

Competencies Achievement of BRAC NFPE Students Improving

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Abstract

Competency achievement of the students of BRAC non-formal primary schools at the end of their primary cycle was assessed and reported in this article. Four cohorts of students were considered and brought under assessment at the end of respective academic cycle. They are the students of second, third, fourth and fifth batches completing the courses between 2000 and 2003. The findings reveal that overall performance of the NFPE graduates increased over time. The graduates of the recent years are getting more homogeneous than the previous years and inter-school variation significantly reduced over the period. Gender difference in achievement also decreased recently. A collective effort of the teachers, programme organisers and the management was urged to keep this trend on.

Introduction

The National Curriculum and Textbook Board (NCTB) under the Ministry of Education has specified 53 terminal competencies for primary education in 1988. The students completing five year cycle of primary schooling are suppose to achieve the competencies. Competency based education was introduced at primary level in 1992 – the competencies were incorporated in syllabus and the textbooks were revised accordingly. According to the Bloom's taxonomy the competencies can be classified into three domains – cognitive, psychomotor and affective. Later the NCTB has modified the list of competencies and now there are 50 competencies in the list. It can be mentioned that such a modification had no affect in the cognitive type of competencies. Each of the competencies is accompanied by a set of learning continuum specified separately for each grade (I to V). It is expected that the students would achieve these competencies throughout the primary cycle.

Following the NCTB curriculum for formal schools BRAC offers full course of primary education through its non-formal schools. However, the duration of course is four years instead of five years. Textbooks prepared by BRAC are used during first three grades and NCTB prepared textbooks are used for grades IV and V. First batch of students completing full cycle of primary education from BRAC schools came out in 1999. During this period four more cohorts of students were graduated.

For the first time in Bangladesh, in 2000, the *Education Watch* study investigated the competencies achievement of the students – where the non-formal primary school students were considered as a stratum. In the non-formal stratum a good number of BRAC schools were sampled. There was no scope to do separate analysis of the BRAC school students in the *Education Watch*. Later BRAC Education Programme (BEP) felt a need to do so. BEP also felt the need of offering the same test to its graduates once a year. Three cohorts of students were tested afterwards, totalling four during 2000 to 2003. The performances of the students in first three tests are reported earlier in Nath 2002 and 2003. This report presents the results from the last test along with a comparison with the previous assessments.

Objective

This study aimed to assess competency based learning outcome of the BRAC school graduates, completing five-year cycle of primary education during 2000 to 2003.

Methodology

The instrument

The competency based test instrument developed for the *Education Watch 2000* was used for this study. The instrument incorporated 27 of the 29 cognitive competencies in the NCTB list. The subjects considered for the test were Bangla, English, Mathematics,

Social Studies and General Science. Total number of items in the test was 64. Table 1 presents number of test items and competencies addressed by subject. List of competencies addressed under each subject is provided in Annex 1.

Table 1. 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

Sampling

Only the rural NFPE schools were considered. Data of the first assessment were came out from the *Education Watch 2000*, where 26 BRAC schools were in the sample. Fourteen students were randomly selected from each school – 7 boys and 7 girls. Number of students assessed was 357, 175 girls and 182 boys.

Similar sampling strategy was applied in the following assessments. The second and third assessments were done on 420 students each taking from 30 schools. However, the fourth assessment was done on 867 students from 62 schools. Schools were randomly selected. From each selected schools 7 girls and 7 boys were selected separately through a systematic sampling procedure. Sample size with breakdown by year of assessment and sex is presented in Table 2.

Table 2. Sample at a glance

Sex	Survey 2000	Survey 2001	Survey 2002	Survey 2003	Total
Girls	175	211	211	435	1032
Boys	182	209	209	432	1032
Total	357	420	420	867	2064

Administering the test

The test was administered in a similar way in all the four surveys. In each school all 14 students were tested at a time in their own classrooms. A team of two trained test administrators conducted the test.

The whole 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 Bnagla and English took ten minutes. There were ten minutes break between each part. At the beginning the test administrators took the opportunity to make the students understand the rules and regulations of the test. Flip charts and blackboards

were used to do so. The first three surveys were carried out between October and November of the years 2000, 2001 and 2002, and the fourth one was in December 2003. That is the tests were conducted just before the ending of the respective cycles.

Limitations

The students assessed for this study were drawn from the rural schools, because majority of the BRAC schools are in the rural areas. Thus, this study presents the situation of the BRAC NFPE schools in rural areas only. Again, only the cognitive competencies were assessed. However, objective of any education is to develop both cognitive and non-cognitive aspects of the students' ability.

Findings

Achievements of Bangla competencies

There are four competencies in Bangla, of which three were considered for assessment. These are *Reading*, *Writing* and *Listening*. No test was taken for assessing vocabulary of the students. Ten question items were placed in the test for Bangla. Table 3 provides a summary of the competencies, test items, and minimum level for qualifying each of the competencies.

