in grade-wise learning continuum and the textbooks were revised in line of the competencies.

Of the 53 terminal competencies four each in Bangla, English and religious studies, five in mathematics, 28 in environmental studies, and the rest can be classified as 'others' (Kalam and Nath 2001). Other way, 18 are on character building, five each on learning human body, mathematics and information collection and creative thinking, six each on knowing social and natural environment and learning discipline, and four each on learning Bangla and English language (PMED undated). However, many of these are overlapping.

According to Bloom's taxonomy learning outcomes can broadly be classified into three (Bloom *et al.*, 1956). *Cognitive domain* includes the area of knowledge and thinking; *psychomotor domain* includes physical activities, habit formation, skills development, and performance in real life, etc.; and belief, faith, outlook, attitude, interest, etc. belong to *affective domain*. Classification of competencies shows that 29 fall under cognitive domain – 13 fully and others mixed with psychomotor and/or affective type. Of the 40 non-cognitive type of competencies (psychomotor and affective), 24 are fully non-cognitive and rest mixed with cognitive competencies. Of the 29 cognitive competencies, four each on Bangla and English languages, five on

mathematics, six on social studies, nine on general science and one on religious studies (Kalam and Nath 2001).

In a competency-based education provision, aim of student assessment should be to measure students' achievement of competencies. Thus, competency-based test instruments are required to assess students learning. However, none of the mid-term and annual examinations in the schools, former scholarship examinations and the present primary education completion examination exercise competency-based learning achievement test of the students. Major studies on students' learning achievement, undertaken by government agencies through foreign financial support, are also of the same pattern (PSPMP 2001a, 2001b, Nanayakkara *et al.* 2007). An argument behind this may be that as the items for the examinations/assessments are taken from the textbooks and the textbooks are competency-based, so the test items reflect the competencies. Inability to measure students learning against each of the competencies separately is the main drawback of these assessments. Slight modifications of the competencies were made later and now there are 50 competencies (Annex 1). However, the contents of both the lists are mostly the same.

Education Watch, a civil society initiative to assess progress in education, for the first time in 2000 took an initiative to measure students' achievement of competencies at the end of grade V (Nath and Chowdhury 2001). A competency-based test instrument was developed through various trials and used it nationally to assess learning achievement of the students completing grade V in 2000. Two national studies were conducted under *Education Watch* in 2000 and 2008 (Nath and Chowdhury 2001, 2009). The instrument was further used to assess the students of BRAC schools once a year at the end of primary course which continued till 2010.

Objectives

The aim of this monograph is to present achievement of competencies of BRAC school graduates during 2000-2010 bringing all data mentioned above including *Education Watch* learning achievement tests. To understand the issue in more detail following themes are outlined:

- Trends in learning achievement 2000-2010
- Rural versus urban schools
- Comparison with government schools
- The ethnic minority schools
- Formal and community schools
- Factors affecting achievement

A brief note on the schools under study

The BRAC school programme

BRAC is a non-government organization (NGO) working internationally, aiming to poverty alleviation and empowerment of the poor. BRAC experienced in education

through operating a large scale functional literacy programme in the 1970s. Primary school programme of BRAC for the disadvantage communities was started in 1985 with 22 schools¹. After few years of learning, the programme was scaled up in the 1990s and 2000s. During the past two-and-a-half decades, 4.7 million children received primary education from BRAC schools. BRAC education programme supplements to the national effort to Education for All.

BRAC Non-formal Primary School (BNFPS): Major portion of BRAC primary education is the non-formal primary schools. Majority of these are established in rural areas; however, about 5% in urban slums. A usual BRAC non-formal primary school (BNFPS) can be defined as follows:

A classroom, a female teacher and a cohort of 33 students residing in one kilometre radius of the classroom where teaching-learning occurs at a joyful manner through an interactive way following the national curriculum.

The five-year national curriculum is covered in four calendar years. Duration of the first two grades is nine months each and the rest 30 months are equally divided by the rest three grades. BRAC textbooks are used in the first three grades and NCTB textbooks for the rest two years. Schools are arranged in rented houses. Education is free in these schools. BRAC provides free textbooks and stationeries to the students, monthly remuneration to the teachers and rent of schoolhouses to the land owners. Earlier, 70% of the students of these schools were taken from the girls. Due to raise in girls' education in the country the share reduced to 65% in recent years.

BRAC Community Primary School (BCPS): BRAC also operates some community primary schools. With financial assistance of the government the communities established these schools. In 1998, non-functioning 44 such schools were handed over to BRAC. NCTB textbooks are used in these schools and the students complete the full cycle of primary education within five calendar years. Each school has 3-4 teachers – salary paid by the government. These are mostly two-shift schools with three classrooms each. The average class size is below 40 equally distributed by sex.

BRAC Formal Primary School (BFPS): BRAC also established 11 formal primary schools adjacent to its 11 training and resource centres located in rural areas. These can be treated as non-registered non-government primary schools. The schools are established in permanent structures. Each school has five classrooms and five teachers. The students use NCTB textbooks for five calendar years to complete the full cycle of primary education. BRAC provides teachers salary. Girls receive free education but the boys pay tuition fees. The class size is 40. Number of boys and girls are equal.

¹ For details of the development of BRAC school programme and its various features see Lovell and Fatema (1989); and Ahmed *et al.* (1993)

BRAC School for Ethnic Minorities (BSEM): A special initiative was taken in 1998 to create educational opportunities for the children of ethnic minorities. After several dialogues with the communities and using expert help at national and international levels some materials were developed. After more than five years of preparatory activities a separate programme was developed. Schools of this kind started in September 2003. The schools are mostly similar to those of non-formal schools. Considering the reality (communication, isolation, lower level of education, etc.) each of these schools consist of 25 students and two teachers – one from the ethnic minority community and one Bangali. Education in these schools starts with mother tongues of the children and then gradually introduced to national language Bangla. At grade V, 10% of the instruction is given in their own languages and 90% in Bangla. First batch of students of these schools graduated in December 2007.

The government schools

The government primary schools (GPS) are the mainstream primary education provision in Bangladesh. These schools were established by the communities and gradually taken over by the government (at a large scale in 1974 through an ordinance of the President²). Like BRAC, these are also fee-free schools and the government provides free textbooks to all students, stipend (*upabritti*) to poorer 40% of the students in each school, constructs and reconstructs schoolhouses, and provides teachers' salaries following national pay scale. Each school has 3-5 classrooms and similar number of teachers. *Upazila* level government officials supervise these schools and the *upazila* resource centres provide academic support. Five calendar years are taken to provide full course of primary education. There are 37,672 government primary schools in the country and the sex ratio of the students in these schools is 50:50.

It is to be noted that BRAC non-formal schools including those for ethnic minorities are temporarily established. After completion of a cycle if adequate number of out-of-school children (at least 30) is not available, the school is moved to a new area, which is generally another remote location. This means that the programme is entering in the remote areas over time. On the other hand, the other two types of BRAC schools (formal and community) and the government schools are established in permanent locations. Management and supervision of the schools are also designed according to their nature. Again, the class size of the permanent schools is higher than the temporarily established schools. As the number of teachers is more than one in these schools, the teachers can share and cooperate with each other as and when necessary, which is not the case in the one teacher non-formal schools. Such gap is tried to be filled up through monthly refreshers training mandatory to all non-formal school teachers. Moreover, the teachers can take help of the programme organizers (PO) at least once a fortnight when the POs visit the schools. In order to complete the full cycle of primary education the non-formal schools take four calendar years, whereas it is five years in other three cases.

² Government of Bangladesh (1974)

METHODS

The instrument

The instrument used for this assessment was developed in the Research and Evaluation Division of BRAC for *Education Watch* study 2000 (Nath *et al.* 2000). Through a series of workshops on curriculum, competencies, assessment procedure and construction of test items, a group of teachers, researchers and educationists collectively developed the instrument. A number of field trials were held to ensure reliability and validity of the test. Detailed description of test development is available elsewhere (Nath *et al.* 2000, Nath and Chowdhury 2001).

The instrument covers 27 of the 29 cognitive competencies, which are suitable to assess through a paper-pencil test. The subjects covered are Bangla, English, mathematics, social studies, general science and religious studies. The number of competencies covered under each subject is three each for Bangla and English, five for mathematics, six for social studies, nine for general science and one for religious studies. List of competencies covered in the test is provided in Table 1. The test has 64 question items – 10 in Bangla, 7 in English, 15 in mathematics, 13 in social studies, 18 in general science and one in religious studies (Table 2). Test items and minimum levels for achieving the competencies are provided in Annexes 2 to 7.

Table 1. Competencies assessed by subject area

Subject area	Competencies
Bangla	Reading skills Writing skills Listening skills
English	Reading skills Writing skills Listening skills
Mathematics	Basic number skills Basic rules of arithmetic Word problem solving Measurement units Identification of geometric figures
Social Studies	Duties as family members Duties as member of society Duties as citizen of Bangladesh Knowing the country Manners with persons of various relationship Knowing about the children of other countries

(Table 1 continued...)

(Continued Table 1...)

General Science	Importance of good health Physical and environmental health systems Knowledge about balanced diet Prevention of common diseases Information collection ability Observation skills on natural objects Scientific investigation skills Identification of cause and effect relationship Science and technology in everyday life
Religious Studies	Knowledge about prophet Mohammad (SM) or the preachers of own religion

Table 2. Number of competencies and question items by subject

Subject	Number of competencies addressed	Number of question items in the test
Bangla	3	10
English	3	7
Mathematics	5	15
Social studies	6	13
General science	9	18
Religious studies	1	1
All	27	64

Data source

Data used in preparing this monograph came from two different sources, viz., *Education Watch* and independent tests on BRAC school graduates. The *Education Watch* studies of 2000 and 2008 considered non-formal schools as a sub-category for investigation. A good number of BRAC non-formal schools located in both rural and urban areas appeared in the samples. These studies also considered government primary schools as another sub-category. Independent sample-based tests were conducted on rural BRAC school graduates of 2001-2007, 2009 and 2010. Besides, BRAC community and formal schools were brought under test in 2004, government schools in 2006 and BRAC schools for ethnic minority children in 2007.

Sampling

Sampling strategy applied for the tests were mostly similar in nature. In order to determine sample size each of the competencies was measured dichotomously – students achieved the competency or not. In each case 95% confidence on the estimates was ensured but in case of margin error it was sometimes 5% and sometimes 7% (Cochran 1977, Kalton 1983). In *Education Watch* studies (2000 and 2008) a number of *upazilas* (sub-districts) or *thanas* (for urban areas) were selected randomly at the first stage. One school of each category was selected randomly at the second stage and students were selected at random at the third stage. For BRAC non-formal schools a number of teams/areas (administrative level for a cluster

of schools) were selected at first stage. One school from each team/area was selected randomly at the second stage and students were selected at random at the third stage. In case of BRAC community school category, 29 schools were randomly selected at the first stage and students at the second stage. As the number of BRAC formal schools was small, all 11 schools of this category were covered. Number of sampled schools of each category including students' distribution by gender is provided in Table 3.

Table 3. Sample size by year, school type, area and gender

Year	School type	Area	No. of schools	Gender		Total
				Boys	Girls	
2000	BNFPS	Rural	26	182	175	357
		Urban	23	157	172	329
	GPS	Rural	30	208	204	412
2001	BNFPS	Rural	30	209	211	420
2002	BNFPS	Rural	30	209	211	420
2003	BNFPS	Rural	62	432	435	867
2004	BNFPS	Rural	60	417	428	845
	BCPS	Rural	29	205	201	406
	BFPS	Rural	11	129	214	343
2005	BNFPS	Rural	298	2045	3901	5946
2006	BNFPS	Rural	30	205	395	600
	GPS	Rural	30	284	297	581
2007	BNFPS	Rural	41	395	415	810
	NSEM	Rural	46	396	410	806
2008	BNFPS	Rural	32	299	326	625
		Urban	36	291	355	646
	GPS	Rural	38	304	322	626
2009	BNFPS	Rural	40	403	401	804
2010	BNFPS	Rural	44	409	403	812

Note: BNFPS = BRAC Non-formal Primary School; GPS = Government Primary School; NCPS = BRAC Community Primary School; BFPS = BRAC Formal Primary School; BSEM = BRAC School for Ethnic Minorities

Administering the test

All tests were conducted in the months of November and December – just before the final examination or end of the course. All students sampled in a school were tested at a time in their own classroom. A team of two trained test administrators conducted tests in each school. A separate team of supervisors supervised the fieldwork.

The test was divided into three parts. Tests for Bangla and English languages were offered in the first one-hour. Tests for mathematics, environmental studies (social studies and general science) and religious studies were given during the second hour. Listening test for Bangla and English took 10 minutes. There were 10 minutes break between each part. Thus, the total test time was two hours and 30 minutes

including 20 minutes break. At the beginning the test administrators built rapport with the students. The rules and regulations of the test were explained to the students. All types of questions and the ways of writing the answers were demonstrated to them. Flip charts and blackboards were used. The students provided all answers in spaces kept in the question paper. A set of pencil, eraser and sharpener was given to each student which they received as gift after the test. The tests were administered by trained research assistants under the supervision of the education researchers of BRAC Research and Evaluation Division.

Data, variables and analyses

Major data used in preparing this monograph are the test results of the sampled students. Sex of the student was a common variable in all the tests. Some information on students' socioeconomic background, schools and additional educational activities were collected in 2005 and 2008. Idea on these variables under each category can be found in the respective chapters.

Analysis started with calculating mean number of competencies achieved by the students at aggregate level and by gender. Subject-wise mean number of competencies achieved were also calculated. Statistical tests were performed to see the differences among various estimates. This followed separate analysis for each of the competencies i.e., proportion of students' achieving each of the competencies. Following *Education Watch*, performance of the students in the competencies were categorized into four viz., *poor*, *mediocre*, *satisfactory* and *excellent*. The following is the categorization.

- *Poor*: If less than 40% of the students attained a particular competency (may also be defined as 'very difficult' item)
- *Mediocre*: If 40-59.9% of the students attained a particular competency (may also be defined as 'difficult' item)
- *Satisfactory*: If 60-79.9% of the students attained a particular competency (may also be defined as 'easy' item)
- *Excellent*: If 80% or more students attained a particular competency (may also be defined as 'very easy' item)

This allowed to see the distribution of the competencies in terms of level of performance and to identify the competencies which are 'very difficult' or 'very easy' to the students. Again, the test was divided into two based on the characteristics of the items – knowledge and understanding levels (Bloom *et al.* 1956). Understanding level items include comprehension, application, analysis and synthesis. Students' performance in these types was compared. Coefficient of variation was also calculated to understand homogeneity of BRAC schools across year and school type. It is a ratio of standard deviation of the school mean (average performance of the students) and their aggregate average times 100.

The second level of analysis was multivariate which aimed to find out the factors predicting students learning achievement. Both student and school level variations

were explored. An attempt was also made to see the deviation between BRAC and government schools and find out the magnitude of such gap controlling the affects of other variables. Both linear and binary logistic regression analyses were used as applicable. More on this is available in the respective chapter.

Validity and reliability

Any study based on achievement test raise question on validity and reliability. The question paper prepared for the test is based on competencies set by the NCTB. Practicing teachers and the national curriculum experts collectively prepared the test and in doing so they ensured that the test questions comprise with the set competencies. Thus, the test is valid in terms of the competencies adopted by NCTB. All types of schools (both BRAC and government) considered for this study follow the national curriculum. It is therefore, expected that the competencies are equally applicable to all of them whether operated in a formal or a non-formal mode and whatever their duration is. At the same time, it is recognized that the readers should remind the background of the school types while reading such comparative studies.

Reliability of the test was assessed on each set of database. Kudar-Richardson formula number 20 (KR 20) was used in order to assess reliability of test data (Kudar and Richardson 1937, Carmines and Zeller 1979, Ferguson and Takane 1989). This exercise was done separately by sex of the students, school type and year. In most of the cases the reliability coefficient was found more than 0.90 and in few cases it was below than this but not less than 0.85. In general, a reliability coefficient of 0.80 is considered as very good. Thus, the test data used in this monograph is satisfactorily reliable.

Strengths and limitations

Like any other sample survey-based research this study also bears some strengths and limitations. Following are the strengths of this study:

1. A valid and reliable competency-based test instrument was used which was developed for a national sample survey. Nationally determined terminal competencies are reflected in the instrument.
2. This study presents BRAC non-formal school graduates achievement of 11 consecutive years which help understand performance of BRAC schools over time.
3. Comparative analyses of the level of learning achievement of various types of BRAC schools located in rural and urban areas and the government schools are some added strengths of this study.

The following are some limitations:

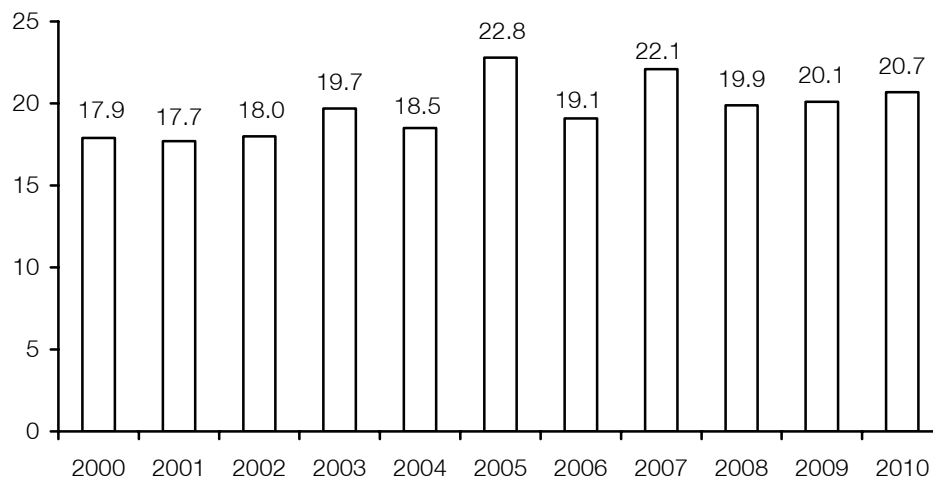
1. Only the cognitive competencies were assessed. However, objective of any education provision is to develop both cognitive and non-cognitive aspects of the students' ability.
2. Only those students who were present in school on the day of the test were considered in sampling frame. Thus, a section of the students might be uncovered due to absenteeism. However, error due to this reason is limited because of high attendance rate in BRAC schools. This may have some influence in government schools.
3. Finally, the tests were taken without informing the students a prior. It might not be ethical to take learning achievement test of pupils without allowing time for preparation. However, a part of this was tried to resolve through rapport building with the students before conducting the test.

TRENDS IN LEARNING ACHIEVEMENT

This chapter presents competencies achievement of the students of BRAC non-formal primary schools (BNFPS) in rural areas. As the rural schools comprised over 95% of such schools of BRAC, findings of this section can be considered as representative of BRAC non-formal schools. Aggregated, gender and subject-wise analyses are presented in this chapter. Most important is to see the trends over time in respect to these.

The average performance of the students of BNFPS varied substantially from one year to another (Fig. 1). Rather than a smooth trend, ups and downs in the average number of competencies achievement were noticed. Average performance of the students was very good in some years while not so good in some. If the year-wise performance is grouped for 3-4 years an upward trend can be noticed. For instance, of the 27 competencies under test, the students on average achieved less than 18 competencies in 2000 and 2001, it was 18 and more for next three years, and did not go below 19 afterwards. Highest performance was observed in 2005 with an average of 22.8 competencies per student followed by 22.1 in 2007. An upward trend was also noticed during the last three years – 19.9 in 2008, 20.1 in 2009 and 20.7 in 2010.

Figure 1. Mean number of competencies achieved by the students of BRAC non-formal primary schools in rural areas, 2000-2010



No statistical difference between the performance of boys and girls was found in seven of the 11 test years (Table 4). The boys significantly performed better than the girls in four test years, viz., 2001, 2002, 2005 and 2009. The highest gender gap was noticed in 2002 where the boys, on average, achieved two competencies more than the girls. Standard deviation of number of competencies achieved by the students gradually decreased over time and so the coefficient of variation (Table 5). These indicate increase of homogeneity or equity among the students. Separate analysis for boys and girls also reflected the same.

Table 4. Gender difference in mean number of competencies achieved by BRAC non-formal primary school students in rural areas, 2000-2010

Year	Gender		Level of significance
	Boys	Girls	
2000	18.5 (5.18)	17.6 (5.82)	ns
2001	18.6 (5.05)	17.2 (5.21)	p<0.01
2002	19.3 (4.74)	17.3 (5.00)	p<0.001
2003	20.0 (4.53)	19.5 (4.87)	ns
2004	18.8 (5.12)	18.4 (4.86)	ns
2005	23.1 (3.41)	22.6 (4.10)	p<0.001
2006	19.6 (4.82)	18.9 (4.72)	ns
2007	22.3 (3.84)	22.0 (4.08)	ns
2008	20.2 (3.85)	19.7 (4.09)	ns
2009	20.5 (3.73)	19.8 (3.87)	p<0.05
2010	20.9 (3.16)	20.6 (3.28)	ns

Figures in the parentheses indicate standard deviation

ns = not significant at p = 0.05

Table 5. Mean, standard deviation and coefficient of variation of number of competencies achieved by the students of rural BRAC non-formal primary schools by year and gender

Year	Both			Boys			Girls		
	M	S.D.	C.V.	M	S.D.	C.V.	M	S.D.	C.V.
2000	17.9	5.6	31.3	18.5	5.2	28.1	17.6	5.8	33.0
2001	17.7	5.2	29.4	18.6	5.0	26.9	17.2	5.2	30.2
2002	18.0	5.0	27.8	19.3	4.7	24.4	17.3	5.0	28.9
2003	19.7	4.8	24.4	20.0	4.5	22.5	19.5	4.9	25.1
2004	18.5	4.9	26.5	18.8	5.1	27.1	18.4	4.9	26.6
2005	22.8	3.9	17.1	23.1	3.4	14.7	22.6	4.1	18.1
2006	19.1	4.8	25.1	19.6	4.8	24.5	18.9	4.7	24.9
2007	22.1	4.0	18.1	22.3	3.8	17.0	22.0	4.1	18.6
2008	19.9	4.0	20.1	20.2	3.9	19.3	19.7	4.1	20.8
2009	20.1	3.8	18.9	20.5	3.7	18.0	19.8	3.9	19.7
2010	20.7	3.2	15.5	20.9	3.2	15.3	20.6	3.3	16.0

Note: M = Mean, S.D = Standard deviation, C.V = Coefficient of variation

During the first three years, the students collectively achieved about two-thirds of the competencies under test. This increased afterwards. Sometimes went up close to 70% or more and sometimes to over 80%. This was 84.4% in 2005 and 81.9% in 2007. The students achieved about three-quarters of the competencies in 2008 and 2009, and more than three-quarters in 2010.

A general trend was that the students did 'satisfactory' or 'excellent' performance in majority of the competencies (Table 6). Number of competencies in which the students showed 'poor', 'mediocre' or 'satisfactory' results reduced over time. Otherwise, number of competencies with 'excellent' performance increased. During first few years of the test, the students of BRAC schools showed 'poor' or 'mediocre' performance in eight competencies which reduced to four in recent years and two in some years. Earlier, 'satisfactory' performance was found in 11-14 competencies which reduced to 5-6 competencies recently. On the other hand, during 2000-02, 'excellent' performance was found in 6-8 competencies, which increased to 15-17 competencies in recent years. Gender-wise such analysis confirmed similar trend for both boys and girls (Annex 8). The two competencies in which the students did poorly in most of the years are 'writing skills in English' and 'knowledge on life sketch of prophet Mohammad (SM) or the preacher of own religion'.

Table 6. Distribution of competencies by performance level in various years

Level of performance	Year										
	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Poor	3	3	3	2	3	1	3	2	2	2	3
Mediocre	5	5	5	4	4	1	3	0	4	4	1
Satisfactory	11	13	13	8	14	2	9	5	6	5	6
Excellent	8	6	6	13	6	23	12	20	15	16	17
Total	27	27	27	27	27	27	27	27	27	27	27

The students, on average, achieved more than two competencies in Bangla in each test (Table 7). It was highest in 2005 followed by 2007. The lowest mean value was observed in 2010. Year-wise statistically significant variation was observed in the proportion of students achieving the competencies in Bangla. In most cases, the proportion was between 70-92% in reading, 60-90% in writing and 80-96% in listening (Annex 9). Exceptionally, 32% of the students of 2010 satisfied the minimum requirement of writing skills. No gender difference was observed in most of the cases (Annex 10). The boys did significantly better than the girls in reading in eight of the 11 test years and in listening once (in 2005). The boys and the girls performed equally in the writing part of the test in each year.

The students did relatively poor in English than Bangla. However, similar to Bangla, year-wise statistically significant variation was observed in English too. The mean number of competencies achieved by the students in English was below two in each test except in 2005 and 2007 (Table 7). Proportion of students achieving the reading competency varied from 74-95%, writing from 6-28%, and listening from 68-89% (Annex 11). In most of the cases, boys and girls performed equally (Annex 12). The

boys did better than the girls once in reading and twice in listening and the girls did better than the boys twice in writing. The year 2005 was different than others. Gender difference was seen in all three English competencies in 2005. The boys did better than the girls in reading and listening and a reverse result was observed in writing.

Table 7. Mean number of competencies achieved by the students of rural BRAC non-formal primary schools by subject and year

Year	Bangla (3)	English (3)	Mathematics (5)	Social studies (6)	General science (9)
2000	2.26 (0.83)	1.61 (0.86)	3.00 (1.47)	4.18 (1.51)	6.60 (2.07)
2001	2.28 (0.86)	1.64 (0.83)	2.79 (1.45)	4.07 (1.53)	6.59 (1.88)
2002	2.22 (0.89)	1.67 (0.73)	2.95 (1.41)	4.22 (1.27)	6.68 (2.04)
2003	2.42 (0.76)	1.93 (0.77)	3.45 (1.31)	4.29 (1.37)	7.23 (1.86)
2004	2.29 (0.83)	1.66 (0.78)	2.90 (1.41)	4.42 (1.47)	7.08 (1.94)
2005	2.74 (0.53)	2.01 (0.66)	4.14 (1.14)	5.28 (1.11)	8.15 (1.42)
2006	2.29 (0.82)	1.89 (0.75)	3.08 (1.32)	4.38 (1.33)	7.28 (1.91)
2007	2.49 (0.69)	2.05 (0.60)	3.97 (1.21)	5.11 (1.13)	8.21 (1.31)
2008	2.31 (0.79)	1.79 (0.79)	3.47 (1.27)	4.48 (1.12)	7.74 (1.57)
2009	2.30 (0.75)	1.83 (0.66)	3.58 (1.24)	4.53 (1.09)	7.75 (1.49)
2010	2.17 (0.66)	1.89 (0.49)	3.96 (0.92)	4.78 (1.00)	7.70 (1.61)

Figures in the parentheses of the first row indicate number of competencies and the other rows standard deviation

Performance of the students in mathematics was in between Bangla and English. Substantial variation in mathematics competencies was observed. Average number of mathematics competencies varied from 2.79 in 2001 to 4.14 in 2005 (Table 7). Of the five competencies, the students did very well in ‘basic number skills’ and ‘four basic rules of arithmetic’ (Annex 13). Seventy-two to 93% of the students achieved these competencies in various years. These two were respectively followed by the competencies ‘knowing geometric figures’ (51-88%), ‘measurement units’ (44-77%) and ‘word problem solving’ (31-74%). There was no gender difference in most of the cases; however, the boys did better than the girls in some cases (Annex 14). The boys did significantly better than the girls twice in ‘basic number skills’ and ‘knowing geometric figures’ each, four times in ‘four basic rules of arithmetic’, five times in ‘measurement units’ and eight times in ‘word problem solving’. The boys’ outperformed the girls’ in all five competencies in 2005.

Students’ performance in social studies was mostly satisfactory with substantial variation by year. On average, they achieved more than four out of six competencies (Table 7). The mean number of competencies exceeded five in 2005 and 2007. Among the social science competencies the students had the best knowledge about their ‘duties as member of society’ which was followed mostly equally by knowledge about ‘duties as family members’ and ‘manners with other people’ (Annex 15). These were followed by knowledge about ‘duties as citizens of Bangladesh’. Least performance in this series was jointly in two competencies. These are knowledge about ‘the country’ and the ‘children of other countries’. The boys and the girls performed equally in most of the competencies in most of the years (Annex 16). The

boys did better than the girls once each in knowledge on 'duties as family members', 'children of other countries' and 'manners with other people'. However, the girls also surpassed the boys once in knowledge on 'manners with other people' and 'about the country'. The boys were ahead of the girls twice on knowledge 'about the country', four times on 'duties as member of society' and six times on 'duties as citizen of Bangladesh'.

In general science, 'satisfactory' or 'excellent' performance of the students was observed in most of the competencies with substantial variation by year. The mean number of competencies achieved by the students in general science was below seven in first three tests (Table 7). It was more than seven afterwards. Mediocre performance was seen thrice in knowledge about 'prevention of common disease' and once in 'use of science and technology in everyday life' (Annex 17). Like other subjects, the boys and girls performed equally in most of the competencies in most of the years (Annex 18). The boys surpassed the girls in few cases. These include five times in 'cause and effect relationship', four times in each of 'importance of good health' and 'information collection ability', twice in each of 'importance of balanced diet', 'scientific investigation skills' and 'science and technology in everyday life', and once in each of 'physical and environmental health systems', 'prevention of common disease' and 'observation skills on natural objects'. The girls did not do better than the boys in any case.

Only one competency was brought in the religious studies part of the test. Except in 2005, the students of BRAC rural non-formal primary schools did 'poorly' in this competency in all the tests (Annex 19). A 'mediocre' performance was seen in 2005 with 43% of the students achieving this competency. In some years, the performance was so poor that less than 10% of the students achieved this competency. Of the 11 test years, the boys and the girls performed equally in seven, the boys were ahead of the girls in three viz., 2002, 2004 and 2006, and the girls outperformed the boys only in 2005 (Annex 19).

Twenty-seven competencies were brought under test for 11 times. Thus, total number of cases for analysis stood at $(27 \times 11 =) 297$. Of these, the students did 'excellent' in 47.8% of the cases, 'satisfactory' in 31% of the cases, 'mediocre' in 12.1% of the cases and 'poor' in 9.1% of the cases (not shown in table, calculated from Table 6). These figures were respectively 52.9, 26.9, 11.4 and 8.8% for the boys and 45.1, 32.7, 12.1 and 10.1% for the girls (not shown in table, calculated from Annex 8). No gender difference was noticed in 73.7% of the cases. The boys were ahead of the girls in 24.6% of the cases and the girls surpassed the boys in 1.7% of the cases (Table 8). Mathematics was at the top regarding subject to gender difference followed by religious studies; it was least in English.

Table 8. Nature of gender difference in BRAC non-formal primary schools in rural areas, 2000-2010

Subjects	No. of competencies	Test-years	No. of cases for gender difference	Nature of gender difference (%)		
				Boys ahead	Girls ahead	No difference
Bangla	3	11	33	27.3	0.0	72.7
English	3	11	33	9.1	6.1	84.8
Mathematics	5	11	55	38.2	0.0	61.8
Social studies	6	11	66	22.7	3.1	74.2
General science	9	11	99	22.2	0.0	77.8
Religious studies	1	11	11	27.3	9.1	63.6
Total	27	11	297	24.6	1.7	73.7

Of the 64 items in the test, 45 fall in 'knowledge' category and 19 'understanding'. The students' performance in 'knowledge' level items was always higher than that of the 'understanding' level items (Table 9). However, both varied substantially by year. The students provided correct answers to less than 60% of the 'knowledge' level items in first three tests which gradually increased to about 70% in 2010. Relatively much higher performance was observed in such items in two tests in 2005 and 2007. The students correctly answered more than three quarters of the 'knowledge' level items in these tests. Students' performance in 'understanding' level items was also better in these two tests; they on average correctly answered 64.7% of the items in 2005 and 57.4% of the items in 2007. In other years, the performance varied from 41-50%. Separate analysis for boys and girls showed similar findings (Annex 20).

Table 9. Performance of BRAC non-formal primary school students in rural areas according to taxonomic class level of items, 2000-2010

Year	Taxonomic class			
	Knowledge (45)		Understanding (19)	
	Mean	%	Mean	%
2000	26.8	59.6	8.8	46.3
2001	25.3	56.2	7.8	41.1
2002	25.9	57.6	7.8	41.1
2003	28.6	63.6	9.5	50.0
2004	27.2	60.4	8.3	43.7
2005	34.9	77.6	12.3	64.7
2006	28.6	63.6	8.4	44.2
2007	34.6	76.9	10.9	57.4
2008	29.4	65.3	8.8	46.3
2009	30.3	67.3	8.8	46.3
2010	31.2	69.3	9.3	48.9

Figures in parentheses indicate number of question items

School-to-school variation in performance was assessed through finding coefficient of variation considering school as unit of analysis. The value of the coefficient

gradually decreased from 27.4% in 2000 to 12.3% in 2005 (Table 10). It increased to 16.2% in 2006 and then decreased gradually to 9.2% in 2010. Overall, school-to-school variation in students' performance reduced to a third within 11 years; meaning that the BRAC non-formal primary schools in rural areas became homogeneous during this period in terms of students competencies achievement.

Table 10. Some indicators to understand school level variation in rural BRAC non-formal primary schools, 2000-2010

Indicators	Year										
	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Mean	17.9	17.7	18.0	19.6	18.6	22.7	19.1	22.1	20.0	20.0	20.6
Standard deviation	4.6	3.3	3.3	3.0	2.8	2.8	3.1	3.1	2.8	2.5	1.9
Coefficient of variation	27.4	18.6	18.3	15.3	15.1	12.3	16.2	14.0	14.0	12.5	9.2

Several trend lines were fitted considering mean number of competencies as dependent variable and time as independent. A combined line considering all the competencies with the whole sample was the main along with two separate lines for boys and girls. In addition, five separate lines were drawn – one for each subject area. The trend lines can be expressed mathematically as follows

$$C = a + by \quad (y = 1, 2, \dots, 11)$$

Where, C represents mean number of competencies achieved, a is the constant and b is the average rate of change per year. Results of this analysis are provided in Table 11.

The combined trend line shows a statistically significant positive change (i.e., increase) in the mean number of competencies achieved by the students of rural BRAC non-formal primary schools. In this case, the average rate of change per year was estimated as 0.62 ($p < 0.05$). The average rate of improvement was higher for the girls than the boys. While the rate of change estimated for the girls trend line was significant at $p < 0.05$ level it was $p < 0.07$ level in the case of boys. Subject wise analysis shows no significant change in Bangla. Among the other subjects, the rate of change was highest in general science followed respectively by mathematics, social studies and English.

Table 11. Trend analysis, 2000-2010

Line names	Trend lines	Statistical test for 'b'
Combined	$C = 17.9 + 0.62y$	$t = 2.37; p < 0.05$
Boys	$C = 18.7 + 0.56y$	$t = 2.04; p < 0.07$
Girls	$C = 17.3 + 0.64y$	$t = 2.49; p < 0.05$
Bangla	$C = 2.34 + 0.01y$	$t = 0.02; ns$
English	$C = 1.65 + 0.59y$	$t = 2.17; p < 0.06$
Mathematics	$C = 2.80 + 0.67y$	$t = 2.73; p < 0.02$
Social studies	$C = 4.01 + 0.64y$	$t = 2.51; p < 0.03$
General science	$C = 6.52 + 0.79y$	$t = 3.86; p < 0.01$

RURAL VERSUS URBAN SCHOOLS

Competencies achievement of the students of rural and urban BRAC non-formal primary schools was assessed twice – in 2000 and 2008. This chapter provides a comparative analysis of learning achievement of BRAC non-formal primary school students of these two areas at aggregate level as well as by gender. Subject-wise performance is also provided.

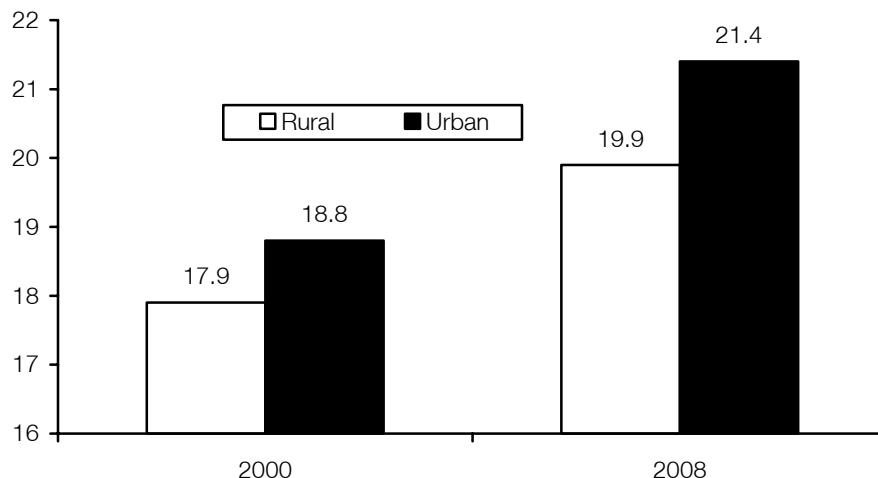
In 2000, the rural students of BRAC non-formal primary schools, on average, achieved 17.9 competencies and the urban students 18.8 ($p<0.05$) (Table 12 and Figure 2). Eight years later, the average performance reached at 19.9 competencies for rural schools students and 21.4 competencies for urban schools students ($p<0.001$). The performance of the students significantly increased in both the areas over a period of eight years ($p<0.001$). Increase was more in urban schools than rural schools; 2.6 vs. two competencies. Thus, the urban-rural gap increased over time – 0.9 competencies in 2000 to 1.5 competencies in 2008. No gender difference was observed in any of the years in rural schools. On the other hand, in urban schools, the boys were significantly ahead of the girls in 2000 ($p<0.05$) and the girls outperformed the boys in 2008 ($p<0.01$). Overall, increase was more among the girls than the boys.

Table 12. Mean number of competencies achieved by the students of BRAC non-formal primary schools by area, gender and year

Student groups	Year		Significance
	2000	2008	
Rural boys	18.5 (5.18)	20.2 (3.85)	$p<0.001$
Rural girls	17.6 (5.82)	19.7 (4.09)	$p<0.001$
<i>Significance</i>	<i>ns</i>	<i>ns</i>	
Urban boys	19.5 (4.51)	20.8 (3.92)	$p<0.001$
Urban girls	18.4 (5.11)	21.6 (3.52)	$p<0.001$
<i>Significance</i>	$p<0.05$	$p<0.01$	
All rural	17.9 (5.60)	19.9 (4.01)	$p<0.001$
All urban	18.8 (4.94)	21.4 (3.67)	$p<0.001$
<i>Significance</i>	$p<0.05$	$p<0.001$	

Figures in the parentheses indicate standard deviation;
ns = not significant at $p=0.05$

Figure 2. Urban-rural gap in mean number of competencies achieved by the students of BRAC non-formal primary schools



Other way, the students of rural schools, on average, achieved two-thirds of the competencies under test in 2000 which was 69.6% among the students of urban schools. After eight years, achievement of the rural school students increased to 73.7% and urban school students to 79.3%. Whereas, the rural school students' achievement improved 7.4 percentage points, the urban school students improved 9.7 percentage points.

In terms of level of performance, in 2000, the rural school students did 'poorly' or 'mediocre' in eight competencies, 'satisfactory' in 11 competencies, and 'excellent' in eight competencies (Table 13). These figures were respectively seven, 11 and nine for the students of urban schools. In 2008, the number of competencies in the categories of 'poor', 'mediocre' and 'satisfactory' decreased and thus a tremendous increase was observed in the category of 'excellent'. The rural students did 'excellent' in 15 competencies and the urban students in 19 competencies in 2008. Such an improvement was seen separately in both boys and girls (Annex 21).

Table 13. Distribution of competencies achieved by the students of BRAC non-formal primary schools by performance level, area and year

Level of performance	Rural		Urban	
	2000	2008	2000	2008
Poor	3	2	3	2
Mediocre	5	4	4	2
Satisfactory	11	6	11	4
Excellent	8	15	9	19
Total	27	27	27	27

Table 14 provides mean and standard deviation of number of competencies achieved by the students in each subject separately. In 2000, the students of both rural and urban areas performed equally in Bangla, English and mathematics. However, the urban students significantly outperformed their rural counterparts in social studies and in general science (both at $p<0.01$). On the other hand, the students of urban schools showed significantly better performance in all the five subjects in 2008 (each at $p<0.001$).

Table 14. Mean number of competencies achieved by the students of BRAC non-formal primary schools by subject, year and area

Subjects	2000			2008		
	Rural	Urban	Sig.	Rural	Urban	Sig.
Bangla	2.26 (0.83)	2.36 (0.77)	ns	2.31 (0.79)	2.45 (0.74)	$p<0.001$
English	1.61 (0.86)	1.64 (0.75)	ns	1.79 (0.79)	2.02 (0.70)	$p<0.001$
Mathematics	3.00 (1.47)	3.03 (1.37)	ns	3.47 (1.27)	3.76 (1.28)	$p<0.001$
Social studies	4.18 (1.51)	4.51 (1.45)	$p<0.01$	4.48 (1.12)	4.92 (1.04)	$p<0.001$
General science	6.60 (2.07)	7.00 (1.90)	$p<0.01$	7.74 (1.57)	8.11 (1.15)	$p<0.001$

Figures in the parentheses indicate standard deviation;

ns = not significant at $p=0.05$

Of the three competencies in Bangla, urban-rural gap was observed only in listening in 2000 but in reading and writing in 2008 (Annex 22). The urban school students surpassed their rural counterparts in all the three cases. The performance of rural school students significantly increased in reading and listening over eight years but decreased in writing. On the other hand, increase in the performance of urban school students noticed only in reading.

In English, statistically significant urban-rural gap was noticed in listening in 2000 but in all three competencies in 2008 (Annex 23). The urban school students outperformed their rural counterparts in all the four cases. Performance of the rural school students increased over time in reading and listening but it increased in all the three competencies for the students of urban schools.

No gap among the students of urban and rural schools was observed in any of the five mathematics competencies in 2000 but the urban students surpassed their rural counterparts in three competencies in 2008 (Annex 24). These are 'four basic rules of arithmetic', 'word problem solving', and 'measurement units'. Over eight years, performance of the rural school students increased in two competencies viz., 'measurement units' and 'identifying geometric figures' but decreased in 'four basic rules of arithmetic'. On the other hand, performance of the urban students improved in four competencies – basic number skills, word problem solving, measurement units, and identifying geometric figures.

In social studies, urban-rural gap was observed in two of the six competencies in 2000 (Annex 25). These are 'duties as citizen of Bangladesh' and 'knowledge about the country'. The urban students outperformed the rural students in both. Such gap was found in three more competencies in 2008. These include 'duties as member of society', 'manners with other people', and 'children of other countries'. Improvement in the performance of both rural and urban students occurred in four competencies. These are knowledge on duties as 'family member', 'member of society' and 'citizen of Bangladesh', and 'manners with other people'. Knowledge of rural school students about 'the country' decreased over time and no improvement in any of the areas was noticed in the students' knowledge about the 'children of other countries'.

Urban school students surpassed their rural counterparts in six of the nine general science competencies in 2000 (Annex 26). The rural school students did better in one competency and no difference was found in two. On the other hand, in 2008, superiority of the urban students was found in six competencies and both groups of students performed equally in three. The four competencies in which urban-rural gap was noticed in favour of urban schools in both the years are knowledge on 'importance of good health', 'importance of balanced diet', 'prevention of common diseases', and 'observation skills on natural objects'. The two competencies in which the urban students did better than rural students in 2000 but they performed equally in 2008 are 'physical and environmental health systems' and 'scientific investigation skills'. Otherwise, the two competencies where there was no difference in 2000 but the urban students did better than the rural students in 2008 are 'information collection ability' and 'science and technology in everyday life'. The rest one is on 'cause and effect relationship'. In this competency the rural students did better than their urban counterparts in 2000; however, both the groups performed equally in 2008. Improvement in achievement over eight years was noticed for both rural and urban students in seven competencies, no improvement occurred in one, and only the rural students improved in the rest.