Table 3. Competencies, test items, and minimum levels for Bangla

Competency	Test items	Minimum level
Reading	<ul style="list-style-type: none"> • Answer two questions from a printed paragraph • Answer two questions from a hand written paragraph 	Answer one correctly Answer one correctly
Writing	<ul style="list-style-type: none"> • Describe a given scenery in four sentences • Describe own home in four 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) 	Answer correctly any three on the left
Listening	Answer two questions based on a pre-recorded paragraph	Answer one correctly

Reading skills

Students ability to read hand written and printed materials were assessed. Nearly 71 percent of the students in 2000 achieved this competency. This was 67.1 percent in 2001, 74.1 percent in 2002 and 78.7 percent in 2003 (Table 4). Although there was no statistically significant difference among the performances of the students of 2000 and 2001, however the performance significantly increased in 2002 ($p < 0.05$) and again in 2003 ($p < 0.001$). The boys outperformed the girls in the first three assessments, but no difference was observed in the forth assessment (Annex 2). The gender gap was increasing over the period up to 2002, but it disappeared in 2003. The performance of the girls jumped from 69.2 percent in 2002 to 77.7 percent in 2003, but it dropped for the boys – 83.7 percent in 2002 to 80.6 percent in 2003.

Table 4. Percentage of students achieving Bangla competencies by year

Competencies	Year				Level of significance		
	2000	2001	2002	2003	2000 vs. 2001	2001 vs. 2002	2002 vs. 2003
Reading	70.9	67.1	74.1	78.7	ns	p<0.05	p<0.05
Writing	72.5	70.7	62.6	73.8	ns	p<0.01	p<0.001
Listening	82.6	90.4	85.1	89.7	p<0.001	p<0.05	p<0.01
All three	47.5	52.0	47.8	57.9	ns	ns	p<0.001

ns = Not significant at p=0.05

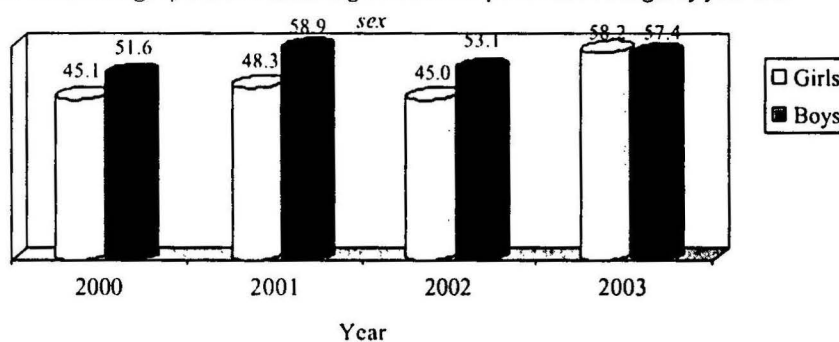
Writing skills

There were four questions for assessing writing skills in Bangla. These are description of a seen and an unseen objects, fill up a form and write an application. Among the students of 2000, 72.5 percent achieved writing competency. This was 70.7 percent for the cohort of 2001, 62.6 percent for 2002 and 73.8 percent for 2003 (Table 4). Similar to reading skills, there was no significant difference among the performance of the students of 2000 and 2001. However, the performance significantly deteriorated in 2002, and again increased in 2003. This shows, of the four cohorts of students the batch of 2002 were significantly poorer in writing. Interestingly, the boys and the girls performed equally in writing in all the four assessments (Annex 2).

Listening skills

Of the three competencies in Bangla, the students did best in listening test in all the four assessments. Table 4 shows that the performance in listening significantly increased from 82.6 percent in 2000 to 90.4 percent in 2001 (p<0.01), but decreased to 85.1 percent in 2002 (p<0.05), which again increased to 89.7 percent in 2003 (p<0.01). Like the writing competency, no gender difference was observed in listening test in any of the surveys (Annex 2).

Figure 1. Percentage of students achieving all three competencies in Bangla by year and sex



Overall performance in Bangla

Over 47 percent of the students achieved all the three competencies in 2000; this was 52 percent in 2001 and 47.8 percent in 2002 (Table 4). No significant difference was

observed among the students of first three cohorts. However, the performance significantly increased to 57.9 percent in 2003 – the increase from 2002 to 2003 was 10 percentage points. Other important feature of the latest assessment was that the girls surpassed the boys for the first time in 2003. The performance of the girls was five to ten percentage points behind the boys in the earlier assessments. This year, the girls were 0.8 percentage points ahead of the boys.

Achievement of English competencies

Like Bangla, three out of four competencies were assessed in English – these are *Reading*, *Writing* and *Listening*. Vocabulary was not considered for test. There were seven question items in the test. Table 5 presents a summary of the competencies, corresponding test items, and minimum level for qualifying the competencies in English.

Table 5. Competencies, test items and minimum levels for English

Competency	Test items	Minimum level
Reading	<ul style="list-style-type: none"> • Answer two questions from a printed paragraph • Answer two questions from a handwritten paragraph 	Answer one correctly Answer one correctly
Writing	Describe a given picture in five sentences	Write three sentences
Listening	Answer two questions based on a pre-recorded dialogue between two friends	Answer one correctly

Reading skills

Reading ability of hand written and printed materials in English was assessed. Over 80 percent of the students achieved this competency in 2003. It was observed that three quarters or more students had this competency in all the assessment year except 2001, when the performance significantly reduced to 67.8 percent. It was good to see that no gender difference was observed in any of the surveys (Annex 4).