In religious studies, performance of the students of both the areas significantly deteriorated over eight years (Annex 27). Amount of deterioration was more in rural schools than urban schools. Whether, the rural students performed well than their urban counterparts in 2000, a reverse result was found in 2008.

Overall, in 2000, both urban and rural students of BRAC non-formal primary schools performed equally in 15 competencies which reduced to seven in 2008. Earlier, the urban students were ahead of their rural counterparts in 10 competencies which doubled within eight years. Whether, the rural students showed better performance in two competencies in 2000 they could not do such result in any of the competencies in 2008.

Separate analyses of each of the competencies for boys and girls are provided in Annexes 28 to 33. In 2000, gender difference was observed in three competencies among the rural students and in five competencies among the urban students. The boys outperformed the girls in all these cases and no difference was observed in other cases. On the other hand, in 2008, the rural boys outperformed the rural girls in

seven competencies and no difference was found in others. However, both the boys and the girls of urban schools performed equally in 25 competencies and the girls surpassed the boys in the rest two.

The students of both the areas and in both the tests showed better performance in the 'knowledge' level items than 'understanding' level items (Table 15). In 2000, very small difference between rural and urban students was observed in correctly answering the items of both types. Performance of both the groups of students increased over time in 'knowledge' level items and only for the urban students in 'understanding' level items. The rural students performance in the 'understanding' level items was equal in both the years.

Table 15. Performance of BRAC non-formal primary school students according to the taxonomic class level of items by year and area

Year	Area	Taxonomic class			
		Knowledge (45)		Understanding (19)	
		Mean	%	Mean	%
2000	Rural	26.8	59.6	8.8	46.3
	Urban	27.3	60.7	8.7	45.8
2008	Rural	29.4	65.3	8.8	46.3
	Urban	32.2	71.6	9.8	51.6

Figures in parentheses indicate number of question items

In terms of students' achievement of competencies, BRAC non-formal primary schools in urban areas were more homogeneous than those in rural areas (Table 16). School-to-school variation in performance also reduced over eight years.

Table 16. School level variation in BRAC non-formal primary schools by year and area

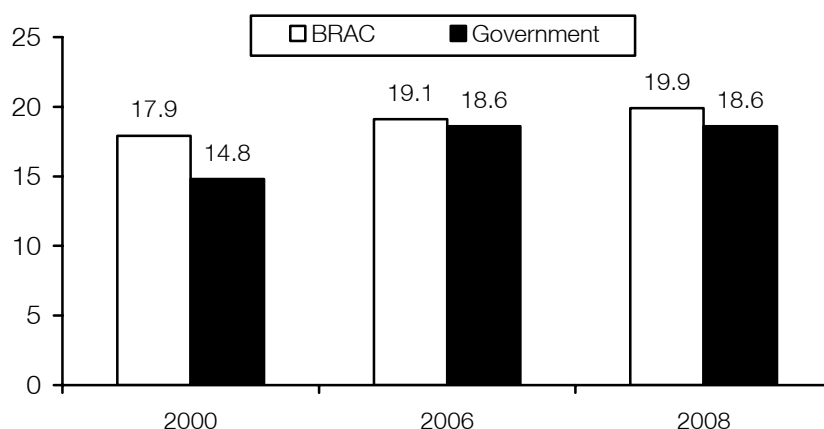
Year	Area	Mean	Standard deviation	Coefficient of variation
2000	Rural	17.9	4.9	27.4
	Urban	18.8	3.6	19.1
2008	Rural	20.0	2.8	14.0
	Urban	21.3	2.7	12.7

COMPARISON WITH GOVERNMENT SCHOOLS

The government primary schools are the major in mainstream primary education provision. To compare between BRAC non-formal and government primary school students we used *Education Watch* data of 2000 and 2008 and separate data from another study conducted in BRAC in 2006. This comparison considers only the rural schools of both the types.

Like as BRAC non-formal primary schools in rural areas, the performance of the government schools in the same areas also significantly increased over time (Figure 3 and Table 17). On average, the BRAC non-formal primary school students achieved 17.9 competencies in 2000, 19.1 in 2006 and 19.9 in 2008 ($p < 0.001$). These figures were respectively 14.8, 18.6 and 18.6 for the students of government primary schools ($p < 0.001$). It shows no difference in the performance of government school students between 2006 and 2008. However, during eight years, BRAC non-formal primary schools could increase two competencies per student while it was 3.8 competencies per student in the government primary schools.

Figure 3. BRAC-government school variation in mean number of competencies achievement by the students



Average number of competencies achieved by the students of BRAC non-formal schools was significantly higher than that of the government schools in 2000 and 2008 but in 2006 the students of both types of schools achieved equally (Table 17). Although the difference between the two types of schools was 3.1 competencies in 2000, it reduced to 1.3 competencies in 2008. No gender difference was found among the students of BRAC non-formal schools in any of the test years but the girls of government schools lagged behind the boys in all the three tests.

Table 17. Mean number of competencies achieved by the students of rural BRAC and government schools in various years

Student groups	Year			Significance
	2000	2006	2008	
BRAC boys	18.5 (5.18)	19.6 (4.82)	20.2 (3.85)	p<0.001
BRAC girls	17.6 (5.82)	18.9 (4.72)	19.7 (4.09)	p<0.001
Significance	ns	ns	ns	
Government boys	15.6 (5.76)	19.3 (4.60)	19.4 (4.16)	p<0.001
Government girls	14.0 (6.31)	18.0 (4.89)	17.9 (5.15)	p<0.001
Significance	p<0.01	p<0.001	p<0.001	
All BRAC	17.9 (5.60)	19.1 (4.76)	19.9 (4.01)	p<0.001
All government	14.8 (6.09)	18.6 (4.80)	18.6 (4.75)	p<0.001
Significance	p<0.001	ns	p<0.001	

Figures in the parentheses indicate standard deviation ns = not significant at p=0.05

Other way, the students of BRAC non-formal schools, on average, achieved two-thirds of the 27 competencies under test in 2000 which increased to 70.7% in 2006 and 73.7% in 2008. On the other hand, the average achievement of the government school students was 54.8% in 2000 and 68.9% in each of 2006 and 2008.

Distribution of competencies by performance level shows that the number of competencies with 'poor', 'mediocre' or satisfactory' performance reduced over time in both types of schools (Table 18). However, the number of competencies with 'excellent' performance increased. The BRAC non-formal school students showed 'excellent' performance in eight competencies in 2000 which increased to 12 in 2006 and 15 in 2008. On the other hand, the government school students could show such performance in no competency in 2000 but they did so in 11 competencies in 2006 and 13 competencies in 2008. BRAC non-formal school students were ahead of their counterparts in government schools in number of competencies with 'excellent' performance. Annex 34 shows such analysis separately for boys and girls.

Table 18. Distribution of competencies by performance level, school type and year

Level of Performance	BRAC non-formal primary school			Government primary school		
	2000	2006	2008	2000	2006	2008
Poor	3	3	2	5	3	3
Mediocre	5	3	4	9	5	4
Satisfactory	11	9	6	13	8	7
Excellent	8	12	15	0	11	13
Total	27	27	27	27	27	27

Table 19 presents mean number of competencies achieved by the students of BRAC non-formal and government schools by subject and year. The BRAC non-formal school students outperformed their counterparts in government schools in each of the five subjects in 2000 and 2008. However, in 2006, such performance was

observed in three subjects, viz., Bangla, English and mathematics. This year, the students of both types of schools performed equally in social studies and general science.

Table 19. Mean and standard deviation of number of competencies achieved by the students of rural BRAC and government schools by subject and year

Subjects	School type	Year			Significance
		2000	2006	2008	
Bangla	BRAC	2.26 (0.83)	2.29 (0.82)	2.31 (0.79)	ns
	Government	1.95 (0.93)	2.09 (0.87)	2.19 (0.87)	p<0.001
	Significance	p<0.001	p<0.001	p<0.01	
English	BRAC	1.61 (0.86)	1.89 (0.75)	1.79 (0.79)	p<0.001
	Government	1.29 (0.78)	1.73 (0.74)	1.68 (0.72)	p<0.001
	Significance	p<0.001	p<0.001	p<0.01	
Mathematics	BRAC	3.00 (1.47)	3.08 (1.32)	3.47 (1.26)	p<0.001
	Government	2.25 (1.55)	2.92 (1.41)	3.03 (1.36)	p<0.001
	Significance	p<0.001	p<0.05	p<0.001	
Social studies	BRAC	4.18 (1.51)	4.38 (1.33)	4.48 (1.12)	p<0.01
	Government	3.67 (1.66)	4.29 (1.30)	4.32 (1.31)	p<0.001
	Significance	p<0.001	ns	p<0.02	
General science	BRAC	6.60 (2.07)	7.28 (1.91)	7.78 (1.57)	p<0.001
	Government	5.88 (2.30)	7.33 (1.81)	7.29 (1.82)	p<0.001
	Significance	p<0.001	ns	p<0.001	

Figures in the parentheses indicate standard deviation;

ns = not significant at p=0.05

Performance of the students of government primary schools increased over time in reading and listening in Bangla (Annex 35). The BRAC non-formal schools, however, could increase its students' performance in listening but it declined in writing. The students of BRAC non-formal schools were ahead of their counterparts in government schools in reading and writing in 2000, in writing and listening in 2006, and in listening in 2008. No difference between BRAC and government schools was found in other cases. Gender difference favouring the boys was found among BRAC non-formal school students in reading in 2000 and 2006 and among the government schools students in reading in 2006 and 2008 and in listening in 2008 (Annex 36). The boys and the girls of both types of schools performed equally in other cases.

Performance of the students of both types of schools increased from 2000 to 2006 in all the three competencies in English (Annex 37). However, in some cases it was stagnant in 2006 and 2008 and in other cases it reduced from 2006 to 2008. BRAC non-formal school students performed significantly well than the students in government schools in reading in 2000 and all the three competencies in 2006. On the other hand, a reverse result was found in listening in 2008. No gender difference was found among BRAC students in any of the English competencies in any of the tests (Annex 38). The boys of the government schools outperformed the girls of the same institutions in listening in 2006 and in reading in 2008.

Year-wise variation in performance was observed in both BRAC non-formal and government schools in most of the mathematics competencies (Annex 39). BRAC non-formal school students performed equally in all the three tests in 'basic number skills' but showed an increased performance in other four competencies. Otherwise, performance of the government school students increased in all five competencies. The BRAC non-formal schools were ahead of the government schools in three competencies in each of 2000 and 2008, and one competency in 2006. These include 'four basic rules of arithmetic' in all the three years, 'word problem solving' in 2000 and 2008, 'basic number skills' in 2000, and 'measurement units' in 2008. An equal performance was observed in other cases. Boys and girls of BRAC non-formal schools performed equally in all the five competencies in 2000, the boys were ahead of the girls in 'word problem solving' in 2006 and 2008, and in 'four basic rules of arithmetic' and 'measurement units' in 2008 (Annex 40). The boys of the government schools surpassed their counterparts girls in 'four basic rules of arithmetic' in all the three tests, 'measurement units' in 2000 and 2006, and 'word problem solving' and 'identifying geometric figures' in 2006 and 2008. The government school students or the girls surpassed their respective counterparts in no competency.

Of the six competencies in social studies BRAC non-formal school students outperformed their counterparts in government schools in four competencies each in 2000 and 2008, and two in 2006 (Annex 41). On the other hand, a reverse trend was observed in one competency in both 2006 and 2008. The BRAC non-formal school students performed significantly well than those of government schools in knowledge on duties as 'family members' in all the three tests, as 'member of society' in 2000 and 2008, and as 'citizen of Bangladesh' in 2008. Similar trend was also observed in 'knowledge about the country' in 2000 and 2006, and 'manners with other people' in 2000 and 2008. The only competency where the government school students did better than their BRAC counterparts is 'knowledge about the children of other countries'. In this competency the former outperformed the later in 2006 and 2008.

The boys of BRAC non-formal schools performed significantly better than the girls of the same institutions in three competencies in three years (Annex 42). These are 'duties as member of society' in 2000, 'duties as citizen of Bangladesh' in 2006 and 'knowledge about the children of other countries' in 2008. On the other hand, among the students of government schools, gender difference with similar direction was found in knowledge on duties as 'family member' in 2008, as 'member of society' in 2000 and 2008, and as 'citizen of Bangladesh' in all the three tests. Students' knowledge on 'manners with other people' and 'children of other countries' also produced a similar result.

Of the nine competencies in general science, difference between the two types of schools was found in seven in 2000, two in 2006 and six in 2008 (Annex 43). Of these 15 cases, the BRAC non-formal school students outperformed in 13 cases and the government school students in two. The BRAC non-formal school students did well than their counterparts in government schools in 'importance of good health', 'physical and environmental health systems' and 'importance of balanced diet' in 2000 and 2008. They also had better knowledge in 'prevention of common

disease' and 'information collection ability' in 2000, and 'scientific investigation skills' in 2008. More students of BRAC non-formal schools understood the 'cause and effect relationship' in all three years. In knowing the 'use of science and technology in everyday life' the government school students were ahead in 2000 and 2006 but a reverse trend was observed in 2008. Equal performance of the students of both types of schools was found in 'observation skills on natural objects' in all three tests.

Boys of BRAC non-formal schools were ahead of the girls of the same institutions in one competency in 2000 and three competencies in 2008 (Annex 44). These are respectively 'information collection ability', 'importance of good health', 'observation skills of natural objects' and 'cause and effect relationship'. On the other hand, the boys of the government schools surpassed their girl counterparts in two competencies in 2000 and 2008, and three additional competencies in 2008. These are respectively 'physical and environmental health systems', 'cause and effect relationship', 'importance of balanced diet', 'observation skills on natural objects' and 'science and technology in everyday life'. No gender difference was observed in any of the science competencies in 2006.

The BRAC non-formal school students outperformed the government school students in the religious studies competency in 2000 but a reverse trend was observed in 2006 and 2008 (Annex 45). Gender difference disfavouring the girls was found in BRAC non-formal schools in 2006 and in government schools in 2000 (Annex 46).

Overall, of the 81 cases (27 competencies x 3 tests), the BRAC non-formal school students did significantly well in 40 (49.4%), government school students in seven (8.6%) and both performed equally in 34 (42%). The girls of any of the school type did not do better than the boys in any competency. Gender difference disfavouring the girls was noticed in 14 cases (17.3%) in BRAC non-formal schools and 30 cases (37%) in government schools. No gender difference was found in 67 cases (82.7%) in BRAC non-formal schools and 51 cases (63%) in government schools.

Like as the BRAC non-formal school students, the government school students also did well in the 'knowledge' level items than the 'understanding' level items. Again, in both types of items, BRAC non-formal school students did better than the government school students. The performance of BRAC non-formal school students in knowledge level items increased over time from 2000 to 2008 and for government schools it increased from 2000 to 2006 but was almost equal in 2006 and 2008. In 'understanding' level items, a smooth increase was noticed among government school students but for BRAC non-formal schools it was equal in 2000 and 2008 but lower in 2006. (Table 20)

Like as BRAC non-formal schools, school-to-school variation in performance of the students also reduced over time in government schools. Earlier homogeneity was more among the government schools than BRAC non-formal schools but it reversed over time. In 2008, the coefficient of variation was found 14% for BRAC non-formal schools and 20.4% for government schools (Table 21).

Table 20. Performance of the students according to the taxonomic class level of items by school type and year

Year	School type	Taxonomic class			
		Knowledge (45)		Understanding (19)	
		Mean	%	Mean	%
2000	BRAC	26.8	59.6	8.8	46.3
	Government	21.5	47.8	6.7	35.3
2006	BRAC	28.6	63.6	8.4	44.2
	Government	27.3	60.7	7.7	40.5
2008	BRAC	29.4	65.3	8.8	46.3
	Government	27.2	60.4	8.0	42.1

Figures in parentheses indicate number of question items

Table 21. School level variation in rural BRAC and government primary schools by year

Year	School type	Mean	Standard deviation	Coefficient of variation
2000	BRAC	17.9	4.9	27.4
	Government	14.9	3.8	25.5
2006	BRAC	19.1	3.1	16.2
	Government	18.5	3.0	16.2
2008	BRAC	20.0	2.8	14.0
	Government	18.1	3.7	20.4

THE ETHNIC MINORITY SCHOOLS

This chapter mainly presents achievement of competencies of the students completing primary education from BRAC non-formal schools exclusively for ethnic minorities (i.e., BSEM). These students graduated in 2007. Their learning achievement was compared with the performance of the students in regular BRAC non-formal primary schools (BNFPS) graduated in the same year. Gender segregated analysis is also presented. Note that few students in the BSEM may be from majority Bangali community and also few students in the BNFPS may be from ethnic minorities.

Of the 27 competencies under test, the students of ethnic minority schools on average achieved 20.2 competencies and the students of rural non-formal primary schools 22.1 ($p < 0.001$) (Figure 4 and Table 22). Gap between them is about two competencies. Although there was no gender difference in the performance of the students of BNFPS, the BSEM boys significantly surpassed their counterpart girls (20.6 vs. 19.8; $p < 0.01$). Whereas the BSEM students achieved 74.8% of the competencies under test, the BNFPS students achieved 82%.

Figure 4. Mean number of competencies achieved by the students of BSEM and BNFPS, 2007

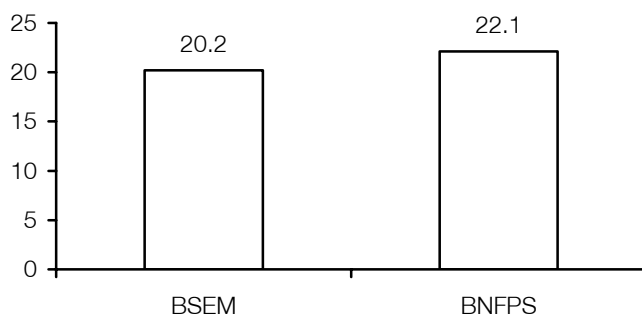


Table 22. Mean number of competencies achieved by the students of BSEM and BNFPS by gender, 2007

School type	Gender		Both	Level of significance
	Boys	Girls		
BSEM	20.6 (3.71)	19.8 (4.22)	20.2 (4.02)	$p < 0.01$
BNFPS	22.3 (3.84)	22.0 (4.08)	22.1 (4.00)	ns
Significance	$p < 0.001$	$p < 0.001$	$p < 0.001$	

Numbers in the parentheses indicate standard deviations;

ns = not significant at $p = 0.05$

The students of both types of schools showed 'excellent' performance in majority of the competencies (Table 23). However, the BNFPS students were ahead of their counterparts in BSEM. The BSEM boys did 'excellent' in 17 competencies and the girls in 15 (Annex 47). On the other hand, both boys and girls of BNFPS showed 'excellent' performance in 20 competencies each. The students of both types of schools did 'poorly' in two competencies. These are 'writing skills in English' and 'life sketch of prophet Mohammed (SM) or the preachers of own religion'. In addition, the BSEM students showed 'mediocre' performance in 'writing skills in Bangla', 'word problem solving in mathematics', and 'knowledge about the children of other countries'.

Table 23. Distribution of competencies by performance level of the students of BSEM and BNFPS, 2007

Level of performance	School type	
	BSEM	BNFPS
Poor	2	2
Mediocre	3	0
Satisfactory	7	5
Excellent	15	20
Total	27	27

Table 24 provides mean and standard deviation of number of competencies achieved by the students of each type of schools in various subjects. The BNFPS students achieved significantly more competencies than the BSEM students in all the subjects considered for the test.

Table 24. Mean number of competencies achieved by the students of BSEM and BNFPS in various subjects, 2007

Subjects	Number of competencies	School type		Level of significance
		BSEM	BNFPS	
Bangla	3	2.19 (0.84)	2.49 (0.69)	p<0.001
English	3	1.73 (0.60)	2.05 (0.60)	p<0.001
Mathematics	5	3.67 (1.31)	3.97 (1.21)	p<0.001
Social studies	6	4.84 (1.18)	5.11 (1.13)	p<0.001
General science	9	7.69 (1.57)	8.21 (1.31)	p<0.001

Figures in the parentheses indicate standard deviations

Competency-wise, the BNFPS students did significantly better than the BSEM students in 20 of the 27 competencies. These include all three competencies in Bangla and English, three of the five competencies in mathematics, three of the six competencies in social studies, seven of the nine competencies in general science and the only competency in religious studies (Annexes 48-53). The students of both types performed equally in the following seven competencies:

- Basic number skills
- Identifying geometric figures
- Knowledge about duties as family member
- Knowledge about the country
- Knowledge about the children of other countries
- Observation skills on natural objects
- Science and technology in everyday life

Both boys and girls of the schools for ethnic minorities (BSEM) performed equally in six Bangla and English competencies. Such performance was found in two mathematics, four social studies, five general science and the religious studies competencies. The boys outperformed the girls in all the other nine competencies. On the other hand, no gender difference was found among the students of BNFPS in 21 competencies, the boys outperformed the girls in five and a reverse result in one (Annexes 54-59).

The students of both groups did better in the 'knowledge' level items of the test than the 'understanding' level items (Table 25). The BSEM students provided correct answers to 70.2% of the 'knowledge' level items and 46.8% of the 'understanding' level items. These figures were respectively 76.9 and 57.4% for the BNFPS students. The BNFPS students were ahead of those in BSEM in both. However, gap between them was more in 'understanding' level items.

Table 25. Performance of the students of BSEM and BNFPS according to the taxonomic class level of items, 2007

Taxonomic class		Number of items	BSEM		BNFPS	
			Mean	%	Mean	%
Boys	Knowledge	45	32.4	72.0	35.0	77.8
	Understanding	19	9.3	48.9	11.3	59.5
Girls	Knowledge	45	30.9	68.7	34.4	76.4
	Understanding	19	8.7	45.8	10.7	56.3
All	Knowledge	45	31.6	70.2	34.6	76.9
	Understanding	19	8.9	46.8	10.9	57.4

Variation among the schools for ethnic minorities (BSEM) was higher than that of those under BNFPS. The coefficient of variation in the performance of BSEM was 14.9% which was found 14% for BNFPS (Table 26). This means that both types of schools analysed in this section were mostly homogeneous in terms of competencies achievement of the students.