Table 6. Percentage of students achieving English competencies by year

Competencies	Year				Level of significance		
	2000	2001	2002	2003	2000 vs. 2001	2001 vs. 2002	2002 vs. 2003
Reading	74.5	67.8	76.3	80.3	p<0.05	p<0.01	ns
Writing	39.2	36.8	35.1	52.5	ns	ns	p<0.001
Listening	68.0	78.1	79.9	84.7	p<0.01	ns	p<0.05
All three	26.0	30.3	28.2	42.0	ns	ns	p<0.001

ns = Not significant at p=0.05

Writing skills

The students were asked to write five sentences on a seen object, correctly writing three sentences was considered as minimum qualification for achieving the competency. Performance of the students in this competency was very low in previous years where below 40 percent of them could qualify. However, the last survey shows a significant

improvement in writing skills in English. Interestingly, during last one year (2002 to 2003) the performance improved 17.4 percentage points (35.1% to 52.5%; $p < 0.001$).

It was common in all the surveys that a majority of the students were unable to conceptualise what they wanted to write seeing the given object. However, the situation is getting improved day-by-day. A good proportion of the students' just picked a portion of the object (e.g., table, book, chair, etc.) and tried to make sentence with it. This competency was so hard for the students that 37.7 percent of the students in 2000, 31.5 percent in 2001, 30.5 percent in 2002 and 14.1 percent in 2003 did not answer this question. One interesting observation is that proportion of students tried to answer this question increased day by day. However, it was possible only for a few students to write five correct sentences. Only 6.8 percent of the students wrote five correct sentences in 2003.

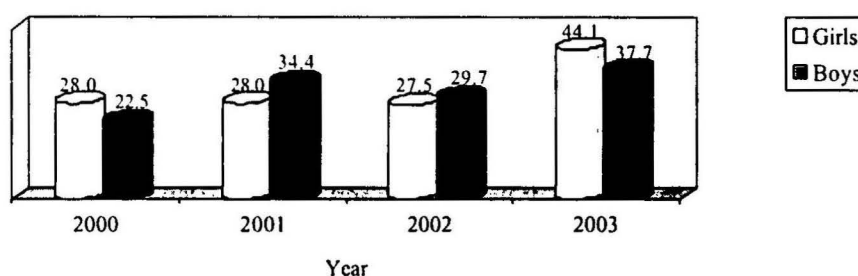
Listening skills

Performance of the students in this competency was better than the other two competencies in English. Nearly 85 percent of the students achieved this competency in 2003 – this performance was significantly higher than that of previous years. The students are doing better in this competency over the period. The girls and the boys did equally in this competency in all the surveys (Annex 4).

Overall performance in English

Proportion of students achieving all the three competencies in English was found improving during the period. For instance, only a quarter of the students achieved all the three competencies in English in 2000, which was 42 percent among the students of 2003. There was no variation in this regard among the students of first three cohorts and again no gender difference was noticed during this period. However, the girls outperformed the boys in the latest survey (44.1% vs. 37.7%). This difference was much higher than that of Bangla.

Figure 2 Percentage of students achieving all three competencies in English by year and sex



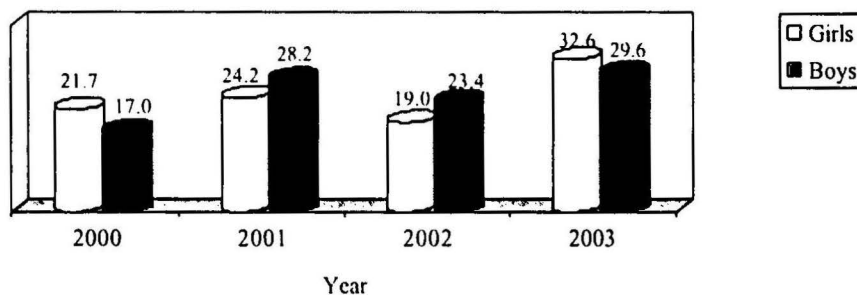
Some of the students failed to achieve any of the English competencies each year. However, the proportion of students achieving no English competency decreased over

time. Over 10 percent of the students in 2000, 7.6 percent in 2001, 6.2 percent in 2001 and 2.9 percent in 2003 did not achieve any of the English competencies.

Overall performance in language

A fifth of the students achieved all the language competencies (Bangla and English together) in 2000; this increased to 25.8 percent in 2001, and then decreased to 20.4 percent in 2002. However, a significant improvement was observed in 2003, where 31.6 percent of the students achieved all six competencies in language. Each year, a small portion of the students (nearly one percent) did not achieve a single language competency.

Figure 3 Percentage of students achieving all six competencies in Bangla and English languages by year and sex



Achievement of Mathematics competencies

Competencies in Mathematics covers both arithmetic and geometry. There are five competencies in Mathematics, for which 15 question items were placed in the test instrument. The competencies cover the areas of basic number skills, four rules of arithmetic, problem solving, measurement of units, and geometric figures. Table 7 presents the competencies, test items, and minimum requirement level for qualifying the Mathematics competencies.

Percentage of students achieving various Mathematics competencies is provided in Table 8. Of the five competencies in Mathematics students did comparatively better in two competencies in all the surveys; these are basic number skills and four basic rules in arithmetic. Over 80 percent of the students achieved these competencies in 2003. Compared to the results in 2002, the performance of the students significantly improved in four competencies. These are four basic rules in arithmetic, problem solving, measurement unit, and geometric figures. Improvement in two competencies was tremendous – it was 13 percentage points in problem solving and 15 percentage points in measurement unit.

Table 7. Competencies, test items and minimum levels for Mathematics

Competency	Test items	Minimum level
Basic numbers	<ul style="list-style-type: none"> • Arrange four given numbers in ascending order • Identify the largest from four given digits 	Answer correctly any one of the items on the left.
Four basic rules	<ul style="list-style-type: none"> • An addition • A subtraction • A multiplication • A division • A simplification 	Do the simplification correctly or any three of the four others
Problem solving	Four sums needing skills on <ul style="list-style-type: none"> • Basic arithmetic operation • Unitary method • Percentage • Graph 	Answer correctly any two of the items on the left
Measurement units	<ul style="list-style-type: none"> • Convert 5 hours and 25 minutes to seconds • Find the length of a pencil 	Answer correctly any one of the items on the left
Geometric figures	<ul style="list-style-type: none"> • Find the number of triangles and rectangles in a figure • Identify four geometric figures 	Answer correctly any one of the items on the left

Table 8. Percentage of students achieving Mathematics competencies by year

Competencies	Year				Level of significance		
	2000	2001	2002	2003	2000 vs. 2001	2001 vs. 2002	2002 vs. 2003
Basic number	78.8	76.9	78.9	82.0	ns	ns	ns
Four basic rules	82.0	73.2	75.8	84.0	p<0.01	ns	p<0.001
Problem solving	39.4	30.2	36.2	49.2	p<0.05	ns	p<0.001
Measurement unit	46.9	46.7	44.0	59.1	ns	ns	p<0.001
Geometric figures	52.8	51.5	59.7	70.1	ns	p<0.01	p<0.001
All five	23.6	21.7	16.1	27.2	ns	p<0.05	p<0.001

ns = Not significant at p=0.05

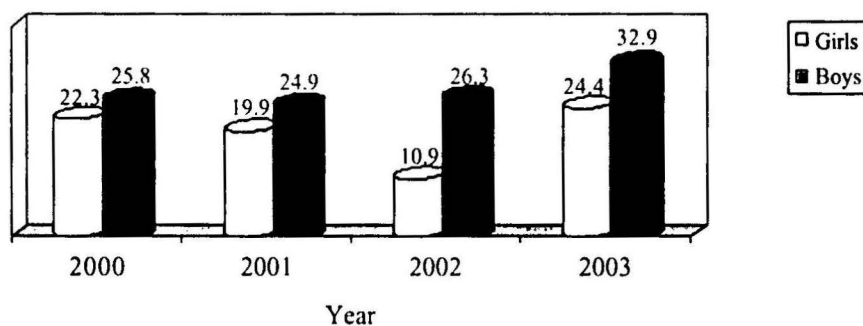
No gender difference was found in any of the Mathematics competencies in first two surveys. However in 2002, boys outperformed the girls in four competencies – four basic arithmetical rules, problem solving, measurement unit and geometric figures. On the other hand, in 2003, gender difference in four basic rules in arithmetic and geometric figures disappeared, but it appeared in case of basic number skills.

Of the four basic rules in arithmetic, students did best in addition followed by subtraction, multiplication and division (Annex 6). In 2003, 87.6 percent of the students made correct answer in addition, 80.5 percent in subtraction, 69.8 percent in multiplication and 52.8 percent in division. Over 69 percent of the students correctly answered the given simplification. Mathematical problem solving was found as the hardest competency in the

assessments. It had four components – items on basic arithmetic operation, unitary method, percentage and understanding graph were there in the test. Students performed poorly in unitary method in all the four surveys. Last survey shows that less than a fifth of the students could correctly do the arithmetic needing skills in unitary method.

Students achieving all the five competencies in Mathematics significantly decreased from 23.6 percent in 2000 to 16.1 percent in 2002 ($p < 0.01$), however, it again increased significantly to 27.2 percent in 2003 ($p < 0.001$). The boys lagged behind the girls in this regard in all the surveys. The gender gap was increasing over the period from 2000 to 2002, however it reduced in 2003.

Figure 4 Percentage of students achieving all five competencies in Mathematics by year and sex



Achievement in Social Studies competencies

Students' learning achievement in six Social Studies competencies was assessed. These are duties as family member, duties as member of society, duties as citizen of Bangladesh, knowledge about the country, manners with other people, and knowledge about children of other countries. Thirteen multiple-choice question items were placed in the test instrument to assess the above-mentioned six competencies. Table 9 gives summary of the competencies, test items, and minimum level of qualifying the competencies in Social Studies.