Table 26. School level variation in BSEM and BNFPS, 2007

School type	Mean	Standard deviation	Coefficient of variation
Ethnic minority	20.2	3.0	14.9
Bangali	22.1	3.1	14.0

FORMAL AND COMMUNITY SCHOOLS

Learning achievements of the students of BRAC community and formal schools are presented in this chapter. The test was administered in 2004 on those students who were graduated from these two types of schools in the same year. Separate analyses for boys and girls are also done.

Table 27 shows that in 2004, the community school students, on average, achieved 18.9 competencies and the formal school students 20.7 ($p < 0.001$). These figures were respectively 70 and 76.7% of the total number of competencies under test. The boys of both types of schools were ahead of their counterpart girls. The boys of the community schools achieved 19.3 competencies and the girls 18.7. In formal schools, the boys achieved 21.2 competencies and the girls achieved 20.4 competencies. However, no gender difference was observed in any of the school types. Figure 5 shows a comparison of these two types of schools with regular BRAC primary schools which was brought under test in the same year.

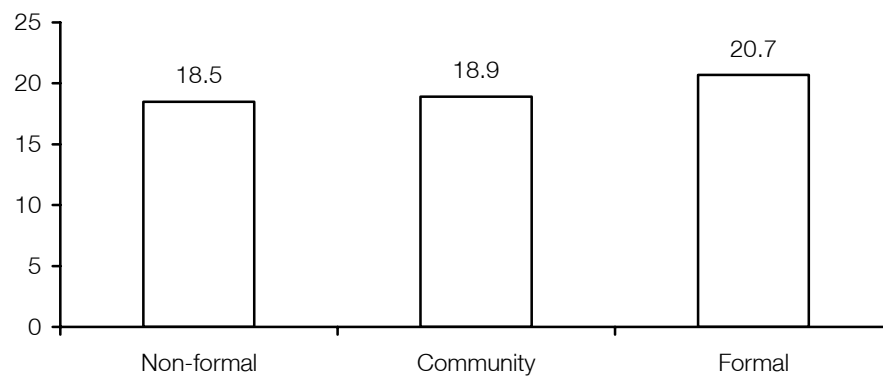
Table 27. Mean number of competencies achieved by the students of BRAC community and formal schools by gender, 2004

School type	Gender		Both	Level of significance
	Boys	Girls		
Community	19.3 (5.13)	18.7 (4.95)	18.9 (5.01)	ns
Formal	21.2 (4.19)	20.4 (3.74)	20.7 (3.93)	ns
Significance	$p < 0.001$	$p < 0.001$	$p < 0.001$	

Figures in the parentheses indicate standard deviation;

ns = not significant at $p = 0.05$

Figure 5. Comparison of three types of BRAC schools in students mean number of competencies achievement, 2004



The students of both types of schools showed 'poor' or 'mediocre' performance in five competencies each (Table 28). At least two competencies were found where both groups of students did 'poorly'; these are 'writing skills in English' and the only competency in religious studies. The community school students also had 'poor' knowledge about the country; however, the students of formal schools showed 'mediocre' performance in this particular competency. Mediocre performance of the students of both types of schools was also found in two mathematics competencies, viz., word problem solving and measurement units. Separate analysis for boys and girls is provided in Annex 60.

Table 28. Distribution of competencies by performance level of the students of BRAC community and formal schools, 2004

Level of performance	School type	
	Community	Formal
Poor	3	2
Mediocre	2	3
Satisfactory	15	5
Excellent	7	17
Total	27	27

Of the rest 22 competencies, the students of community schools showed 'satisfactory' performance in 15 and 'excellent' in seven (Table 28). On the other hand, the formal school students showed 'satisfactory' performance in five and 'excellent' performance in 17 competencies. We identified seven competencies where the students of both types of schools showed 'excellent' performance. These are

- Listening skills in Bangla,
- Knowledge on duties as member of society,
- Manners with persons of various relationships,
- Importance of good health,
- Physical and environmental health systems,
- Information collection ability, and
- Science and technology in everyday life (Annexes 61 to 66).

The formal school students did significantly better than those of the community schools in 16 competencies (Annexes 61 to 66). These include two each in Bangla and English, five in social studies and seven in general science. The community school students did better than the formal school students in one competency. This is 'knowledge about measurement units in mathematics'. The 10 competencies in which the students of both types of schools did equally are the following.

-
- Reading skills in Bangla,
 - Writing skills in English,
 - Basic number skills in arithmetic,
 - Four basic rules of mathematics,
 - Word problem solving in mathematics,
 - Knowing geometric figures,
 - Manners with persons of various relationships,
 - Information collection ability,
 - Scientific investigation skills, and
 - Knowledge on life sketch of prophet Mohammed (SM) or the preachers of own religion (Annexes 61 to 66).

Gender difference among the students of formal schools was observed only in three mathematics competencies. These are four basic rules, word problem solving and measurement units. The boys did better than the girls in all the three. Similarly, the boys of the community schools did significantly better than their counterpart girls in three competencies. These are knowledge on 'duties as citizen of Bangladesh', 'about the country', and 'prevention of common disease'. No competency was found where the girls did better than the boys. Separately by school-type, the boys and the girls did equally in majority of the competencies (Annexes 67 to 72).

Table 29 shows, mean and standard deviation of number of competencies achieved by the students of each type of schools. Except mathematics, the formal school students achieved more competencies than those of the community schools in other four subject areas. On average, the students of both types of schools achieved equally in mathematics.

Table 29. Mean number of competencies achieved by community and formal school students in various subjects, 2004

Subjects	Number of competencies	School type		Level of significance
		Community	Formal	
Bangla	3	2.33 (0.83)	2.60 (0.63)	p<0.001
English	3	1.63 (0.80)	1.99 (0.68)	p<0.001
Mathematics	5	3.25 (1.48)	3.17 (1.36)	ns
Social studies	6	4.33 (1.31)	4.81 (1.10)	p<0.001
General science	9	7.08 (2.01)	7.82 (1.53)	p<0.001

Figures in the parentheses indicate standard deviation; ns = not significant at p =0.05

The students of both types of schools, in general, did well in the 'knowledge' level items than the 'understanding' level items. For instance, the formal school students correctly answered 68.2% of the 'knowledge' and 49.5% of the 'understanding' level items (Table 30). Otherwise, the community school students correctly answered 58.9% of the 'knowledge' and 47.9% of the 'understanding' level items. This shows

that the difference between formal and community schools was more in 'knowledge' level items than the 'understanding' level items. Separate analyses for boys and girls also showed similar findings.

Table 30. Performance of the students of BRAC community and formal schools according to the taxonomic class level of items, 2004

Taxonomic class		Number of items	Community		Formal	
			Mean	%	Mean	%
Boys	Knowledge	45	27.8	61.8	31.6	70.2
	Understanding	19	9.4	49.5	10.0	52.6
Girls	Knowledge	45	26.5	58.9	30.2	67.1
	Understanding	19	9.0	47.4	9.1	47.9
All	Knowledge	45	26.5	58.9	30.7	68.2
	Understanding	19	9.1	47.9	9.4	49.5

The BRAC formal schools were extremely homogeneous in terms of average achievement of their students. The co-efficient of variation was found 3.8% for this type of school (Table 31). This figure was much less than any other type of BRAC schools and the government primary schools (shown in other sections of this monograph). For instance, the co-efficient was 13.2% for the community schools and 14% or more for BRAC primary schools and 25% or more for government primary schools.

Table 31. School level variation in BRAC community and formal schools, 2004

School type	Mean	Standard deviation	Coefficient of variation
Community	18.9	2.5	13.2
Formal	20.8	0.8	3.8

FACTORS PREDICTING ACHIEVEMENT

Two attempts were made to find out the factors predicting competencies achievement in BRAC non-formal primary schools in rural areas – one at school level and the other at student level. The 2005 dataset was used where 5,946 students from 298 BRAC non-formal primary schools were brought under test. The two questions in this regard were:

1. What are the factors predicting school-to-school variation regarding pupils' achievement of competencies; and
2. What are the factors predicting competencies achievement of the pupils'?

A number of information on the students' background, schools, teachers, programme organizers and area managers were considered. Annexes 73 and 74 show the explanatory variables along with their measurements. The variables were selected carefully. To reduce the chance of multi-co-linearity the highly inter-correlated independent variables were kept out of this analysis. In other words, correlation coefficients belonging between -0.75 and +0.75 were considered perfect for inclusion in the analyses. However, none of the correlation coefficients was beyond ± 0.60 .

To explore the factors predicting the average achievement of the schools a linear regression analysis (ordinary least square or OLS method) was performed. Average number of competencies achieved by the students in each school was the dependent variable. On the other hand, the distribution of number of competencies achieved by the students was found negatively skewed, which is very much exponential type. It would not be wise to do ordinary regression analysis to see the predictors of student level variation in competencies achievement, because of the dependent variable's failure to meet the normality assumption of such analysis. Thus, considering the distribution as exponential it was decided to cut the line at its median point to make it suitable for binomial logistic regression. Considering above in mind, binary logistic regression analysis was performed to explore the factors predicting student level variation. Thus, the students were divided into two depending on their achievement: well performed and not so well performed. Well performed means students achieving 24 or more competencies³ and not so well performed means students achieving less than 24 competencies.

Mathematical expressions of the regression models are provided below.

The OLS model: $T = a + \sum b_i x_i$; where T is the number of competencies achieved by each student.

³ 24 is the median value

The binary logistic regression model: $\ln [p / (1-p)] = a + \sum b_i x_i$; where p is the probability of a student achieving 24 or more competencies or do well in the test.

For both, a is the constant, b_i values are estimated regression coefficients and x_i are the predicting variables. For more details about these models see Menard (1995), Hosmer and Lemeshow (1989) and Gujarati (1988).

In both the cases, a step-wise approach was followed to select the most economic model. This considered only the factors significantly predicting the dependent variables. The non-selected variables were excluded from the final models.

Exploration of school level variation

The ordinary least square regression analysis reveals that of the 27 explanatory variables considered in the analysis, the final model granted only five of them. These include quality of teachers as assessed by the area managers, proportion of contents of the textbooks taught in the classrooms, proportion of Muslims in the schools, teachers' length of service and number of programme organizers supervised in grade V. Table 32 provides results from the regression analysis.

Regarding predicting the average achievement of the schools, the most important variable was quality of the teachers assessed by the area managers. Schools with better teachers performed well. A positive relationship between schools' average performance and quality of teacher⁴ was emerged when influences of other variables were kept constant. The proportion of contents of the textbooks taught in the classrooms has emerged as the second most important predictor. As much as the teachers covered the contents of the textbooks the pupils were more likely to do well in the test. The third important predictor was the proportion of Muslim students in the schools. Increase of the proportion of Muslim students in the schools also increased the average performance of the pupils. The fourth important predictor in this regard was the length of experience of the teachers. The students of the schools were more likely to do well in the test as the duration of experience of teachers increased. Number of programme organizers supervised the schools during grade V came out as the fifth important predictor of schools' average achievement. However, a negative relationship was found. If the POs were not changed frequently they were able to supervise schools for longer period which resulted in an increased performance of the schools. These five variables collectively explained 26% of the total variation in the average performance of the schools.

⁴ See Annex 73 for details of assessing quality of teachers and proportion of contents taught (textbook coverage index)

Table 32. Multivariate regression model predicting mean number of competencies achieved by schools

Explanatory variables	Regression coefficient	Beta coefficient	Level of significance
Quality of teachers	1.50	0.38	p<0.001
Coverage of textbooks	0.19	0.18	p<0.001
% of Muslim students in schools	0.03	0.15	p<0.01
Teachers service length	0.09	0.12	p<0.05
Number of PO in grade V	-0.46	-0.11	p<0.05
Constant	10.66		p<0.001
Adjusted R ²	0.26		
Analysis of Variance (F value)	20.60		p<0.001

Exploration of student level variation

The binary logistic regression analysis predicting students' performance considered 16 of the 27 variables in the final model. The explanatory variables in terms of their importance (as per contribution in explaining variation in the dependent variable) are mentioned below.

- Quality of teachers
- Proportion of contents taught
- Religion of student
- Number of school visit by area manager
- Length of service of area manager
- Number of programme organizers visited schools in grade V
- Level of education of programme organizers
- Mothers' education
- Proportion of girls in school
- Length of service of teachers
- Sex of student
- Having private tutor
- Teachers' marital status
- Number of school under the programme organizers
- Teachers' level of education
- Sex of programme organizers

Detail of the analysis is provided in Table 33.

Table 33. Binary logistic regression model predicting competencies achievement of the students

Explanatory variables	Regression coefficient	Odds ratio	95% CI of odds ratio	Level of significance
Quality of teacher	0.818	2.27	2.08–2.47	p<0.001
Proportion of contents taught	0.083	1.09	1.06–1.11	p<0.001
Religion of student	0.693	2.00	1.59–2.51	p<0.001
Number of school visit by AM	0.035	1.04	1.02–1.05	p<0.001
AMs length of service	0.096	1.10	1.07–1.14	p<0.001
Number of PO in grade V	-0.274	0.76	0.70–0.83	p<0.001
Education of PO	0.087	1.09	1.05–1.13	p<0.001
Mothers education	0.055	1.06	1.03–1.08	p<0.001
Percentage of girls in school	0.023	1.02	1.01–1.03	p<0.001
Teachers length of experience	0.029	1.03	1.01–1.05	p<0.001
Sex of student	0.223	1.25	1.11–1.41	p<0.001
Having private tutor	0.216	1.24	1.09–1.42	p<0.01
Teachers marital status	0.205	1.23	1.06–1.42	p<0.01
Number of school under a PO	-0.008	0.99	0.99–1.00	p<0.01
Teachers education	-0.059	0.94	0.90–0.98	p<0.01
Sex of PO	0.180	1.20	1.04–1.38	p<0.01
Constant	-8.067			
Cox & Snell R ²	0.14			
Nagelkerke R ²	0.18			

The analysis reveals that the boys, Muslim students and those who had private tutors performed well compared respectively to the girls, non-Muslim students and those did not avail private tutors (Table 33). Schools with married teachers and those supervised by female programme organizers (PO) did well compared to their respective counterparts. Number of change in the position of PO and the number of schools under a PO negatively influenced learning achievement of the students. This means that if the POs were changed frequently or a PO was given responsibility of many schools resulted poor performance of the students. Teachers' education (measured in terms of years of schooling) also showed negative relationship with students' competency achievement. All other variables mentioned above had positive influence on learning achievement.

It may be mentioned here that all five explanatory variables appeared in the model predicting school level variation also appeared in the model for predicting student level variation. This indicates importance of these variables in predicting students' achievement of competencies in BRAC non-formal primary schools. Again, the first three variables in both the models are the same. These are quality of teachers, proportion of contents taught and religion of the students. Note that all types of variables such as students' background, and characteristics of the teachers, POs and area managers were included in the model as predictors of students' learning achievement.

Further regression: We have three levels of variables in hand; these are students' characteristics at household level, schools' and teachers' characteristics at school level, and POs' and AMs' characteristics at the area level. An attempt was made to see which group of variables explains more in order to predict students' achievement in the test. Thus, three more regression models were built with the three sets of variables mentioned above. Similar to the above, logistic regression analysis was done for all the three cases.

Five of the eight household level variables came out as the significant predictors of competency achievement of the students (Table 34). These are sex of the students, mothers' education, provision of private tutor, religion, and availability of electricity at home. The religion came out as the most important predictor of students' achievement followed respectively by mother's education, provision of private tutor, availability of electricity at home, and sex of student. All the five variables together explained only 3% of the total variation in the dependent variable.

Table 34. Logistic regression analysis predicting students' performance against their background variables as predictors

Explanatory variables	Regression coefficient	Odds ratio	95% CI of odds ratio	Level of significance
Religion	0.707	2.03	1.64 – 2.50	p<0.001
Mothers education	0.044	1.05	1.02 – 1.07	p<0.001
Private tutoring	0.255	1.29	1.14 – 1.46	p<0.001
Electricity availability at home	0.162	1.18	1.05 – 1.32	p<0.01
Sex of student	0.121	1.13	1.01 – 1.26	p<0.05
Constant	-0.733			p<0.001
-2 log likelihood	7973.351			
Cox & Snell R ²	0.02			
Nagelkerke R ²	0.03			

Of the 10 school level variables (including teacher characteristics) six appeared as the significant predictors of students' performance in competency test (Table 35). These are quality of teacher, textbook coverage, proportion of girls in class, teachers' length of experience, marital status and level of education, and class size. Teachers' quality assessed by the AMs and proportion of contents taught were the two most important predictors which together explained major part of the total variation in the dependent variable. The independent variables of this model collectively explained 14% of the total variation in the learning achievement of the students.

Table 35. Logistic regression analysis predicting students' performance against school and teacher centric variables as predictors

Explanatory variables	Regression coefficient	Odds ratio	95% CI of odds ratio	Level of significance
Quality of teacher	0.800	2.23	2.05 – 2.42	p<0.001
Textbook coverage	0.094	1.10	1.08 – 1.12	p<0.001
Proportion of girls in class	0.026	1.03	1.02 – 1.04	p<0.001
Teachers length of experience	0.029	1.03	1.01 – 1.05	p<0.001
Teachers marital status	0.257	1.29	1.12 – 1.49	p<0.001
Teachers education	-0.050	0.95	0.91 – 0.99	p<0.05
Class size	0.027	1.03	1.01 – 1.05	p<0.05
Constant	-7.343			p<0.001
-2 log likelihood	7290.849			
Cox & Snell R ²	0.10			
Nagelkerke R ²	0.14			

Among the 10 variables related to the school supervisors (i.e., PO and AM) six appeared in the model as significant predictors of students' performance in the competency test (Table 36). These are (chronologically as they appeared in the model) length of service of AM, number of school visit by AM, number of PO in grade V, education of PO, sex of PO and length of service of PO. These variables collectively explained 4% of the total variation in the performance of the students.

Table 36. Logistic regression analysis predicting students' performance against supervisors' characteristics and supervision of the schools

Explanatory variables	Regression coefficient	Odds ratio	95% CI of odds ratio	Level of significance
Sex of PO	0.213	1.24	1.09 – 1.41	p<0.001
Education of PO	0.136	1.15	1.10 – 1.20	p<0.001
POs length of experience	0.022	1.02	1.01 – 1.04	p<0.05
Number of PO in grade V	-0.276	0.76	0.70 – 0.82	p<0.001
AMs length of service	0.114	1.12	1.09 – 1.15	p<0.001
Number of school visit by AM	0.039	1.04	1.03 – 1.05	p<0.001
Constant	-2.267			p<0.001
-2 log likelihood	7915.780			
Cox & Snell R ²	0.03			
Nagelkerke R ²	0.04			

From the above-mentioned three models it is clear that the school level variables have more contribution than others in predicting learning achievement of the pupils in BRAC non-formal primary schools and the contribution of the household level variables was the least.

BRAC versus government schools

In an earlier chapter we have seen that BRAC non-formal primary school students in rural areas outperformed their counterparts in nearby government primary schools. This part of analysis intends to see how far the students of BRAC non-formal schools performed better compared to those in the government primary schools controlling the affects of other variables contributing students' learning achievement. Data generated in 2008 *Education Watch* were used in this analysis. As majority of the BRAC non-formal schools are located in the rural areas only the rural schools (both BRAC and government) were considered in this analysis.

Due to the same reason mention in an earlier analysis the number of competencies achieved by the students were divided into two – cutting them through the median value. In this case, the median value was 20. Thus, students achieving 20 or more competencies were considered as well performing students and those achieving less than this were considered as not so well performing students. Such a categorization made it suitable for a binomial logistic regression analysis. The mathematical expression of the regression model is as follows:

$$\ln [p / (1 - p)] = a + \sum b_i x_i$$

Where p is the probability of a student achieving 20 or more competencies or do well in the test, a is the constant, b_i values are estimated regression coefficients and x_i are the predicting variables.

Number of explanatory variables considered in the analysis was 20, which can be categorized into three, viz., students' socioeconomic background, school-related factors and additional educational inputs. The variables and their measurements are provided in Annex 75. Here too, a step-wise approach was followed to select the appropriate regression model. This considered only the variables significantly predicting the dependent variable. Insignificant variables were excluded from the final model.

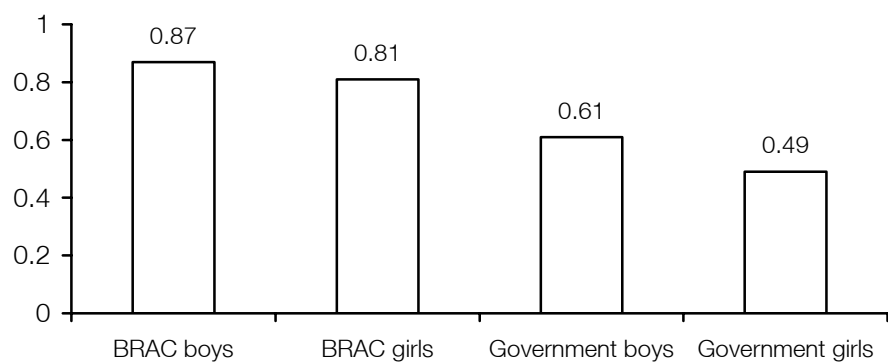
Of the 20 variables granted for analysis the final regression model considered eight of them. These include (according to chronology of appearance in the model) private tutoring, fathers education, school type, ethnicity, SMC meeting, teachers' length of experience, sex and age of student. Table 37 shows the results from regression analysis. Although duration of students availing private tuition and fathers' length of schooling came out as two most important contributing factors of students learning achievement, the place of school type appeared as the third most important predictor. The finding reveals that BRAC non-formal school students were 4.37 times more likely to do well in the test compared to those in the government schools when the affects of other variables were controlled. The Bangali students did well compared to the ethnic minority students and the boys outperformed the girls. Positive influences of SMC meeting and teachers length of experience were also observed. However, age of the students affected negatively; indicating relatively younger students performed well in the test. All these eight variables collectively explained 23% of the total variation in the dependent variable.