Percentage of students achieving social science competencies in various years is provided in Table 10. The students of 2003 showed very good performance in four competencies; these are duties as family members, duties as member of society, duties as citizen of Bangladesh, and manners with other people. Over 80 percent of the students achieved all these competencies. Less than half of the students achieved the other two competencies. No variation was observed among the performances of the students of four cohorts in three competencies; these are duties as family members, duties as member of society, and knowledge about the country. Indicating that the students of all four years performed equally in these competencies.

Table 9. Competencies, test items and minimum levels in Social Studies

Competency	Test items	Minimum level
Duties as family member	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • Responsibility as a citizen • Eligibility to vote in national elections 	Answer correctly any one of the items on the left
Knowledge about the country	<ul style="list-style-type: none"> • Independence day • Major transportation system • Place of highest rainfall 	Answer correctly any two of the items on the left
Manners with other people	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • Main food of the children of Maldives • Popular games in Nepal 	Answer correctly any one of the items on the left

Table 10. Percentage of students achieving Social Studies competencies by year

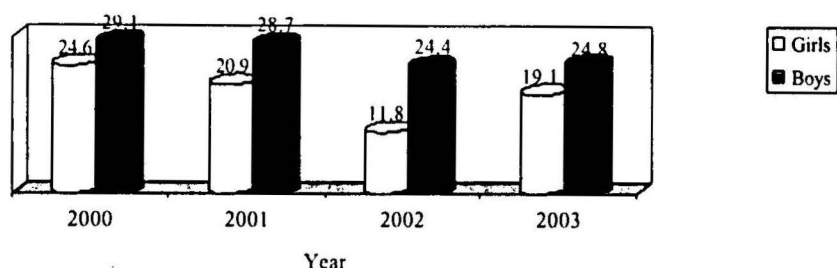
Competencies	Year				Level of significance		
	2000	2001	2002	2003	'00 vs. '01	'01 vs. '02	'02 vs. '03
Duties as family members	80.0	75.4	79.3	81.1	ns	ns	ns
Duties as member of society	86.3	84.4	85.8	87.5	ns	ns	ns
Duties as citizen of Bangladesh	66.8	67.1	93.7	80.5	ns	p<0.001	p<0.001
Knowledge about the country	51.6	46.3	41.1	45.9	ns	ns	ns
Manners with other people	84.6	83.5	77.6	83.8	ns	p<0.05	p<0.01
Children of other countries	48.6	51.6	45.0	49.9	ns	p<0.05	ns
All five	26.2	23.6	16.1	21.0	ns	p<0.01	p<0.05

ns = Not significant at p=0.05

The boys outperformed the girls in only one social science competency in 2000, which increased to two in 2001 and to three in 2002. Such difference was only in one competency in 2003; this was 'duties as member of society'.

Proportion of students achieving all social science competencies significantly reduced from 26.2 percent in 2000 to 16.1 percent in 2002 (p<0.01), however, it increased to 21 percent in 2003 (p<0.05). Gender gap in this regard was also increased during 2000-2002, however the gap reduced in 2003. The girls were lagging behind the boys in all four surveys – 4.5 percentage points in 2000, 7.8 percentage points in 2001, 12.6 percentage points in 2002 and 5.7 percentage points in 2003. A good sign is that the gender gap has reduced during last one year.

Figure 5 Percentage of students achieving all six competencies in Social Studies by year and sex



Achievement of General Science competencies

Nine General Science competencies were assessed, five of whom are related to physical and environmental health and four on science and technology. The competencies are: understand the importance of good health, know physical and environmental health systems, understand the importance of balanced diet, know the preventive measures of common diseases, have information collection ability, observation skills on natural objects, ability in scientific investigation, identification of cause and effect relationship, and knowledge on science and technology in everyday life. Two multiple-choice questions were pleased for assessing each of the competencies, totalling 18 for the subject. Table 11 provides the competencies, test items, and minimum level for qualifying the competencies of General Science.

The students did well in all the nine General Science competencies in 2003. At least 70 percent of the students achieved each of the competencies. Statistically significant improvement from 2002 to 2003 was noticed in four competencies; these are importance of balance diet, prevention of common diseases, cause and effect relationship and science and technology in everyday life. Students of four different cohorts performed equally in rest of the competencies.

Although the boys outperformed the girls in five competencies in 2002, but such a situation was observed only in one competency in 2003. This was 'information collection ability'. It was surprising to see that the boys of all four cohorts surpassed their counterpart girls in this competency.

No significant variation was observed among the students of first three cohorts in the achievement of all nine competencies in General Science. However, a big improvement (10.2 percentage points) was observed in 2003 in this regard. The girls lagged behind the girls in all the surveys and such difference was increasing up to the year 2002. The gender gap was 5.9 percentage points in 2002, which reduced to 4.4 percentage points in 2003.