Table 37. Binary logistic regression analysis predicting performance of BRAC and government schools students

Explanatory variables	Regression coefficient	Odds ratio	95% CI of odds ratio	Level of significance
Private tutoring	0.097	1.10	1.07 – 1.14	p<0.001
Fathers' education	0.089	1.09	1.06 – 1.13	p<0.001
School type	1.474	4.37	1.82 – 6.75	p<0.001
Ethnicity	2.869	17.62	5.17 – 60.01	p<0.001
SMC meeting	0.116	1.12	1.07 – 1.18	p<0.001
Teachers' experience	0.037	1.04	1.02 – 1.06	p<0.001
Sex of student	0.471	1.60	1.24 – 2.07	p<0.001
Age of student	-0.212	0.81	0.72 – 0.91	p<0.001
Constant	-3.039			
-2 log likelihood	1438.475			
Cox & Snell R ²	0.17			
Nagelkerke R ²	0.23			

Let us now calculate probabilities of students doing well in the competency test against some of their specific characteristics. This will help understand magnitude of difference between the students of BRAC non-formal primary schools and the government schools in rural areas. In specifying the characteristics of the students we choose the Bangalis because of their majority in the sample and the mean values of other explanatory variables appeared in the model provided in Table 37. Thus, the probabilities were calculated for the Bangali students with age 11.3 years, received 4.5 months of private tuition in grade V, having fathers with 5.1 years of schooling, teachers with 12.6 years of experience and SMC met 8.4 times in a year. The calculated probability of performing well of a BRAC non-formal primary school student with above characteristics was 0.87 if it was a boy and 0.81 if it was a girl (Figure 6). These were respectively 0.61 and 0.49 for the boys and girls of government primary schools with the same characteristics. In other words, a rural boy with the above characteristics receiving education from BRAC non-formal school rather than government primary school increased the probability of performing well in the test by 0.26 (0.61 to 0.87) which was 0.32 (0.49 to 0.81) for the rural girls. Gender difference was more in government primary schools than BRAC non-formal primary schools.

Figure 6. Estimated probabilities of students performing well in competencies achievement test



Note: These probabilities are calculated from the regression coefficients presented in Table 37 by using the following equation: $p = \exp(a + \sum b_i x_i) / [1 + \exp(a + \sum b_i x_i)]$

DISCUSSION AND CONCLUSION

The BRAC non-formal primary schools – often called as bailey bridges in our primary education system would no longer require when sufficient number of permanent bridges i.e., the national primary education system would be constructed on a strong footing to facilitate quality education to all children. Available evidences show that the national primary education system is gradually improving (DPE 2008, Nath and Chowdhury 2009). The rate of progress is no doubt slower than expected. Many students do dropout before completing the full course of primary education and quality of learning is also questionable. Out-of-school children still exist and disparities in terms of geographical location, school type, stream of education and students background are key concerns to further development. However, the new education policy promised to tackle those with a broader vision of human resource development (Government of Bangladesh 2010).

When BRAC started its non-formal primary education programme in 1985, it already gained experiences of operating two national programmes for the masses. The first one was a centre-based functional literacy programme for adult women and the other one was a door-to-door teaching programme to treat diarrhoeal diseases through a simplified method (Smillie 2009, Chowdhury and Cash 1996). On this background, BRAC initiated a non-formal primary education programme for the children of poor and illiterate families (Lovell and Fatema 1989). At that time the primary net enrolment rate was below 60% with girls lagging much behind the boys. Children, especially the girls, of the poor and illiterate parents were less likely to get access to education. Thus, BRAC decided to take education to the door steps of those masses who never got a chance to be educated. Seventy percent of the students in BRAC non-formal primary schools were taken from the girls which has now reduced to 65% due to gender parity in primary enrolment at national level. *Education Watch* study of 2008 showed that the non-formal schools, majority of which are established by BRAC, admit more girls and first generation learners compared to other provisions in the country (Nath and Chowdhury 2009).

Quality of education is an integral part of BRAC schools. National curriculum is followed in these schools. Both BRAC and NCTB prepared textbooks are used along with a set of supplementary books and other materials. Teachers are mostly females. Seating arrangement is done in such a way and the student-teacher ratio is kept minimum (33:1 or less) so that the teachers can contact with each of the students and provide necessary care. Major learning is held in classrooms along with co-curricular activities and very little homework.

As already mentioned in the introduction, the concept of quality of education is an encompassing one. Anything that happens under the broad umbrella of education, inside the educational institutions and/or outside, can come in the discussion of

quality of education. However, students learning achievement is an immediate output of any education provision. It is as well a popular indicator of understanding quality of education. This research monograph presents learning achievement of the students of BRAC primary schools during 2000-2010.

The findings reveal that average learning achievement of the students of BRAC non-formal primary schools increased over time. Although no smooth trend was evident – ups and downs in the performance were particularly the situation. Of the 27 competencies under test, the students achieved below 18 in the first two tests, 18 or more afterwards, more than 19 during 2005-2008 and over 20 since 2009. Such a trend indicates gradual increase of quality of education in BRAC non-formal primary schools. Improvement not only evident at aggregate level but also separately for each subjects viz., Bangla, English, mathematics, social studies and general science. Earlier, the students showed excellent performance (80% or more students attaining a competency) in 6-8 competencies which increased to 15-17 in recent years. With all these improvements we identified at least two competencies in which the students performed poorly throughout the test decade– 40% or less proportion of the students achieved these competencies. These are ‘writing skills in English’ and ‘knowing life sketch of prophet Mohammad (SM) or the preachers of own religion’. The students had ‘satisfactory’ performance in ‘writing skills in Bangla’ in all the tests until 2009 but suddenly they did poorly in this competency in 2010. They were poor in ‘word problem solving in mathematics’ as shown in first few years; however, they gradually improved showing ‘satisfactory’ performance in recent years. It is, thus, important to explore the reasons behind poor performance in some of the competencies and try to improve instructions in these areas of curriculum. At the same time how BRAC non-formal schools gradually improved in ‘word problem solving in mathematics’ be another area of investigation from which one can learn the ways for improvement.

Although most educational activities of BRAC are in the rural areas, there are urban schools too which are located in the slums. Operating schools in urban areas is not an easy task because of uncertainty in slum life. However, we found that the students of BRAC non-formal schools in urban areas outperformed their rural counterparts. Although the average performance of the students of both areas improved, the rate of increase was more in urban schools. Thus, the urban-rural gap widen over time. Subject-wise analysis shows that in 2000, the urban students were ahead of the rural students in social studies and general science but in 2008 such difference was extended to Bangla, English and mathematics too. Urban students surpassing their rural counterparts is generally evident in formal education provision. The BRAC non-formal schools are not out of such disparity. Further investigation reveals that the students of both the areas had no difference in terms of mean age, mothers’ education, duration of receiving private tuition, class size, teachers education and number of SMC meeting. However, in terms of fathers education urban students lagged behind the rural students, and thus, proportion of first generation learners were also higher in urban schools (37% vs. 34%). The urban students were found in a favourable condition in three indicators. On average, the urban schools were within three kilometres radius of *thana* head quarters but the

rural schools were 8.6 kilometres away from *upazila* centres. While 54.6% of the urban students had access to electricity, it was 37.2% among the rural students. Nearly three-quarters of the urban and two-thirds of the rural students had access to mass media (radio, TV or newspaper). These may have influence in urban students doing well in competencies achievement test; however, need of further investigation cannot be ruled out.

Girls are almost double of the boys in total BRAC student population. Engagement of females as teachers in BRAC non-formal schools at a large scale not only creates spaces for them to be employed and involve in work beyond home but also creates a favourable environment for the girls to be in school, participate actively in classroom activities and avoid dropout. A positive influence of this may be a cause why the boys and the girls of BRAC non-formal schools performed equally in most of the times – seven out of 11 tests. Competency-wise analysis also shows no gender difference in about three-fourths of the cases. The BRAC non-formal schools were found ahead of the government schools in terms of gender parity in competencies achievement with a difference of 20 percentage points. With this good news we also remind that the boys of BRAC non-formal schools were found ahead of the girls in a good number of competencies and a reverse result in a few cases. It is, thus, a challenge for BRAC programme to further reduce the chances of gender difference in learning achievement, especially in mathematics where such difference was found most. Increased care of the teachers towards girls learning may be the only instrument to be fair at classroom level. We also observed that the students of those schools performed better who had female programme organizers and a significant positive relationship between students learning achievement and proportion of girls in the classrooms. A further dig into data confirmed that if the programme organizer was a male, the boys outperformed the girls ($p < 0.001$) and if the PO was a female the students of both gender performed equally. At present, approximately a quarter of the POs may be from the females which may be increased for the sake of enhancement of girls learning and ultimately equity in students' learning performance. Although no implication of increased proportion of girls in the classrooms was observed in enhancement of girls learning but such an atmosphere increased overall performance of the schools. Thus, the provision of enrolment of more girls than boys in BRAC non-formal schools should be continued. At the same time, it should be remind that although on average the BRAC non-formal schools admit 65% of its students from the girls, at present this 65:35 ratio could be maintained only in half of the schools. This would be hard to continue because of gender parity in access at the national level.

Variations in students' performance were also observed in various types of BRAC primary schools. For instance, the students of the ethnic minority schools (BSEM) could not do well like as other BRAC schools. Again, the students of formal schools (BFPS) showed the best performance followed by those in the community schools (BCPS) and the schools operated in non-formal mode (BNFPS). One argument behind non-formal schools doing less well than the others may be explained by the way the programme is operated. First of all, the schools are established in a temporary place for a certain period and after completion of a full cycle if no

adequate number of children is left behind for schooling the authority shift the school to a new area where there is a demand for education. This means that each year the programme is shifted to some new areas, where it faces more challenges in keeping quality of education. Secondly, the students of non-formal schools received the full course of primary education within four calendar years, which is not the case for other two types of schools. The community and the formal school students received the same course within five calendar years. The formal school students also receive compulsory pre-primary course. Moreover, students of the formal and community schools are ahead of those in non-formal schools in terms of parental education and household economy indicating better educational environment at home. The students of the schools for ethnic minorities brought under the test were the first batch graduated from such schools. Compared to the first batch of BNFPS who graduated in 2000 and on average achieved 17.9 competencies per student, the first batch of ethnic minorities did better with 20.2 competencies per student. BNFPSs better performance may be a reflection of their long experience. However, the ethnic minority schools were built on the experiences of BNFPS. Whatever the case is, the BRAC education programme should provide its best effort so that the ethnic minority students of BRAC schools can learn equally with the Bangali students.

Variation in learning achievement among the BRAC non-formal primary schools has significantly reduced over time indicating increased homogeneity among them. This is a good sign when disparity is a major concern in formal school provision. An attempt was made to see what factors explain the variation in learning achievement in BRAC non-formal schools. Quality of teachers and proportion of contents taught in the classrooms came out as two most important predictors of such variation. The BNFPS teachers found various levels of difficulty in dealing with the textbooks which has a strong relationship with the proportion of contents they taught to their pupils. These findings have serious implication in teacher preparation, which is often claimed as the heart of all success in quality. As we did not see any importance of teachers' level of education in the performance of the schools, it is probably no matter in BRAC case but there length of service is. The issue of teachers facing difficulty with the contents and not completing the full contents within the given period may partially be dealt by appointing more qualified teachers and strengthening both pre and in service training of them. At the same time it is important to look at the overall duration of BNFPS. An inquiry is required whether time is a constraint in completing the full contents of the textbooks. If this is so, the programme may like to extend its duration from four years to five years.

Frequent transfer of the POs from the schools came out as an important predictor of school performance. We saw no PO supervised a school more than one year. Average length of involvement of POs with a school was 6.5 months. Even a quarter of the POs were transferred three months before completion of the course. This study identified a negative effect of this process. As the duration of supervision of the POs increased it helped increase students' performance significantly and hence the overall performance of the schools. Again, importance of area managers' length of service in competencies achievement of the pupils indicates the need of experienced persons as managers. It was observed that a quarter of the AMs had two to 4.4

years of experience. Serious attention of the BEP field operations unit is required in order to have a fruitful solution of these problems.

It is interesting to see that teacher and school centric variables came out as important predictors of students learning achievement than those related to students' background characteristics and variables related to the POs and AMs. The finding reveals that the system itself was more influential than the individual characteristics of the pupils. Other way, the influence of personal characteristics could be reduced, if not eliminated, through the schooling with BRAC. However, sadly, religious belief of the students came out as one of the important predictors of students' performance. This factor is also responsible for school-to-school variation. No information was collected to see the reasons of why the religious minorities were doing less well than the Muslims in BRAC schools. Future research can explore the issue.

The BRAC non-formal school students performed significantly better than those in the government schools. This is not only in terms of average number of competencies achievement, separate analysis for each of the competencies also showed the same. Competency-wise analysis shows that the BRAC students were ahead of the government students in about half of the competencies under test, whereas a reverse result was found only in 8.6% of the competencies. It is well known that in terms of infrastructure of the schools, and academic qualification and salary of the teachers the government schools are much ahead of the BRAC non-formal schools. But BRAC non-formal schools surpassed their government counterparts in continuous teacher training, supervision of schools and classroom teaching quality. Class size is also much smaller in BRAC system. Studies show that due to the above, teaching-learning provision in BRAC non-formal schools is much better than the government schools. All these collectively helped BRAC students doing well in the test.

The findings and the analyses made in this monograph clearly show that BRAC's major educational intervention i.e., the non-formal schools are progressing well over time in terms of students learning achievement. These schools are doing better with a fair margin when compared to the mainstream primary education provision i.e., the government schools. BRAC also showed its competency in running schools for the ethnic minority children with a good quality. Moreover, its formal and community schools are also doing better than any other sub-system considered for this study. All these collectively give a sense of efficiency of the bailey bridges that BRAC has been making throughout the country for last two-and-a-half decades. Experience in operating various types of primary schools for various groups of population is also a strong point of BRAC. However, we already identified some gaps that BRAC can consider for further development. Quality of any education provision has no end point. It is an idea which always changes with the need of the society and moves forward. Our mainstream education provision is far from reaching all eligible children with quality education. It is a constitutional obligation that the national system would be able to fulfil basic educational needs of all children of the country.

Existence of multiple provisions moving towards a national goal is good unless those create inequality in the society. The BRAC education programme, from its very beginning, has been in a mission of targeting the economically poor and first generation learners and providing them a fairly good quality of education. It is thus a provision for enhancing equity in education. Now the question is how the good practices of BRAC education provision can be transformed to the mainstream national education system so that the sense of *quality with equity* can be established on a broader canvas. BRAC schools should continue staying in the specific rural areas, urban slums and the ethnic minority communities until the mainstream school system takes the responsibility of all children. Close collaboration between BRAC and government is another area to be considered through which the good practices of BRAC can be transformed into the mainstream system. Some years back, an idea was generated for such collaboration which could not take off due to un-willingness of the mainstream school teachers. The idea can be retrieved through broader consultation with the parents and the teachers at local level and education officials at upazila and central levels. It would be a missed opportunity if no lesson is learned by the mainstream system from this innovative model at its birth place. The Directorate of Primary Education can come forward with a broader vision of *quality with equity* for all children under its third development programme (i.e., PEDP III).

REFERENCES

- Ahmed M, Chhabott C, Joshi A, Pande R (1993). *Primary education for all: learning from the BRAC experience, A case study*. Dhaka: Advancing Basic Education and Literacy.
- Bloom BS, Engelhart MD, Furst EJ, Hill WH, Krathwohl DR (1956). *Taxonomy of educational objectives, the classification of educational goals*. London: Longman Group Ltd.
- Carmines EG and Zeller R (1979). *Reliability and validity assessment*. Sage University Paper Series on Quantitative Applications in the Social Sciences, 07-017. Newbury Park, CA: Sage
- Chowdhury AMR, Haq MN, Ahmed Z (1997). Quality of primary education in Bangladesh. In: AK Jalaluddin and AMR Chowdhury (Editors), *Getting started: universalizing quality primary education in Bangladesh*. Dhaka: University Press Limited.
- Chowdhury AMR and Cash RA (1996). A simple solution: teaching millions to treat diarrhoea at home. Dhaka: University Press Limited.
- Cochran WG (1977). *Sampling techniques*. Singapore: John Wiley & Sons.
- Directorate of Primary Education (DPE) (2008). School survey report 2007 of second primary education development programme (PEDP II). Dhaka: Directorate of Primary Education.
- Ferguson GA and Takane Y (1989). *Statistical analysis in psychology and education*. Sixth edition. Singapore: McGraw-Hill Book Company.
- Government of Bangladesh (2010). National education policy 2010 (in Bangla). Dhaka: Ministry of Education, Government of Bangladesh.
- Government of Bangladesh (1974). The primary schools (taking over) act 1974. Act no. viii of 1974. *The Bangladesh Gazette*, extra, 5 February 1974. Dhaka: Government of the Peoples' Republic of Bangladesh.
- Govinda R and Varghese NV (1993). *Quality of primary schooling in India – a case study of Madhya Pradesh*. Paris: International Institute for Educational Planning and National Institute of Educational Planning and Administration.
- Gujarati DN (1988). *Basic econometrics*. Singapore: McGraw Hill Book Company.
- Hosmer DW and Lemeshow S (1989). *Applied logistic regression*. New York: John Wiley & Sons.
- Kalam MA and Nath SR (2001). The national terminal competencies and their reflection in the source materials. In: SR Nath and AMR Chowdhury (Editors), *A question of quality: state of primary education in Bangladesh, Vol II Achievement of competencies*. Dhaka: Campaign for Popular Education and The University Press Limited.
- Kalton G (1983). *Introduction to survey sampling*. Sage University Paper Series on Quantitative Applications in the Social Sciences, 07-035. Newbury Park, CA: Sage.
- Kuder GF and Richardson MW (1937). The theory of the estimation of test reliability. *Psychometrika*, 2: 151-160.

Lovell C and Fatema K (1989). The BRAC non-formal primary education programme in Bangladesh. Assignment children. New York: UNICEF.

Menard S (1995). *Applied logistic regression analysis*. Sage University Paper series on Quantitative application in the social sciences, 07-106. Thousand Oaks: Sage.

Nanayakkara GLS, Haq MN, Aziz MA and Hossain MK (2007). National assessment of pupils of grades 3 & 5, 2006. Dhaka: Directorate of Primary Education.

Nath SR (2006). *Quality of BRAC education programme: a review of existing studies*. Dhaka: Research and Evaluation Division, BRAC.

Nath SR and Chowdhury AMR (2009). State of primary education in Bangladesh: progress made, challenges remained. Dhaka: Campaign for Popular Education.

Nath SR and Chowdhury AMR (Editors) (2001). A question of quality: state of primary education in Bangladesh. Volume II Achievement of competencies. Dhaka: Campaign for Popular Education and University Press Limited.

Nath SR, Ghosh SK, Akter S (2000). Development of instruments to assess the achievement of national competencies at the end of primary education cycle. Dhaka: BRAC.

NCTB (undated). Revision and modification of curriculum of the primary stage against the background of universal primary education- essential learning continua (primary education). Dhaka: National Curriculum and Textbook Board.

NCTB and UNICEF (1998). Sarbajanin prathanik sikshyar patabhumite prathanik starer sikshyacramer parimarjano nabayan (in Bangla) Dhaka: National Curriculum and Textbook Board.

PMED (undated). Prathamik shiksha stare arjan upajogi prantic jogyata samuha (a wall poster in Bangla). Dhaka: Primary and Mass Education Division.

PSPMP (2001a). Primary education in Bangladesh. Findings of PSPMP 2000. Dhaka: PSPMP.

PSPMP (2001b). Improving the quality of primary education in Bangladesh: a strategic investment plan. Dhaka: Primary School Performance Monitoring Project.

Smillie I (2009). Freedom from want: the remarkable success story of BRAC, the global grassroots organization that's winning the fight against poverty. Dhaka: University Press Limited. 283p.

UNESCO (2005). Education for all – the quality imperative. EFA global monitoring report 2005. Paris: UNESCO.

ANNEXES

Annex 1. The 50 terminal competencies

1. To place unflinching trust to Allah, the almighty.
2. To know about the Creator and remember Him in all activities and to be grateful to Him.
3. To know the life sketch of Hazrat Mohammad (peace be on him), the prophet of Allah or the preachers of own religion and follow their teachings and examples created by them.
4. To know about the religious books of own religion and to build ethical and moral standard through following the teaching instructions of the religions.
5. To love all creations of the Creator.
6. To show respect and tolerance to all irrespective of ethnicity, religion, race and gender.
7. To know about the people of other countries and to show love and gratitude to them.
8. To get idea about the basic needs of human beings and to be aware of developing a nice livelihood.
9. To be aware of one's own rights and as well as the rights of others.
10. To allow others to express their opinions and to show respect to such opinions.
11. To be cooperative and friendly to all.
12. To be interested in manual work and to be respectful to people living on such work.
13. To be aware of one's own duties and responsibilities as a member of the family and to take part in household work.
14. To be aware of own and others rights, duties and responsibilities through active participation in the activities in school and in the society
15. To be aware of democratic norms and to be aware of one's own responsibilities and duties as a good citizen.
16. To participate in nation building activities through avoiding self interest.
17. To get some ideas about geographical location and characteristics of Bangladesh.
18. To be inspired in love to the country and in nationalism in light of the War of Independence.
19. To know about national history, heritage, culture and literature and to be respectful to these.
20. To be active in environmental development and preservation.
21. To develop liberal attitude towards universal brotherhood and the culture of various countries and to develop an appreciation of the spirit of world peace.
22. To develop an attitude to be careful in making appropriate use of personal, family, community and national resources and their conservation.
23. To be informed about the gradually increasing population of the country and to gain awareness of its effect on environment.
24. To gain knowledge about the mode of construction of Bangla language, arrangement of sentences (syntax) and rules and orders and to be able to apply them.