Table 11. Competencies, test items and minimum levels for General Science

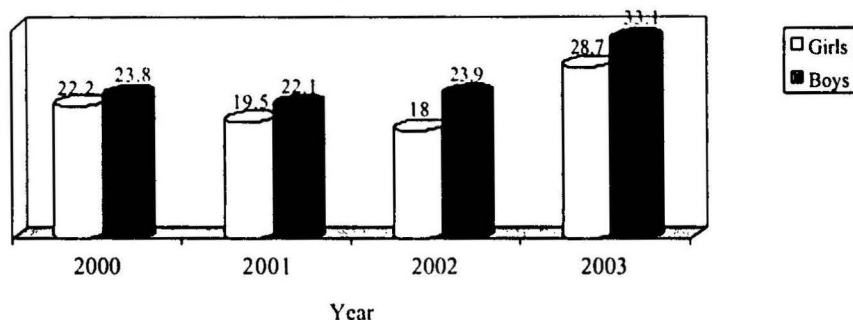
Competency	Test items	Minimum level
Knowledge about importance of good health	<ul style="list-style-type: none"> • How good health is achieved • Why one takes carbohydrate 	Answer correctly any of the items on the left
Knowledge about physical and environmental health	<ul style="list-style-type: none"> • Which tube well water is safe • How diarrhoea spreads 	Answer correctly any of the items on the left
Knowledge of balanced diet	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • Transmission of worms • Skin diseases 	Answer correctly any of the items on the left
Information collection ability	<ul style="list-style-type: none"> • What is the fastest mass media • Highest and lowest temperatures during summer 	Answer correctly any of the items on the left
Observation skills	<ul style="list-style-type: none"> • Which tree has no branch • Plant without a flower 	Answer correctly any of the items on the left
Scientific investigation	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • What is information communication • What are modern agricultural technologies 	Answer correctly any of the items on the left

Table 12. Percentage of students achieving General Science competencies by year

Competencies	Year				Level of significance		
	2000	2001	2002	2003	'00 vs. '01	'01 vs. '02	'02 vs. '03
Importance of good health	89.7	91.5	90.8	91.3	ns	ns	ns
Physical and environmental health systems	84.3	84.4	85.6	86.9	ns	ns	ns
Importance of balanced diet	67.7	70.1	70.0	80.7	ns	ns	p<0.001
Prevention of common diseases	61.7	55.6	54.4	70.1	ns	ns	p<0.001
Information collection ability	83.4	81.1	86.4	88.4	ns	p<0.05	ns
Observation skills on natural objects	79.0	77.3	76.6	79.1	ns	ns	ns
Scientific investigation skills	64.9	64.3	66.9	71.4	ns	ns	ns
Cause and effect relationship	70.9	61.1	63.3	76.2	p<0.01	ns	p<0.001
Science and technology in everyday life	58.1	72.8	73.9	79.1	p<0.001	ns	p<0.05
All nine	22.8	20.3	20.0	30.2	ns	ns	p<0.001

ns = Not significant p=0.05

Figure 6 Percentage of students achieving all General Science competencies by year and sex



Achievement in Religious Studies

Only one competency was assessed in religious studies. This is knowledge on life history of prophet Mohammed (SM) or the preachers of own religion. The students were asked to write five sentences on any one of the following: Mohammad (SM), Jesus Christ, Goutam Buddha and Shree Ramakrishna. However, correctly writing three sentences about any one of them was the minimum requirement for achieving this competency. Performance of the students in this competency decreased from 31.7 percent in 2000 to 24.4 percent in 2002, however, it significantly increased to 33 percent in 2003. The boys outperformed the girls in this competency in 2001 and 2002, but both groups performed equally in 2003 (Annex 10).

Table 13. Percentage of students achieving a competency in Religious Studies by year

Competency	Year				Level of significance		
	2000	2001	2002	2003	'00 vs. '01	'01 vs. '02	'02 vs. '03
Knowledge on life history of prophet Mohammed (SM) or the preachers of own religion	31.7	31.2	24.4	33.0	ns	p<0.05	p<0.001

Overall Learning Achievement

Performances of the students in each of the competencies assessed are presented in the above sections. The following sections provide students performances considering all the competencies together.

Classification of the competencies

The competencies were classified into four categories according to the performance of the students. These are *Very Difficult*, *Difficult*, *Easy* and *Very Easy*. The followings are the definitions of this classification.

- Very difficult:* If less than 40% of the students attain a particular competency (the level of achievement is 'poor');
- Difficult:* If 40–59.9% of the students attain a particular competency (the level of achievement is 'mediocre');
- Easy:* If 60–79.9% of the students attain a particular competency (the level of achievement is 'satisfactory');
- Very easy:* If 80% or more students attain a particular competency (the level of achievement is 'excellent').

Classification of the competencies according to the performance of the students is provided in Annexes 11 to 14 – these shows improvement in the performance of the students over the period. For instance, in 2000, the students did 'excellent' in 8 competencies, 'satisfactory' in 11, 'mediocre' in 5, and 'poor' in 3 competencies. However, the survey of 2001 and 2002 show that the students did 'excellent' in 6 competencies, 'satisfactory' in 13, 'mediocre' in 5, and 'poor' in 3 competencies. On the other hand, the students of 2003 did 'excellent' in 13 competencies, 'satisfactory' in 8, 'mediocre' in 5, and 'poor' in only one competency.

The analyses show that the students of BRAC Non-formal Primary Education remain 'poor' in the competency under the religious studies after completing the full course. This was found to be the hardest competency for them to achieve.

The students of all the four cohorts showed 'excellent' performance in the following five competencies.

- Listening in Bangla
- Duties as member of the society
- Importance of good health
- Physical and environmental health systems
- Information collection ability

It was observed that BRAC NFPE students were weaker mostly in the competencies in Mathematics, writing English, and religious studies, however they made improvement in most of these areas in 2003 except the religious studies competency.

Achievement of all competencies

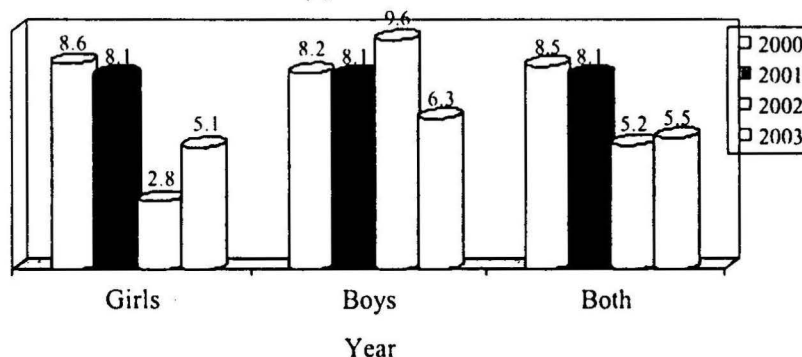
Percentage of students achieving all the competencies by subject, sex and year is provided in Table 14. Highest proportion of students achieving all the competencies was in Bangla in all the surveys. The position of English was second. Other subjects obtained no consistent position. The improvement of the situation from the year 2002 to 2003 was tremendous – 10 percentage points in Bangla, 13.8 percentage points in English, 11.1 percentage points in Mathematics, 4.9 percentage points in Social Science and 10.2 percentage points in General Science. Similar level of improvement was noticed for both boys and girls when data were analysed by sex. It can be seen that there was a downward trend in some cases up to the year 2002, however the situation improved in 2003.

Table 14. Percentage of students achieving all the competencies by subject and sex

Subject	Boys				Girls				Both			
	2000	2001	2002	2003	2000	2001	2002	2003	2000	2001	2002	2003
Bangla	51.6	58.9	53.1	57.4	45.1	48.3	45.0	58.2	47.5	52.0	47.8	57.9
English	22.5	34.4	29.7	37.7	28.0	28.0	27.5	44.1	26.0	30.3	28.2	42.0
Mathematics	25.8	24.9	26.3	32.9	22.3	19.9	10.9	24.4	23.6	21.7	16.1	27.2
Social Studies	29.1	28.7	24.4	24.8	24.6	20.9	11.8	19.1	26.2	23.6	16.1	21.0
General Science	23.6	22.0	23.9	33.1	22.3	19.4	18.0	28.7	22.8	20.3	20.0	30.2

Percentage of students achieving all the 27 competencies by year and sex is provided in Figure 7. Overall performance in the first two surveys was similar and again no variation was found in the performance of last two surveys. However, a significant deterioration was noticed between second and third surveys. On average, 8.5 percent of the students achieved all the 27 competencies in 2000, it was 8.1 percent in 2001, 5.2 percent in 2002, and 5.5 percent in 2003. The highest gender variation favouring boys was observed in 2002, however it reduced in the following year.

Figure 7 Percentage of students achieving all 27 competencies by year and sex



Mean number of competencies achieved

Unlike above findings, the mean number of competencies achieved by the students was mostly similar in first three years, which improved in 2003. On average, the students achieved 18.1 competencies in 2000, 17.9 in 2001, 18.2 in 2002, and 19.9 in 2003. The students altogether achieved 67 percent of the competencies in 2000, however it improved to 73.7 percent in 2003. Mean number of competencies achieved was less for girls than boys in all four surveys. The median of the number of competencies achieved was also increased over the period. The median was 18 in 2000 and 2001, 19 in 2002, and 21 in 2003. This means that a half of the students achieved more than 18 competencies in 2000. On the other hand, half of the students achieved 21 or more number of competencies in 2003.

Table 15. Some basic statistics on number of competencies achieved by the students

Year	Sex	Mean	Median	Standard deviation	Coefficient of variation
2000	Boys	18.7	18.5	5.2	27.8
	Girls	17.8	18.0	5.8	32.6
	Both	18.1	18.0	5.6	30.9
2001	Boys	18.8	19.0	5.2	27.7
	Girls	17.4	17.0	5.4	31.0
	Both	17.9	18.0	5.3	29.6
2002	Boys	19.6	20.0	4.9	25.0
	Girls	17.5	18.0	5.1	29.1
	Both	18.2	19.0	5.1	28.0
2003	Boys	20.2	21.0	4.6	22.8
	Girls	19.7	21.0	5.0	25.4
	Both	19.9	21.0	4.8	24.1

No gender difference was found in the mean number of competencies achieved in 2000, however, in 2001 and 2002, the boys outperformed the girls (Annex 15). Equal performance of the boys and the girls was shown again in 2003.

Mean number of correctly answering items

Table 16 provides mean number of correctly answering items in various subjects by year of survey. The students did best in Bangla in all four surveys, followed by English. At the aggregate level, of the 64 items the mean was 36 in 2000, 33.4 in 2001, 34.8 in 2002, and 38.3 in 2003. Otherwise, the students on an average correctly answered less than 60 percent of the test items. The situation in Bangla and English were better than the aggregate performance, however, it was lower in three subjects viz., Mathematics, Social Studies and General Science.