-
25. To be able to understand the central ideas of rhymes, poems, stories, speeches, narrations and conversations in Bangla, listening to them attentively.
 26. To be able to speak to class fellows and others understandably in colloquial Bangla with correct and standard pronunciation.
 27. To be able to read printed and handwritten texts correctly and understand the sense of the text read.
 28. To be able to express in writing, the observations, experiences and ideas in Bangla correctly and clearly, write common letters and applications and fill in various forms.
 29. To gain basic ideas about numbers and be able to use them.
 30. To be able to listen, speak. Read and write numerical and ordinal words including dates.
 31. To know the four fundamental rules (operations) of mathematics and to be able to use them.
 32. To recognize the geometrical shapes and sizes of various things in the environment and to be able to use them.
 33. To know the units of length, weights, area, volume, time and coins and to be able to use them.
 34. To be able to apply mathematical skills in solving practical and information-based simple problems.
 35. To be able to use various information from the environment through collection, organization and processing them.
 36. To know about calculator and computer and to be able to use calculator in computations.
 37. To be able to apply mathematical knowledge in solving population-related problems.
 38. To listen to and understand simple conversations, stories and rhymes in English and to enjoy them.
 39. To be able to speak in simple and correct sentences in English about one's own observations, ideas and feelings.
 40. To be able to read and understand printed and handwritten materials in English.
 41. To be able to write brief accounts of experience and know things in correct and simple English.
 42. To acquire knowledge about the application of science and technology in enhancing the quality of day to day life.
 43. To develop habit of solving problems by adopting scientific methods.
 44. To develop scientific attitude.
 45. To know the environment through observation and enquiry and to be able to classify different things and events on the basis of the knowledge acquired.
 46. To be aware of the variety in creations through the study of arts and crafts (such as drawings, designs and sketches; work of clay, wood, cloth and paper) and to develop one's creativity and extend areas for enjoying beauty.
 47. To promote one's own creativity, sense of beauty, aesthetics and intelligence through the study of music, dance and drama.
 48. To be interested in games and physical exercise.
 49. To know and follow health rules with a view to ensuring healthful living.
 50. To acquire the mentality of living together and to be imbued with the attitude of honesty, sense of justice, duty, discipline and good manner and behave accordingly.

Annex 2. Competencies, test items, and minimum levels for Bangla

Competency	Test items	Minimum level
Reading	Answer two questions from a printed paragraph	Answer one correctly
	Answer two questions from a hand written paragraph	Answer one correctly
Writing	Describe a given scenery in five sentences	Answer correctly any three on the left
	Describe own home in five sentences	
	Fill out a form with eight blanks (any six is acceptable)	
	Write an application with date, salutation, and closing (message with any two acceptable)	
Listening	Write Answer two questions based on a pre-recorded paragraph	Answer one correctly

Annex 3. Competencies, test items, and minimum levels for English

Competency	Test items	Minimum level
Reading	• Answer two questions from a printed paragraph	Answer one correctly
	• Answer two questions from a handwritten paragraph	Answer one correctly
Writing	• Describe a given picture in five sentences	Answer four correctly
Listening	• Answer two questions based on a pre-recorded dialogue between two friends	Answer one correctly

Annex 4. Competencies, test items, and minimum levels for mathematics

Competency	Test items	Minimum level
Basic numbers	• Arrange four given numbers in ascending order	Answer correctly any one of the items on the left.
	• Identify the largest from four given digits	
Four basic rules	• An addition	Do the simplification correctly or any three of the four others
	• A subtraction	
	• A multiplication	
	• A division	
	• A simplification	
Problem solving	Four sums needing skills on	Answer correctly any two of the items on the left
	• Basic arithmetic operation	
	• Unitary method	
	• Percentage	
	• Graph	
Measurement units	• Convert some hours and some minutes to seconds	Answer correctly any one of the items on the left
	• Find the length of a pencil	
Geometric figures	• Find the number of triangles and rectangles in a figure	Answer correctly any one of the items on the left
	• Identify four geometric figures	

Annex 5. Competencies, test items, and minimum levels for social studies

Competency	Test items	Minimum level
Duties as family member	• How a family becomes a happy family • Responsibility of family members	Answer correctly any one of the items on the left
Duties as a member of the society	• Responsibility as a member of the society • Why one should not play radio/TV loudly	Answer correctly any one of the items on the left
Duties as citizen of Bangladesh	• Responsibility as a citizen • Eligibility to vote in national elections	Answer correctly any one of the items on the left
Knowledge about the country	• Independence day • Major transportation system • Place of highest rainfall	Answer correctly any two of the items on the left
Manners with other people	• Right manners with teachers • Right manners with younger siblings	Answer correctly any one of the items on the left
Knowledge about children of other countries	• Main food of the children of Maldives • Popular games in Nepal	Answer correctly any one of the items on the left

Annex 6. Competencies, test items, and minimum levels for general science

Competency	Test items	Minimum level
Knowledge about importance of good health	• How good health is achieved • Why one takes carbohydrate	Answer correctly any of the items on the left
Knowledge about physical and environmental health	• Which tube well water is safe • How diarrhoea spreads	Answer correctly any of the items on the left
Knowledge of balanced diet	• What is a balanced diet • Why should adolescents take extra food	Answer correctly any of the items on the left
Knowledge about prevention of common illnesses	• Transmission of worms • Skin diseases	Answer correctly any of the items on the left
Information collection ability	• What is the fastest mass media • Highest and lowest temperatures during summer	Answer correctly any of the items on the left
Observation skills	• Which tree has no branch • Plant without a flower	Answer correctly any of the items on the left
Scientific investigation	• Identification of preventive measures for given illness • Identify effects of over population	Answer correctly any of the items on the left
Cause and effect relationship	• Energy that causes a boiling kettle lid to move up • Energy which drives a bullock cart	Answer correctly any of the items on the left
Everyday science	• What is information communication • What are modern agricultural technologies	Answer correctly any of the items on the left

Annex 7. Competency, test item and minimum level for religious studies

Competency	Test items	Minimum level
Knowledge about prophet Mohammad (SM) or the preachers of own religion	Write about any of the following in five sentences • Prophet Mohammad (SM) • Goutam Buddha • Jesses Christ • Shree Ramakrishna	Correctly writing three sentences

Annex 8. Distribution of competencies achieved by the students of rural BRAC non-formal primary schools by performance level and year

Level of performance	Year										
	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Boys											
Poor	2	3	2	2	2	2	4	2	2	2	3
Mediocre	5	5	5	3	4	0	1	1	4	5	1
Satisfactory	10	12	9	9	14	1	8	4	5	2	6
Excellent	10	7	11	13	7	24	14	20	16	18	17
Total	27	27	27	27	27	27	27	27	27	27	27
Girls											
Poor	3	3	5	2	3	1	3	2	3	2	3
Mediocre	5	5	4	4	4	1	3	1	3	4	2
Satisfactory	12	14	12	10	14	4	10	4	5	7	5
Excellent	7	5	6	11	6	21	11	20	16	14	17
Total	27	27	27	27	27	27	27	27	27	27	27

Annex 9. Percentage of rural BRAC non-formal primary school students achieving Bangla competencies by year

Year	Competencies		
	Reading	Writing	Listening
2000	71.0	72.4	82.5
2001	67.1	70.7	90.5
2002	74.1	62.6	85.0
2003	78.7	73.8	89.7
2004	78.1	74.6	76.7
2005	91.6	88.6	93.9
2006	72.8	68.5	87.8
2007	87.7	66.1	95.5
2008	76.8	60.3	94.2
2009	81.3	60.2	88.4
2010	88.5	31.7	96.3
Level of significance	p<0.001	p<0.001	p<0.001

Annex 10. Percentage of rural BRAC non-formal primary school students achieving Bangla competencies by gender and year

Year	Gender	Competencies		
		Reading	Writing	Listening
2000	Boys	76.9	71.4	84.1
	Girls	67.4	73.1	81.7
	Significance	p<0.05	ns	ns
2001	Boys	74.6	75.1	93.8
	Girls	63.0	68.2	88.6
	Significance	p<0.05	ns	ns
2002	Boys	83.7	64.6	88.5
	Girls	69.2	61.6	83.4
	Significance	p<0.001	ns	ns
2003	Boys	80.6	74.3	88.0
	Girls	77.7	73.6	90.6
	Significance	ns	ns	ns
2004	Boys	82.0	72.4	76.3
	Girls	76.2	75.7	76.9
	Significance	p<0.05	ns	ns
2005	Boys	93.5	87.8	95.2
	Girls	90.6	89.0	93.3
	Significance	p<0.001	ns	p<0.01
2006	Boys	78.5	71.7	88.8
	Girls	69.9	66.8	87.3
	Significance	p<0.05	ns	ns
2007	Boys	91.9	66.6	97.0
	Girls	85.5	65.8	94.7
	Significance	p<0.01	ns	ns
2008	Boys	76.3	56.2	95.0
	Girls	77.0	62.3	93.9
	Significance	ns	ns	ns
2009	Boys	88.8	57.6	89.3
	Girls	77.3	61.6	88.0
	Significance	p<0.001	ns	ns
2010	Boys	89.2	28.6	96.3
	Girls	88.1	33.5	96.3
	Significance	ns	ns	ns

Annex 11. Percentage of rural BRAC non-formal primary school students achieving English competencies by year

Year	Competencies		
	Reading	Writing	Listening
2000	74.4	18.9	67.9
2001	67.9	18.5	78.1
2002	76.2	10.7	79.8
2003	80.3	27.9	84.7
2004	75.7	15.0	75.7
2005	92.1	22.3	86.6
2006	79.5	25.3	84.2
2007	94.5	21.7	88.5
2008	79.8	20.4	79.0
2009	89.3	14.4	79.6
2010	95.3	6.5	87.3
Level of significance	p<0.001	p<0.001	p<0.001

Annex 12. Percentage of rural BRAC non-formal primary school students achieving English competencies by gender and year

Year	Gender	Competencies		
		Reading	Writing	Listening
2000	Boys	75.8	17.6	67.0
	Girls	73.7	19.4	68.6
	Significance	ns	ns	ns
2001	Boys	72.2	20.1	85.6
	Girls	65.4	17.5	73.9
	Significance	ns	ns	p<0.01
2002	Boys	79.9	12.0	81.3
	Girls	74.4	10.0	79.1
	Significance	ns	ns	ns
2003	Boys	79.2	25.2	81.7
	Girls	80.9	29.2	86.2
	Significance	ns	ns	ns
2004	Boys	76.3	15.3	75.8
	Girls	75.5	14.7	75.7
	Significance	ns	ns	ns
2005	Boys	93.2	20.5	88.2
	Girls	91.5	23.1	85.7
	Significance	p<0.05	p<0.05	p<0.01
2006	Boys	83.4	23.4	82.0
	Girls	77.5	26.3	85.3
	Significance	ns	ns	ns
2007	Boys	94.4	15.4	87.1
	Girls	94.5	24.8	89.2
	Significance	ns	p<0.01	ns
2008	Boys	79.3	20.1	75.6
	Girls	80.1	20.6	80.7
	Significance	ns	ns	ns
2009	Boys	88.1	13.4	81.4
	Girls	90.0	15.0	78.6
	Significance	ns	ns	ns
2010	Boys	95.8	4.9	85.3
	Girls	95.0	7.4	88.3
	Significance	ns	ns	ns

Annex 13. Percentage of rural BRAC non-formal primary school students achieving mathematics competencies by year

Year	Competencies				
	Basic number	Four basic rules	Problem solving	Measurement unit	Geometric figures
2000	78.9	82.0	39.4	46.8	53.0
2001	76.9	73.2	31.2	46.7	51.4
2002	78.9	75.8	36.2	43.9	59.6
2003	82.0	84.1	49.2	59.1	70.2
2004	72.7	73.1	37.0	45.8	61.7
2005	89.3	90.6	74.2	77.3	82.7
2006	83.0	74.8	31.2	47.5	71.5
2007	88.8	85.4	62.1	73.8	87.1
2008	83.3	76.0	45.0	56.2	86.1
2009	86.6	80.0	49.6	54.6	87.4
2010	92.7	83.7	69.4	62.3	87.7
Level of significance	p<0.001	p<0.001	p<0.001	p<0.001	p<0.001

Annex 14. Percentage of rural BRAC non-formal primary school students achieving mathematics competencies by gender and year

Year	Gender	Competencies				
		Basic number	Four basic rules	Problem solving	Measurement unit	Geometric figures
2000	Boys	80.8	83.5	43.4	48.9	53.3
	Girls	77.7	81.1	37.1	45.7	52.6
	Significance	ns	ns	ns	ns	ns
2001	Boys	78.0	78.0	32.1	48.8	54.5
	Girls	76.3	70.6	30.8	45.5	49.8
	Significance	ns	ns	ns	ns	ns
2002	Boys	79.4	81.3	44.0	52.2	67.9
	Girls	78.7	73.0	32.2	39.8	55.5
	Significance	ns	p<0.05	p<0.05	p<0.05	p<0.01
2003	Boys	85.4	86.6	56.0	64.1	72.0
	Girls	80.2	82.8	45.7	56.6	69.2
	Significance	p<0.05	ns	p<0.01	p<0.05	ns
2004	Boys	76.5	75.8	42.4	49.2	61.2
	Girls	70.8	71.7	34.3	44.2	61.9
	Significance	ns	ns	p<0.05	ns	ns
2005	Boys	91.0	92.2	77.6	80.5	84.1
	Girls	88.4	89.7	72.4	75.6	82.0
	Significance	p<0.01	p<0.01	p<0.001	p<0.001	p<0.05
2006	Boys	82.9	78.5	38.5	51.2	74.1
	Girls	83.0	72.9	27.3	45.6	70.1
	Significance	ns	ns	p<0.01	ns	ns
2007	Boys	88.6	87.8	66.8	79.0	88.9
	Girls	88.9	84.1	59.8	71.1	86.3
	Significance	ns	ns	p<0.05	p<0.01	ns
2008	Boys	83.6	81.3	52.5	62.9	87.3
	Girls	83.1	73.3	41.4	53.1	85.6
	Significance	ns	p<0.05	p<0.01	p<0.05	ns

(Annex 14 continued---)

(Continued Annex 14---)

2009	Boys	87.8	86.4	59.8	58.3	87.8
	Girls	85.8	76.6	44.1	52.6	87.3
	Significance	ns	p<0.001	p<0.001	ns	ns
2010	Boys	93.9	86.6	71.9	67.7	88.3
	Girls	92.1	82.1	68.0	59.3	87.3
	Significance	ns	ns	ns	p<0.05	ns

Annex 15. Percentage of rural BRAC non-formal primary school students achieving social studies competencies by year

Year	Competencies					
	Duties as family member	Duties as member of society	Duties as citizen of Bangladesh	Knowledge about the country	Manners with other people	Children of other countries
2000	80.0	86.2	66.8	51.5	84.5	48.5
2001	75.5	84.3	67.1	45.4	83.6	51.7
2002	79.3	85.7	93.6	41.1	77.6	45.0
2003	81.1	87.6	80.5	45.9	83.8	49.9
2004	84.2	86.9	72.2	56.8	82.8	59.4
2005	90.8	95.1	87.6	81.0	92.8	80.4
2006	88.2	90.2	75.7	58.0	85.8	40.3
2007	94.7	96.0	89.2	75.6	95.2	60.2
2008	93.0	93.0	84.8	44.5	90.5	42.5
2009	90.8	95.8	85.2	45.9	90.7	45.0
2010	91.0	94.1	86.9	67.2	92.2	47.0
Level of significance	p<0.001	p<0.001	p<0.001	p<0.001	p<0.001	p<0.001

Annex 16. Percentage of rural BRAC non-formal primary school students achieving social studies competencies by gender and year

Year	Gender	Competencies					
		Duties as family member	Duties as member of society	Duties as citizen of Bangladesh	Knowledge about the country	Manners with other people	Children of other countries
2000	Boys	83.0	91.2	68.7	54.9	84.6	50.5
	Girls	78.3	83.4	65.7	49.7	84.6	47.4
	Sig.	ns	p<0.05	ns	ns	ns	ns
2001	Boys	79.9	90.4	74.6	45.0	83.7	50.7
	Girls	73.0	81.0	63.0	45.5	83.4	52.1
	Sig.	ns	p<0.01	p<0.05	ns	ns	ns
2002	Boys	80.4	89.5	96.2	50.2	84.7	48.8
	Girls	78.7	83.9	92.4	36.5	73.9	43.1
	Sig.	ns	ns	ns	p<0.01	p<0.01	ns
2003	Boys	83.8	90.5	82.4	49.3	84.5	51.4
	Girls	79.8	86.0	79.5	44.1	83.4	49.2
	Sig.	ns	p<0.05	ns	ns	ns	ns
2004	Boys	81.8	89.7	78.2	61.2	81.1	58.5
	Girls	85.5	85.5	69.2	54.7	83.6	59.8
	Sig.	ns	ns	p<0.01	ns	ns	ns

(Annex 16 continued---)

(Continued Annex 16---)

2005	Boys	91.8	96.6	90.2	83.5	93.5	80.5
	Girls	90.2	94.3	86.3	79.7	92.4	80.4
	Sig.	p<0.05	p<0.001	p<0.001	p<0.001	ns	ns
2006	Boys	88.3	91.7	81.0	60.0	86.3	37.1
	Girls	88.1	89.4	72.9	57.0	85.6	42.0
	Sig.	ns	ns	p<0.05	ns	ns	ns
2007	Boys	94.7	95.9	92.7	75.2	95.7	57.2
	Girls	94.7	95.9	87.5	75.9	94.9	61.7
	Sig.	ns	ns	p<0.05	ns	ns	ns
2008	Boys	92.6	94.3	88.3	40.8	89.3	47.8
	Girls	93.3	92.3	83.1	46.3	91.1	39.9
	Sig.	ns	ns	ns	ns	ns	p<0.05
2009	Boys	91.8	96.3	89.1	46.4	87.8	44.4
	Girls	90.3	95.5	83.0	45.6	92.3	45.4
	Sig.	ns	ns	p<0.05	ns	p<0.05	ns
2010	Boys	91.4	95.6	89.0	61.6	93.9	49.4
	Girls	90.8	93.3	85.9	70.2	91.3	45.7
	Sig.	ns	ns	ns	p<0.05	ns	ns

Annex 17. Percentage of rural BRAC non-formal primary school students achieving general science competencies by year

Year	Competencies								
	Importance of good health	Physical and environmental health systems	Importance of balanced diet	Prevention of common diseases	Information collection ability	Observation skills on natural objects	Scientific investigation skills	Cause and effect relationships	Science and technology in everyday life
2000	89.9	84.2	67.6	61.7	83.4	78.9	65.1	71.0	58.0
2001	91.4	84.5	70.1	55.6	81.2	77.6	64.3	61.0	72.7
2002	90.7	85.7	70.0	54.4	86.5	76.5	67.0	63.3	73.9
2003	91.4	86.9	80.8	70.2	88.4	79.1	71.4	76.2	79.1
2004	90.8	88.6	74.8	57.3	90.5	76.7	72.6	78.8	78.3
2005	95.8	95.0	88.5	80.3	94.7	91.4	85.6	91.5	92.4
2006	91.2	90.8	83.3	71.0	88.8	80.5	72.7	82.3	67.7
2007	94.6	95.8	91.2	84.7	93.8	90.9	84.7	91.3	94.0
2008	91.6	93.4	87.2	73.0	91.5	85.0	80.4	78.7	93.4
2009	93.3	94.4	87.7	74.1	92.9	85.2	76.3	75.0	96.1
2010	93.8	94.6	83.8	76.0	92.6	87.0	75.1	71.9	95.2
Sig.	p<.001	p<.001	p<.001	p<.001	p<.001	p<.001	p<.001	p<.001	p<.001

Annex 18. Percentage of rural BRAC non-formal primary school students achieving general science competencies by gender and year

Year	Gender	Competencies								
		Importance of good health	Physical and environmental health systems	Importance of balanced diet	Prevention of common diseases	Information collection ability	Observation skills on natural objects	Scientific investigation skills	Cause and effect relationship	Science and technology in everyday life
2000	Boys	91.8	85.7	69.2	62.6	88.5	80.2	67.6	73.1	63.7
	Girls	88.6	83.4	66.9	61.1	80.6	78.3	63.4	69.7	54.9
	Sig.	ns	ns	ns	ns	p<0.05	ns	ns	ns	ns
2001	Boys	92.3	88.0	70.8	59.3	86.1	78.9	67.5	62.7	78.5
	Girls	91.0	82.5	69.7	53.6	78.7	76.8	62.6	60.2	69.7
	Sig.	ns	ns	ns	ns	p<0.05	ns	ns	ns	p<0.05
2002	Boys	94.3	90.0	76.1	56.9	91.4	77.0	71.8	73.2	78.5
	Girls	89.1	83.4	66.8	53.1	83.9	76.3	64.5	58.3	71.6
	Sig.	ns	p<0.05	p<0.05	ns	p<0.05	ns	ns	p<0.01	ns
2003	Boys	92.4	88.7	81.7	69.2	91.7	77.8	73.1	75.9	78.7
	Girls	90.8	86.0	80.2	70.6	86.7	79.8	70.6	76.3	79.3
	Sig.	ns	ns	ns	ns	p<0.05	ns	ns	ns	ns
2004	Boys	93.8	89.9	76.5	54.7	88.7	75.3	73.9	77.5	77.5
	Girls	89.3	87.9	73.8	58.6	91.4	77.3	72.0	79.4	78.7
	Sig.	p<.05	ns	ns	ns	ns	ns	ns	ns	ns
2005	Boys	97.0	95.5	90.1	82.2	95.5	91.2	88.7	93.1	93.6
	Girls	95.2	94.7	87.7	79.3	94.3	91.5	84.1	90.7	91.7
	Sig.	p<.01	ns	p<0.01	p<0.01	ns	ns	p<.001	p<0.01	p<0.01
2006	Boys	90.2	93.7	84.4	69.8	89.8	83.9	74.6	82.0	67.3
	Girls	91.6	89.4	82.8	71.6	88.4	78.7	71.6	82.5	67.8
	Sig.	ns	ns	ns	ns	ns	ns	ns	ns	ns
2007	Boys	96.5	97.0	90.9	86.8	92.9	92.4	88.6	93.2	94.4
	Girls	93.7	95.2	91.3	83.6	94.2	90.1	82.7	90.4	93.7
	Sig.	ns	ns	ns	ns	ns	ns	p<0.05	ns	ns
2008	Boys	94.6	93.0	87.3	73.6	92.6	88.6	81.3	83.3	94.3
	Girls	90.2	93.6	87.1	72.7	90.8	83.1	80.1	76.4	92.9
	Sig.	p<.05	ns	ns	ns	ns	p<.05	ns	p<0.05	ns
2009	Boys	95.5	94.3	88.3	72.7	92.6	86.8	79.7	81.1	96.8
	Girls	92.0	94.5	87.3	74.8	93.0	84.3	74.6	71.6	95.8
	Sig.	p<.05	ns	ns	ns	ns	ns	ns	p<0.01	ns
2010	Boys	93.2	95.1	82.9	76.3	93.9	86.8	77.8	76.8	95.6
	Girls	94.3	94.3	84.4	75.9	91.8	87.1	73.7	69.2	95.0
	Sig.	ns	ns	ns	ns	ns	ns	ns	p<0.05	ns

Annex 19. Percentage of rural BRAC non-formal primary school students achieving a competency in religious studies by year and sex

Year	Sex		Both	Level of significance
	Boys	Girls		
2000	34.1	30.3	31.5	ns
2001	36.4	28.4	31.2	ns
2002	34.9	19.0	24.3	p<0.001
2003	33.3	32.9	33.1	ns
2004	21.3	15.4	17.4	p<0.05
2005	39.5	45.0	43.1	p<0.001
2006	25.9	16.7	19.8	p<0.01
2007	25.8	24.8	25.1	ns
2008	5.4	8.0	7.1	ns
2009	8.2	5.5	6.5	ns
2010	22.2	18.9	20.0	ns
Level of significance	p<0.001	p<0.001	p<0.001	

Annex 20. Performance of rural BRAC non-formal primary school students according to the taxonomic class level of items by gender and year

Year	Boys				Girls			
	Knowledge (45)		Understanding (19)		Knowledge (45)		Understanding (19)	
	Mean	%	Mean	%	Mean	%	Mean	%
2000	27.3	60.7	9.1	47.9	26.5	58.9	8.6	45.3
2001	26.5	58.9	8.2	43.2	24.6	54.7	7.5	39.5
2002	27.6	61.3	8.7	45.8	25.0	55.6	7.4	38.9
2003	29.2	64.9	9.8	51.6	28.3	62.9	9.3	48.9
2004	27.7	61.6	8.8	46.3	27.0	60.0	8.1	42.6
2005	35.4	78.7	12.5	65.8	34.7	77.1	12.2	64.2
2006	29.1	64.7	8.9	46.8	28.4	63.1	8.1	42.6
2007	35.0	77.8	11.3	59.5	34.4	76.4	10.7	56.3
2008	29.7	66.0	9.1	47.9	29.3	65.1	8.6	45.3
2009	31.0	68.9	9.4	49.5	29.9	66.4	8.4	44.2
2010	31.7	70.4	9.7	51.1	31.0	68.9	9.0	47.4

Figures in parentheses indicates number of question items

Annex 21. Distribution of competencies achieved by the students of BRAC non-formal primary schools by performance level, gender, area and year

Level of performance	Rural		Urban	
	2000	2008	2000	2008
Boys				
Poor	2	2	3	2
Mediocre	5	4	3	4
Satisfactory	10	5	10	4
Excellent	10	16	11	17
Total	27	27	27	27
Girls				
Poor	3	3	3	2
Mediocre	5	3	5	1
Satisfactory	12	5	11	5
Excellent	7	16	8	19
Total	27	27	27	27

Annex 22. Percentage of the students of BRAC non-formal primary schools achieving Bangla competencies by year and area

Competencies	Year	Area		Level of significance
		Rural	Urban	
Reading	2000	71.0	76.6	ns
	2008	76.8	85.3	p<0.001
	Significance	p<0.05	p<0.01	
Writing	2000	72.4	69.4	ns
	2008	60.3	66.8	p<0.05
	Significance	p<0.001	ns	
Listening	2000	82.5	89.8	p<0.01
	2008	94.2	92.9	ns
	Significance	p<0.001	ns	

Annex 23. Percentage of the students of BRAC non-formal primary schools achieving English competencies by year and area

Competencies	Year	Area		Level of significance
		Rural	Urban	
Reading	2000	74.4	76.0	ns
	2008	79.8	88.7	p<0.001
	Significance	p<0.05	p<0.001	
Writing	2000	18.9	13.5	ns
	2008	20.4	26.2	p<0.05
	Significance	ns	p<0.001	
Listening	2000	67.9	75.1	p<0.05
	2008	79.0	86.9	p<0.001
	Significance	p<0.001	p<0.001	

Annex 24. Percentage of the students of BRAC non-formal primary schools achieving mathematics competencies by year and area

Competencies	Year	Area		Level of significance
		Rural	Urban	
Basic number	2000	78.9	81.4	ns
	2008	83.3	86.2	ns
	Significance	ns	p<0.05	
Four basic rules	2000	82.0	78.7	ns
	2008	76.0	81.2	p<0.05
	Significance	p<0.05	ns	
Problem solving	2000	39.4	34.5	ns
	2008	45.0	58.9	p<0.001
	Significance	ns	p<0.001	
Measurement unit	2000	46.8	51.4	ns
	2008	56.2	62.7	p<0.05
	Significance	p<0.01	p<0.01	
Geometric figures	2000	53.0	56.8	ns
	2008	86.1	86.5	ns
	Significance	p<0.001	p<0.001	

Annex 25. Percentage of the students of BRAC non-formal primary schools achieving social studies by year and area

Competencies	Year	Area		Level of significance
		Rural	Urban	
Duties as family member	2000	80.0	80.8	ns
	2008	93.0	95.2	ns
	Significance	p<0.001	p<0.001	
Duties as member of society	2000	86.2	87.7	ns
	2008	93.0	96.1	p<0.05
	Significance	p<0.001	p<0.001	
Duties as citizen of Bangladesh	2000	66.8	79.3	p<0.001
	2008	84.8	88.7	p<0.05
	Significance	p<0.001	p<0.001	
Knowledge about the country	2000	51.5	61.0	p<0.05
	2008	44.5	57.1	p<0.001
	Significance	p<0.05	ns	
Manners with other people	2000	84.5	87.7	ns
	2008	90.5	94.7	p<0.01
	Significance	p<0.01	p<0.001	
Children of other countries	2000	48.5	55.3	ns
	2008	42.5	60.0	p<0.001
	Significance	ns	ns	

Annex 26. Percentage of the students of BRAC non-formal primary schools achieving general science competencies by year and area

Competencies	Year	Area		Level of significance
		Rural	Urban	
Importance of good health	2000	89.9	95.5	p<0.01
	2008	91.6	95.5	p<0.01
	Significance	ns	ns	
Physical and environmental health systems	2000	84.2	90.1	p<0.05
	2008	93.4	95.6	ns
	Significance	p<0.001	p<0.01	
Importance of balanced diet	2000	67.6	76.3	p<0.05
	2008	87.2	92.8	p<0.01
	Significance	p<0.001	p<0.001	
Prevention of common diseases	2000	61.7	70.3	p<0.05
	2008	73.0	81.8	p<0.001
	Significance	p<0.001	p<0.001	
Information collection ability	2000	83.4	88.0	ns
	2008	91.5	95.0	p<0.05
	Significance	p<0.001	p<0.001	
Observation skills on natural objects	2000	78.9	86.8	p<0.01
	2008	85.0	92.8	p<0.001
	Significance	p<0.05	p<0.01	
Scientific investigation skills	2000	65.1	72.2	p<0.05
	2008	80.4	77.1	ns
	Significance	p<0.001	ns	
Cause and effect relationship	2000	71.0	60.8	p<0.01
	2008	78.7	83.3	ns
	Significance	p<0.01	p<0.001	
Science and technology in everyday life	2000	58.0	59.8	ns
	2008	93.4	97.1	p<0.01
	Significance	p<0.001	p<0.001	

Annex 27. Percentage of the students of BRAC non-formal primary schools achieving a competency in religious studies by year and area

Competencies	Year	Area		Level of significance
		Rural	Urban	
Knowledge on life history of prophet Mohammed (SM) or the preachers of own religion	2000	31.5	23.4	p<0.05
	2008	7.1	12.9	p<0.001
	Significance	p<0.001	p<0.001	

Annex 28. Percentage of the students of BRAC non-formal primary schools achieving Bangla competencies by gender, area and year

Competencies	Gender	Rural		Urban	
		2000	2008	2000	2008
Reading	Boys	76.9	76.3	78.3	83.8
	Girls	67.4	77.0	75.6	85.9
	Significance	p<0.05	ns	ns	ns
Writing	Boys	71.4	56.2	74.5	62.2
	Girls	73.1	62.3	66.9	68.7
	Significance	ns	ns	ns	ns
Listening	Boys	84.1	95.0	90.4	92.1
	Girls	81.7	93.9	89.5	93.2
	Significance	ns	ns	ns	ns

Annex 29. Percentage of the students of BRAC non-formal primary schools achieving English competencies by gender, area and year

Competencies	Gender	Rural		Urban	
		2000	2008	2000	2008
Reading	Boys	75.8	79.3	76.4	88.7
	Girls	73.7	80.1	75.6	88.7
	Significance	ns	ns	ns	ns
Writing	Boys	17.6	20.1	15.3	14.1
	Girls	19.4	20.6	12.8	31.5
	Significance	ns	ns	ns	p<0.001
Listening	Boys	67.0	75.6	79.6	84.2
	Girls	68.6	80.7	72.7	88.2
	Significance	ns	ns	ns	ns

Annex 30. Percentage of the students of BRAC non-formal primary schools achieving mathematics competencies by gender, area and year

Competencies	Gender	Rural		Urban	
		2000	2008	2000	2008
Basic number	Boys	80.8	83.6	87.3	84.9
	Girls	77.7	83.1	78.5	86.8
	Significance	ns	ns	p<0.05	ns
Four basic rules	Boys	83.5	81.3	83.4	79.7
	Girls	81.1	73.3	76.2	82.0
	Significance	ns	p<0.05	Ns	ns
Problem solving	Boys	43.4	52.5	39.5	59.1
	Girls	37.1	41.4	32.0	58.9
	Significance	ns	p<0.01	Ns	ns
Measurement unit	Boys	48.9	62.9	58.6	59.8
	Girls	45.7	53.1	47.7	63.9
	Significance	ns	p<0.05	p<0.05	ns
Geometric figures	Boys	53.3	87.3	63.1	86.9
	Girls	52.6	85.6	53.5	86.2
	Significance	ns	ns	Ns	ns

Annex 31. Percentage of the students of BRAC non-formal primary schools achieving social studies competencies by gender, area and year

Competencies	Gender	Rural		Urban	
		2000	2008	2000	2008
Duties as family member	Boys	83.0	92.6	82.2	94.5
	Girls	78.3	93.3	80.2	95.5
	Significance	ns	ns	ns	ns
Duties as member of society	Boys	91.2	94.3	91.7	95.5
	Girls	83.4	92.3	85.5	96.3
	Significance	p<0.05	ns	ns	ns
Duties as citizen of Bangladesh	Boys	68.7	88.3	80.9	86.9
	Girls	65.7	83.1	78.5	89.6
	Significance	ns	ns	ns	ns
Knowledge about the country	Boys	54.9	40.8	67.5	47.4
	Girls	49.7	46.3	57.6	61.4
	Significance	ns	ns	ns	p<0.001
Manners with other people	Boys	84.6	89.3	91.7	92.4
	Girls	84.6	91.1	85.5	95.8
	Significance	ns	ns	ns	ns
Children of other countries	Boys	50.5	47.8	51.6	56.7
	Girls	47.4	39.9	57.0	61.4
	Significance	ns	p<0.05	ns	ns

Annex 32. Percentage of the students of BRAC non-formal primary schools achieving general science competencies by gender, area and year

Competencies	Gender	Rural		Urban	
		2000	2008	2000	2008
Importance of good health	Boys	91.8	94.6	96.8	93.5
	Girls	88.6	90.2	94.8	96.3
	Significance	ns	p<0.05	ns	ns
Physical and environmental health systems	Boys	85.7	93.0	90.4	95.5
	Girls	83.4	93.6	90.1	95.8
	Significance	ns	ns	ns	ns
Importance of balanced diet	Boys	69.2	87.3	75.8	90.0
	Girls	66.9	87.1	76.7	94.1
	Significance	ns	ns	ns	ns
Prevention of common diseases	Boys	62.6	73.6	73.2	78.7
	Girls	61.1	72.7	68.6	83.1
	Significance	ns	ns	ns	ns
Information collection ability	Boys	88.5	92.6	93.0	94.2
	Girls	80.6	90.8	85.5	95.5
	Significance	p<0.05	ns	p<0.05	ns
Observation skills on natural objects	Boys	80.2	88.6	89.8	90.7
	Girls	78.3	83.1	85.5	93.8
	Significance	ns	p<0.05	ns	ns
Scientific investigation skills	Boys	67.6	81.3	71.3	76.3
	Girls	63.4	80.1	72.7	77.5
	Significance	ns	ns	ns	ns
Cause and effect relationship	Boys	73.1	83.3	63.7	85.2
	Girls	69.7	76.4	59.3	82.5
	Significance	ns	p<0.05	ns	ns

(Annex 32 continued---)

(Continued Annex 32---)

Science and technology in everyday life	Boys	63.7	94.3	53.5	96.2
	Girls	54.9	92.9	62.8	97.5
	Significance	ns	ns	ns	ns

Annex 33. Percentage of the students of BRAC non-formal primary schools achieving a competency in religious studies by gender, area and year

Competency	Gender	Rural		Urban	
		2000	2008	2000	2008
Knowledge on life history of prophet Mohammed (SM) or the preachers of own religion	Boys	34.1	5.4	31.8	13.4
	Girls	30.3	8.0	19.2	12.7
	Significance	ns	ns	p<0.01	ns

Annex 34. Distribution of competencies achieved by the students of rural BRAC and government schools by performance level, school type and year

Level of performance	BRAC primary school			Government primary school		
	2000	2006	2008	2000	2006	2008
Boys						
Poor	2	4	2	4	2	3
Mediocre	5	1	4	9	5	3
Satisfactory	10	8	5	12	6	6
Excellent	10	14	16	2	14	15
Total	27	27	27	27	27	27
Girls						
Poor	3	3	3	6	4	3
Mediocre	5	3	3	9	4	5
Satisfactory	12	10	5	12	12	10
Excellent	7	11	16	0	7	9
Total	27	27	27	27	27	27

Annex 35. Percentage of students achieving Bangla competencies by school type and year

Competencies	School type	Year			Level of significance
		2000	2006	2008	
Reading	BRAC	71.0	72.8	76.8	ns
	Government	63.1	73.7	72.4	p<0.01
	Significance	p<0.05	ns	ns	
Writing	BRAC	72.4	68.5	60.3	p<0.001
	Government	53.6	54.7	60.1	ns
	Significance	p<0.001	p<0.001	ns	
Listening	BRAC	82.5	87.8	94.2	p<0.001
	Government	78.2	80.9	86.6	p<0.01
	Significance	ns	p<0.01	p<0.001	

Annex 36. Percentage of students achieving Bangla competencies by gender, school type and year

Competencies	Gender	BRAC primary school			Govt. primary school		
		2000	2006	2008	2000	2006	2008
Reading	Boys	76.9	78.5	76.3	67.3	79.2	77.3
	Girls	67.4	69.9	77.0	58.8	68.4	67.7
	Significance	p<0.05	p<0.05	ns	ns	p<0.01	p<0.01
Writing	Boys	71.4	71.7	56.2	57.2	55.6	61.8
	Girls	73.1	66.8	62.3	50.0	53.9	58.4
	Significance	ns	ns	ns	ns	ns	ns
Listening	Boys	84.1	88.8	95.0	79.3	82.0	91.1
	Girls	81.7	87.3	93.9	77.0	79.8	82.3
	Significance	ns	ns	ns	ns	ns	p<0.01

Annex 37. Percentage of students achieving English competencies by school type and year

Competencies	School type	Year			Level of significance
		2000	2006	2008	
Reading	BRAC	74.4	79.5	79.8	ns
	Government	52.2	79.5	75.4	p<0.001
	Significance	p<0.001	ns	ns	
Writing	BRAC	18.9	25.3	20.4	p<0.05
	Government	3.4	13.4	9.3	p<0.001
	Significance	p<0.001	p<0.001	p<0.001	
Listening	BRAC	67.9	84.2	79.0	p<0.001
	Government	73.5	80.0	83.5	p<0.001
	Significance	ns	ns	p<0.05	

Annex 38. Percentage of students achieving English competencies by gender, school type and year

Competencies	Gender	BRAC primary school			Government primary school		
		2000	2006	2008	2000	2006	2008
Reading	Boys	75.8	83.4	79.3	52.4	81.0	82.6
	Girls	73.7	77.5	80.1	52.0	78.1	68.6
	Significance	ns	ns	ns	ns	ns	p<.001
Writing	Boys	17.6	23.4	20.1	1.9	14.4	10.5
	Girls	19.4	26.3	20.6	4.9	12.5	8.1
	Significance	ns	ns	ns	ns	ns	ns
Listening	Boys	67.0	82.0	75.6	70.7	83.5	85.5
	Girls	68.6	85.3	80.7	76.5	76.8	81.7
	Significance	ns	ns	ns	ns	p<0.05	ns

Annex 39. Percentage of students achieving mathematics competencies by school type and year

Competencies	School type	Year			Level of significance
		2000	2006	2008	
Basic number	BRAC	78.9	83.0	83.3	ns
	Government	68.9	81.2	81.6	p<0.001
	Significance	p<0.01	ns	ns	
Four basic rules	BRAC	82.0	74.8	76.0	p<0.05
	Government	39.6	58.9	57.2	p<0.001
	Significance	p<0.001	p<0.001	p<0.001	
Problem solving	BRAC	39.4	31.2	45.0	p<0.001
	Government	22.8	33.4	32.3	p<0.01
	Significance	p<0.001	ns	p<0.001	
Measurement unit	BRAC	46.8	47.5	56.2	p<0.01
	Government	42.7	44.1	49.8	p<0.05
	Significance	ns	ns	p<0.05	
Geometric figures	BRAC	53.0	71.5	86.1	p<0.001
	Government	50.7	74.0	82.4	p<0.001
	Significance	ns	ns	ns	

Annex 40. Percentage of students achieving mathematics competencies by gender, school type and year

Competencies	Gender	BRAC primary school			Govt. primary school		
		2000	2006	2008	2000	2006	2008
Basic number	Boys	80.8	82.9	83.6	71.2	83.1	84.5
	Girls	77.7	83.0	83.1	66.7	79.5	78.9
	Significance	ns	ns	ns	ns	ns	ns
Four basic rules	Boys	83.5	78.5	81.3	48.1	66.5	64.1
	Girls	81.1	72.9	73.3	30.9	51.5	50.6
	Significance	ns	ns	p<0.05	p<.001	p<.001	p<0.01
Problem solving	Boys	43.4	38.5	52.5	26.0	41.9	36.2
	Girls	37.1	27.3	41.4	19.6	25.3	28.6
	Significance	ns	p<0.01	p<0.01	ns	p<.001	p<0.05
Measurement unit	Boys	48.9	51.2	62.9	47.6	51.8	50.3
	Girls	45.7	45.6	53.1	37.7	36.7	49.4
	Significance	ns	ns	p<0.05	p<0.05	p<.001	ns
Geometric figures	Boys	53.3	74.1	87.3	53.8	78.9	86.8
	Girls	52.6	70.1	85.6	47.5	69.4	78.3
	Significance	ns	ns	ns	ns	p<0.01	p<0.01

Annex 41. Percentage of students achieving social studies by school type and year

Competencies	School type	Year			Level of significance
		2000	2006	2008	
Duties as family member	BRAC	80.0	88.2	93.0	p<0.001
	Government	67.0	82.8	86.3	p<0.001
	Significance	p<0.001	p<0.01	p<0.001	
Duties as member of society	BRAC	86.2	90.2	93.0	p<0.01
	Government	79.6	93.3	89.9	p<0.001
	Significance	p<0.05	ns	p<0.05	
Duties as citizen of Bangladesh	BRAC	66.8	75.7	84.8	p<0.001
	Government	60.7	79.3	77.5	p<0.001
	Significance	ns	ns	p<0.01	
Knowledge about the country	BRAC	51.5	58.0	44.5	p<0.001
	Government	36.2	44.2	42.8	p<0.05
	Significance	p<0.001	p<0.001	ns	
Manners with other people	BRAC	84.5	85.8	90.5	p<0.01
	Government	73.5	83.1	86.4	p<0.001
	Significance	p<0.001	ns	p<0.05	
Children of other countries	BRAC	48.5	40.3	42.5	p<0.05
	Government	50.0	46.5	49.4	ns
	Significance	ns	p<0.05	p<0.05	

Annex 42. Percentage of students achieving social studies competencies by gender, school type and year

Competencies	Gender	BRAC primary school			Govt. primary school		
		2000	2006	2008	2000	2006	2008
Duties as family member	Boys	83.0	88.3	92.6	70.7	82.7	89.8
	Girls	78.3	88.1	93.3	63.2	82.8	82.9
	Significance	ns	ns	ns	ns	ns	p<0.05
Duties as member of society	Boys	91.2	91.7	94.3	85.1	95.1	94.4
	Girls	83.4	89.4	92.3	74.0	91.6	85.7
	Significance	p<0.05	ns	ns	p<0.01	ns	p<.001
Duties as citizen of Bangladesh	Boys	68.7	81.0	88.3	68.8	83.8	84.9
	Girls	65.7	72.9	83.1	52.5	75.1	70.5
	Significance	ns	p<0.05	ns	p<0.01	p<0.01	p<.001
Knowledge about the country	Boys	54.9	60.0	40.8	38.5	47.5	42.1
	Girls	49.7	57.0	46.3	33.8	41.1	43.5
	Significance	ns	ns	ns	ns	ns	ns
Manners with other people	Boys	84.6	86.3	89.3	77.9	85.6	84.5
	Girls	84.6	85.6	91.1	69.1	80.8	88.2
	Significance	ns	ns	ns	p<0.05	ns	ns
Children of other countries	Boys	50.5	37.1	47.8	54.8	48.2	48.0
	Girls	47.4	42.0	39.9	45.1	44.8	50.6
	Significance	ns	ns	p<0.05	p<0.05	ns	ns

Annex 43. Percentage of students achieving general science competencies by school type and year

Competencies	School type	Year			Level of significance
		2000	2006	2008	
Importance of good health	BRAC	89.9	91.2	91.6	ns
	Government	79.4	93.6	88.2	p<0.001
	Significance	p<0.001	ns	p<0.05	
Physical and environmental health systems	BRAC	84.2	90.8	93.4	p<0.001
	Government	70.4	88.8	88.8	p<0.001
	Significance	p<0.001	ns	p<0.01	
Importance of balanced diet	BRAC	67.6	83.3	87.2	p<0.001
	Government	56.8	80.0	80.0	p<0.001
	Significance	p<0.01	ns	p<0.01	
Prevention of common diseases	BRAC	61.7	71.0	73.0	p<0.01
	Government	50.7	70.1	69.3	p<0.001
	Significance	p<0.01	ns	ns	
Information collection ability	BRAC	83.4	88.8	91.5	p<0.01
	Government	75.0	90.9	90.4	p<0.001
	Significance	p<0.01	ns	ns	
Observation skills on natural objects	BRAC	78.9	80.5	85.0	p<0.05
	Government	73.1	79.2	82.4	p<0.01
	Significance	ns	ns	ns	
Scientific investigation skills	BRAC	65.1	72.7	80.4	p<0.001
	Government	62.1	75.6	74.0	p<0.001
	Significance	ns	ns	p<0.01	
Cause and effect relationship	BRAC	71.0	82.3	78.7	p<0.001
	Government	52.7	69.7	68.1	p<0.001
	Significance	p<0.001	p<0.001	p<0.001	
Science and technology in everyday life	BRAC	58.0	67.7	93.4	p<0.001
	Government	68.0	85.2	87.4	p<0.001
	Significance	p<0.01	p<0.001	p<0.001	

Annex 44. Percentage of students achieving general science competencies by gender, school type and year

Competencies	Gender	BRAC primary school			Govt. primary school		
		2000	2006	2008	2000	2006	2008
Importance of good health	Boys	91.8	90.2	94.6	81.7	93.3	89.8
	Girls	88.6	91.6	90.2	77.0	93.9	86.6
	Sig.	ns	ns	p<0.05	ns	ns	ns
Physical and environmental health systems	Boys	85.7	93.7	93.0	75.5	90.5	92.1
	Girls	83.4	89.4	93.6	65.2	87.2	85.7
	Sig.	ns	ns	ns	p<0.05	ns	p<0.05
Importance of balanced diet	Boys	69.2	84.4	87.3	59.6	81.7	83.9
	Girls	66.9	82.8	87.1	53.9	78.5	76.4
	Sig.	ns	ns	ns	ns	ns	p<0.05
Prevention of common diseases	Boys	62.6	69.8	73.6	48.6	69.4	72.7
	Girls	61.1	71.6	72.7	52.9	70.7	66.1
	Sig.	ns	ns	ns	ns	ns	ns
Information collection ability	Boys	88.5	89.8	92.6	73.6	91.2	91.8
	Girls	80.6	88.4	90.8	76.5	90.6	89.1
	Sig.	p<0.05	ns	ns	ns	ns	ns

(Annex 44 continued---)

(Continued Annex 44---)

Observation skills on natural objects	Boys	80.2	83.9	88.6	75.0	80.3	85.5
	Girls	78.3	78.7	83.1	71.1	78.1	79.5
	Sig.	ns	ns	p<0.05	ns	ns	p<0.05
Scientific investigation skills	Boys	67.6	74.6	81.3	63.9	77.8	76.6
	Girls	63.4	71.6	80.1	60.3	73.4	71.4
	Sig.	ns	ns	ns	ns	ns	ns
Cause and effect relationship	Boys	73.1	82.0	83.3	58.7	73.2	74.0
	Girls	69.7	82.5	76.4	46.6	66.3	62.4
	Sig.	ns	ns	p<0.05	p<0.05	ns	p<0.01
Science and technology in everyday life	Boys	63.7	67.3	94.3	70.2	85.6	90.1
	Girls	54.9	67.8	92.9	65.7	84.8	84.8
	Sig.	ns	ns	ns	ns	ns	p<0.05

Annex 45. Percentage of students achieving a competency in religious studies by school type and year

Competencies	School type	Year			Level of significance
		2000	2006	2008	
Knowledge on life history of prophet Mohammed (SM) or the preachers of own religion	BRAC	31.5	19.8	7.1	p<0.001
	Government	16.0	25.5	10.9	p<0.001
	Significance	p<0.001	p<0.05	p<0.05	

Annex 46. Percentage of students achieving a competency in religious studies by gender, school type and year

Competencies	Gender	BRAC primary school			Govt. primary school		
		2000	2006	2008	2000	2006	2008
Knowledge on life history of prophet Mohammed (SM) or the preachers of own religion	Boys	34.1	25.9	5.4	20.2	26.8	8.6
	Girls	30.3	16.7	8.0	11.8	24.2	13.0
	Sig.	ns	p<0.01	ns	p<0.05	ns	ns

Annex 47. Distribution of competencies achieved by the students of BSEM and BNFPS by performance level and gender, 2007

Level of performance	BNFPS		BSEM	
	Boys	Girls	Boys	Girls
Poor	2	2	2	2
Mediocre	1	1	3	3
Satisfactory	4	4	5	7
Excellent	20	20	17	15
Total	27	27	27	27

Annex 48. Percentage of the students of BSEM and BNFPS achieving Bangla competencies, 2007

Competencies	School type		Level of significance
	BNFPS	BSEM	
Reading	87.7	84.0	p<0.05
Writing	66.1	52.6	p<0.001
Listening	95.5	81.9	p<0.001

Annex 49. Percentage of the students of BSEM and BNFPS achieving English competencies, 2007

Competencies	School type		Level of significance
	BNFPS	BSEM	
Reading	94.5	89.7	p<0.001
Writing	21.7	6.2	p<0.001
Listening	88.5	76.7	p<0.001

Annex 50. Percentage of the students of BSEM and BNFPS achieving mathematics competencies, 2007

Competencies	School type		Level of significance
	BNFPS	BSEM	
Basic number	88.8	87.0	ns
Four basic rules	85.4	75.6	p<0.001
Word problem solving	62.1	46.9	p<0.001
Measurement unit	73.8	68.8	p<0.05
Geometric figures	87.1	88.6	ns

Annex 51. Percentage of the students of BSEM and BNFPS achieving social studies competencies, 2007

Competencies	School type		Level of significance
	BNFPS	BSEM	
Duties as family members	94.7	92.9	ns
Duties as member of society	96.0	91.3	p<0.001
Duties as citizen of Bangladesh	89.2	78.8	p<0.001
Knowledge about the country	75.6	74.6	ns
Manners with other people	95.2	90.6	p<0.001
Children of other countries	60.2	55.8	ns

Annex 52. Percentage of the students of BSEM and BNFPS achieving general science competencies, 2007

Competencies	School type		Level of significance
	BNFPS	BSEM	
Importance of good health	94.6	91.7	p<0.05
Physical and environmental health systems	95.8	92.2	p<0.01
Importance of balanced diet	91.2	86.9	p<0.01
Prevention of common diseases	84.7	70.1	p<0.001
Information collection ability	93.8	89.1	p<0.01
Observation skills on natural objects	90.9	88.1	ns
Scientific investigation skills	84.7	74.5	p<0.001
Cause and effect relationship	91.3	83.7	p<0.001
Science and technology in everyday life	94.0	92.6	ns
All nine	59.2	41.6	p<0.001

Annex 53. Percentage of the students of BSEM and BNFPS achieving a competency in religious studies, 2007

Competency	School type		Level of significance
	BNFPS	BSEM	
Knowledge on life history of prophet Mohammed (SM) or the preachers of own religion	25.1	4.2	p<0.001

Annex 54. Percentage of the students of BSEM and BNFPS achieving Bangla competencies by gender, 2007

Competencies	BNFPS			BSEM		
	Boys	Girls	Significance	Boys	Girls	Significance
Reading	91.9	85.5	p<0.01	83.1	84.9	ns
Writing	66.6	65.8	ns	54.3	51.2	ns
Listening	97.0	94.7	ns	83.6	80.5	ns

Annex 55. Percentage of the students of BSEM and BNFPS achieving English competencies by gender, 2007

Competencies	Bangali			Ethnic minority		
	Boys	Girls	Significance	Boys	Girls	Significance
Reading	94.4	94.5	ns	89.4	90.0	ns
Writing	15.4	24.8	p<0.01	5.1	7.1	ns
Listening	87.1	89.2	ns	78.8	75.1	ns

Annex 56. Percentage of the students of BSEM and BNFPS achieving mathematics competencies by gender, 2007

Competencies	BNFPS			BSEM		
	Boys	Girls	Sig.	Boys	Girls	Sig.
Basic number	88.6	88.9	ns	87.1	86.8	ns
Four basic rules	87.8	84.1	ns	78.0	73.7	ns
Problem solving	66.8	59.8	p<0.05	51.3	43.4	p<0.05
Measurement unit	79.0	71.1	p<0.01	72.7	65.6	p<0.05
Geometric figures	88.9	86.3	ns	92.2	85.9	p<0.01

Annex 57. Percentage of the students of BSEM and BNFPS achieving social studies competencies by gender, 2007

Competencies	BNFPS			BSEM		
	Boys	Girls	Sig.	Boys	Girls	Sig.
Duties as family members	94.7	94.7	ns	93.7	92.4	ns
Duties as member of society	95.9	95.9	ns	91.9	91.0	ns
Duties as citizen of Bangladesh	92.7	87.5	p<.05	82.3	76.1	p<.05
Knowledge about the country	75.2	75.9	ns	76.3	73.4	ns
Manners with other people	95.7	94.9	ns	93.2	88.5	p<.05
Children of other countries	57.2	61.7	ns	53.8	57.3	ns

Annex 58. Percentage of the students of BSEM and BNFPS achieving general science competencies by gender

Competencies	BNFPS			BSEM		
	Boys	Girls	Sig.	Boys	Girls	Sig.
Importance of good health	96.5	93.7	ns	91.9	91.5	ns
Physical and environmental health systems	97.0	95.2	ns	92.9	91.7	ns
Importance of balanced diet	90.9	91.3	ns	89.4	84.9	ns
Prevention of common diseases	86.8	83.6	ns	74.0	67.1	p<0.05
Information collection ability	92.9	94.2	ns	91.2	87.6	ns
Observation skills on natural objects	92.4	90.1	ns	90.2	86.6	ns
Scientific investigation skills	88.6	82.7	p<0.05	80.6	69.8	p<.001
Cause and effect relationship	93.2	90.4	ns	88.4	80.0	p<0.01
Science and technology in everyday life	94.4	93.7	ns	95.2	90.5	p<0.01

Annex 59. Percentage of the students of BSEM and BNFPS achieving religious studies competencies by gender, 2007

Competencies	BNFPS			BSEM		
	Boys	Girls	Sig.	Boys	Girls	Sig.
Knowledge on life history of prophet Mohammed (SM) or the preachers of own religion	25.8	24.8	ns	3.3	4.9	ns

Annex 60. Distribution of competencies achieved by the students of BRAC community and formal schools by performance level, 2004

Level of performance	Community		Formal	
	Boys	Girls	Boys	Girls
Poor	2	3	2	4
Mediocre	3	3	3	1
Satisfactory	14	14	3	6
Excellent	8	7	19	16
Total	27	27	27	27

Annex 61. Percentage of BRAC community and formal school students achieving Bangla competencies, 2004

Competencies	School type		Level of significance
	Community	Formal	
Reading	77.0	82.8	ns
Writing	73.8	85.1	p<0.001
Listening	82.4	91.8	p<0.001

Annex 62. Percentage of BRAC community and formal school students achieving English competencies, 2004

Competencies	School type		Level of significance
	Community	Formal	
Reading	71.0	89.8	p<0.001
Writing	17.6	23.0	ns
Listening	74.1	86.6	p<0.001

Annex 63. Percentage of BRAC community and formal school students achieving mathematics competencies, 2004

Competencies	School type		Level of significance
	Community	Formal	
Basic number	75.3	81.0	ns
Four basic rules	74.3	71.1	ns
Word problem solving	46.4	44.0	ns
Measurement unit	53.3	40.8	p<0.01
Geometric figures	75.5	79.9	ns

Annex 64. Percentage of BRAC community and formal school students achieving social studies competencies, 2004

Competencies	School type		Level of significance
	Community	Formal	
Duties as family members	75.5	87.8	p<0.001
Duties as member of society	90.9	94.8	p<0.05
Duties as citizen of Bangladesh	73.1	86.6	p<0.001
Knowledge about the country	35.1	42.9	p<0.05
Manners with other people	85.4	89.2	ns
Children of other countries	72.6	79.9	p<0.05

Annex 65. Percentage of BRAC community and formal school students achieving general science competencies, 2004

Competencies	School type		Level of significance
	Community	Formal	
Importance of good health	88.9	96.5	p<0.001
Physical and environmental health systems	85.4	92.4	p<0.01
Importance of balanced diet	76.0	83.7	p<0.05
Prevention of common diseases	60.9	77.3	p<0.001
Information collection ability	88.9	88.6	ns
Observation skills on natural objects	74.3	87.5	p<0.001
Scientific investigation skills	79.8	82.5	ns
Cause and effect relationship	67.7	79.0	p<0.01
Science and technology in everyday life	86.4	94.8	p<0.001

Annex 66. Percentage of BRAC community and formal school students achieving a competency in religious studies, 2004

Competency	School type		Level of significance
	Community	Formal	
Knowledge on life history of prophet Mohammed (SM) or the preachers of own religion	29.6	31.5	ns

Annex 67. Percentage of BRAC community and formal school students achieving Bangla competencies by gender, 2004

Competencies	Community			Formal		
	Boys	Girls	Significance	Boys	Girls	Significance
Reading	79.0	76.1	ns	85.3	81.3	ns
Writing	73.2	74.1	ns	88.4	83.2	ns
Listening	83.9	81.6	ns	91.5	92.1	ns

Annex 68. Percentage of BRAC community and formal school students achieving English competencies by gender, 2004

Competencies	Community			Formal		
	Boys	Girls	Significance	Boys	Girls	Significance
Reading	68.8	72.1	ns	90.7	89.3	ns
Writing	19.0	16.9	ns	22.5	23.4	ns
Listening	78.0	72.1	ns	86.8	86.4	ns

Annex 69. Percentage of BRAC community and formal school students achieving mathematics competencies by gender, 2004

Competencies	Community			Formal		
	Boys	Girls	Sig.	Boys	Girls	Sig.
Basic number	73.7	76.1	ns	84.5	79.0	ns
Four basic rules	74.6	74.1	ns	78.3	66.8	p<0.05
Problem solving	50.7	44.3	ns	52.7	38.8	p<0.05
Measurement unit	56.6	51.7	ns	48.1	36.4	p<0.05
Geometric figures	75.1	75.6	ns	81.4	79.0	ns

Annex 70. Percentage of BRAC community and formal school students achieving social studies competencies by gender, 2004

Competencies	Community			Formal		
	Boys	Girls	Sig.	Boys	Girls	Sig.
Duties as family members	75.1	75.6	ns	86.0	88.8	ns
Duties as member of society	90.7	91.0	ns	96.1	93.9	ns
Duties as citizen of Bangladesh	79.5	69.7	p<0.05	86.8	86.4	ns
Knowledge about the country	43.9	30.3	p<0.01	44.2	42.1	ns
Manners with other people	84.4	86.1	ns	87.6	90.2	ns
Children of other countries	68.8	74.6	ns	80.6	79.4	ns

Annex 71. Percentage of BRAC community and formal school students achieving general science competencies by gender, 2004

Competencies	Community			Formal		
	Boys	Girls	Sig.	Boys	Girls	Sig.
Importance of good health	91.7	87.6	ns	96.1	96.7	ns
Physical and environmental health systems	87.8	84.1	ns	90.7	93.5	ns
Importance of balanced diet	77.6	75.1	ns	87.6	81.3	ns
Prevention of common diseases	68.8	56.7	p<0.05	79.8	75.7	ns
Information collection ability	92.2	87.1	ns	91.5	86.9	ns
Observation skills on natural objects	68.8	77.1	ns	86.0	88.3	ns
Scientific investigation skills	81.0	79.1	ns	85.3	80.8	ns
Cause and effect relationship	69.8	66.7	ns	79.8	78.5	ns
Science and technology in everyday life	87.3	86.1	ns	94.6	94.9	ns

Annex 72. Percentage of BRAC community and formal school students achieving a competency in religious studies by gender, 2004

Competencies	Community			Formal		
	Boys	Girls	Sig.	Boys	Girls	Sig.
Knowledge on life history of prophet Mohammed (SM) or the preachers of own religion	32.2	28.4	ns	38.8	27.1	p<0.05

Annex 73. Description of variables used in the multivariate analysis of school level variation

Variable name	Description	Numeric expression
SIZE	Class size in grade V	22–34
GIRL	Proportion of girls in class	30–85
DURA	Duration of school (in month)	43–53
SAGE	Mean age of students (in year)	10.5–13.2
FEDU	Percentage of fathers with schooling	5–90
MEDU	Percentage of mothers with schooling	0–100
HELP	Percentage of students getting help in study at home	0–90
PTUT	Percentage of students having private tutor	0–95
ELEC	Percentage of student having electricity facility at home	0–95
RELI	Percentage of Muslim students in school	0–100
TEDU	Teachers education (years of schooling completed)	7–16
TSTR	Stream of education of teacher	0= Science, 1= Arts/Business
TEXP	Length of service of teacher (in year)	0–20
TMAR	Marital status of teacher	0= Single, 1= Married
QUAT	Quality of teachers assessed by AM	1–5
PSEX	Sex of Programme Organizer (PO)	0 = Male, 1= Female
PEDU	Education of PO (years of schooling)	10–16
PEXP	PO's length of service in BRAC (in years)	0.5–18.6
NOPO	Number of POs supervised school in grade V	1–4
NOSC	Number of school under supervision of PO	5–22
POVI	Number of visit provided by PO	19–87
AMSE	Sex of Area Manager (AM)	0= Male, 1= Female
AMED	Education of AM (years of schooling)	12–16
TEXY	AM's experience in present position (in years)	0–10
AMVI	Number of visit provided by Area Manager (AM)	1–25
COVE	Textbook coverage index	12–24
DIFF	Textbook difficulty index	13–24

Notes: *Textbook difficulty index*: The teachers were asked in a four point scale to mention how easy the textbooks of class V to them were. The points in the scale were <25% of the contents was easy, 25–<50% easy, 50–<75% easy and 75% or more easy. The responses were coded as 4, 3, 2, and 1 respectively. The teachers expressed their opinion separately for each of the following six subjects: Bangla, English, mathematics, social studies, general science and religious studies. The codes were then added to make an index which ranged from 13–24 with an average of 20 and standard deviation 2.7.

Textbook coverage index: The teachers were asked to mention separately for each subject the proportion of the contents they covered (taught) in class V. Similar to the textbook difficulty index, the teachers responses were given value in the following way: <25% covered = 1, 25–<50% covered = 2, 50–<75% covered = 3, and 75%+ covered = 4. The values were then added to have overall difficulty score which was ranged from 12–24 with an average of 18.4 and standard deviation 2.7.

Quality of teachers: The Area Managers (AM) were asked to rank the teachers in a five point scale considering their classroom performance. The AMs considered three abilities of the teachers, viz., make the contents understandable to the students, take care of the needs of students and ensure students participation. The points in the scale were Excellent = 5, Good = 4, Average = 3, Poor = 2 and Very poor = 1.

Annex 74. Description of variables used in the multivariate analysis of student level variation

Variable name	Description	Numeric expression
SSEX	Students sex	Girl = 0, Boy = 1
SAGE	Students age (in years)	9–16
FEDU	Fathers education (years of schooling completed)	0–16
MEDU	Mothers education (years of schooling completed)	0–14
HELP	Whether household members help in study at home	No= 0, Yes= 1
PTUT	Whether there is provision of private tutor	No= 0, Yes= 1
ELEC	Availability of electricity at home	No= 0, Yes= 1
RELI	Religion of student	Non-Muslim= 0, Muslim= 1
TEDU	Teachers education (years of schooling completed)	7–16
TSTR	Stream of education of teacher	Science= 0, Arts/Business= 1
TEXP	Teacher service length (in years)	0–20
TMAR	Marital status of teacher	Single= 0, Married= 1
COVE	Textbook coverage index	12–24
PSEX	Sex of Programme Organizer (PO)	Male= 0, Female= 1
PEDU	Education of PO (years of schooling)	10–16
PEXP	Length of service of PO (in years)	0.5–18.6
POVI	Number of school visit of PO	19–87
NOPO	Number of PO during last one year	1–4
AMSE	Sex of Area Manager	Male= 0, Female= 1
AMED	Education of AM	12–16
TEXY	Length of service of AM as manager	0–10
AMVI	Number of school visit by AM	1–25
QUAT	Quality of teachers assessed by AM	1–5
SIZE	Class size in grade V	22–34
GIRL	Proportion of girls in the schools	30–85
DIFF	Textbook difficulty index	13–24
DURA	Duration of school (in month)	43–53
NOSC	Number of schools under supervision of PO	5–22

Annex 75. Description of variables used in the multivariate analysis of BRAC and government school students

Variable name	Description	Numeric expression
STYP	School type	0 = Government, 1 = BRAC
SEXS	Sex of student	0 = Girl, 1 = Boy
AGES	Age of student (in complete year)	9 – 17
MEDU	Mothers education (years of schooling completed)	0 – 16
FEDU	Fathers education (years of schooling completed)	0 – 16
RELI	Religion	0 = Muslim, 1 = Non-Muslim
ETHN	Ethnicity	0 = Non-Bangali, 1 = Bangali
ELEC	Electricity at home	0 = No, 1 = Yes
PRES	Pre-school participation	0 = No, 1 = Yes
MEDI	Students' access to mass media (number of media)	0 – 3
PTUT	Availing private tutor (duration in month)	0 – 10
COCU	Participation in co-curricular activities	0 = No, 1 = Yes
GUMT	Guardians attendance in school meeting (in number)	0 – 3
GDIS	Guardians discussion with teachers (in number)	0 – 3
CSIZ	Class size	6 – 64
RATI	Student teacher ratio	13 – 99
TEDU	Teachers educational qualification (mean years)	10 – 16
TEXP	Teachers professional experience (mean years)	1 – 32.5
TTRA	Teachers professional training (% of teachers)	0 – 100
SMCM	SMC meeting (in number)	0 – 14
DIST	Distance between school and <i>upazila</i> (in kilometer)	2 – 40