Table 16. Mean number of correctly answering items by subject and year

Subject	Number of question items	2000		2001		2002		2003	
		Mean	%	Mean	%	Mean	%	Mean	%
Bangla	10	7.0	70.0	7.0	70.0	7.1	71.0	7.4	74.0
English	7	4.3	61.4	4.1	58.6	4.5	64.3	4.8	68.6
Mathematics	15	7.4	49.3	6.4	42.7	7.0	46.7	8.1	54.0
Social Studies	13	7.1	54.6	6.4	49.2	6.6	50.8	7.2	53.4
General Science	18	9.6	53.3	9.1	50.6	9.4	52.2	10.4	57.8
All	64*	36.0	56.3	33.4	52.2	34.8	54.4	38.3	59.8

* Includes one competency on Religious Studies

There was no gender difference in 2000 in the mean number of correctly answering items. The boys surpassed the girls afterwards. In 2003, on average, the boys correctly answered 39.3 items and the girls 37.8 items ($p < 0.05$).

School level analysis

Earlier sections provided information considering student as unit of analysis, however, this section analysed data considering school as unit. This helps understanding how far the achievement of the students varied from one school to another. A wide variation was observed in the performance of the schools in 2000, however it reduced over time. For instance, the co-efficient of variation was 26.4 percent in 2000, which reduced to 18.2 percent in 2001, 17.8 percent in 2002 and 15.0 percent in 2003 (Table 17).

Table 17. School level analysis: some basic statistics of mean number of competencies achieved

Year	Number of schools	Minimum	Maximum	Range	Mean	Standard deviation	Co-efficient of variation
2000	26	9.4	26.7	17.3	18.2	4.8	26.4
2001	30	12.8	23.9	11.1	18.1	3.3	18.2
2002	30	10.4	23.3	12.9	18.5	3.3	17.8
2003	62	14.1	26.3	12.1	20.0	3.0	15.0

Performance according to taxonomic class level of items

The question items put in the test instruments were classified according to taxonomic class level. Of the 64 items in the test, 45 are of knowledge level and 19 are of understanding level. The students of BRAC schools did better in the knowledge level items than the understanding level items. Interestingly, the performance of the students improved in both the areas over the period.

Table 18. Performance of the students according to the taxonomic class level of items

Taxonomic class	Number of items	2000		2001		2002		2003	
		Mean	%	Mean	%	Mean	%	Mean	%
Knowledge	45	26.8	59.6	25.3	56.2	26.5	58.9	28.6	63.6
Understanding	19	8.9	46.8	8.0	42.1	8.3	43.7	9.7	51.1

Highlights of the findings

Achievement of competencies of the students of BRAC NFPE, after completing five-year cycle of primary education, is presented in this report. The students of four cohorts were assessed through a nationally standardised test instrument developed for the *Education Watch 2000*. These students completed their primary schooling between 2000 and 2003. They are the students of second to fifth batches after shifting from three years to four years programme. The tests were taken immediate before the end of respective academic year. Following are the highlights of the assessments.

Overall performance of the NFPE students increased over time. This can be shown in various ways. Firstly, the proportion of students achieving the competencies increased

over time – such increment was observed in most of the competencies. This ultimately resulted in the mean number of competencies achieved. Of the 27 competencies considered for the test, the students of each batch achieved about 18 competencies during 2000 to 2002, however the mean jumped up to 19.9 in 2003. In other words, the first three assessed groups achieved two-thirds of the competencies, but the fourth group achieved 73.7 percent of the competencies.

Again, the mean number of items correctly answering by the students also increased over the period. Of the 64 items in the test, the students correctly answered 36 items in 2000, which reduced to 33.4 in 2001, and then increased to 34.8 in 2002 and to 38.3 in 2003. These showed that none of the groups could correctly answer more than 60 percent of the items. The first three assessments showed that the students of BRAC schools were weaker mostly in Mathematics, Social Science and General Science, however the performance in these areas also started to increase recently.

The students of recent years are getting more homogeneous than the previous years. This is a good sign in respect to equality in performance of the students. Analysis of coefficient of variation of the students performance in terms of competencies achievement and number of correct items reduced over the period. When the analysis was done separately for boys and girls, similar trend was observed. However, the boys were found more homogeneous than the girls in all the surveys.

Inter-school variation reduced significantly. The *Education Watch* study observed that school-to-school variation in formal schools was less than that of the non-formal schools. This is because the non-formal schools are operated by various different organisations. The four assessments done on the BRAC school graduates showed that such variation is reducing over the period.

Gender difference in achievement decreased. Earlier assessments showed that gender difference in learning achievement favouring the boys was increasing over time. However, it turned to be reduced in 2003. Competency wise analysis showed that the boys did better than the girls in three competencies in 2000, which increased to seven in 2001 and to 14 in 2002. However in 2003, such gap was observed in five competencies only.

Performance of the students of BRAC NFPE at the end of primary cycle showed that the programme is getting better day-by-day. A downward slop was observed in the performance of the students in various subjects during first three years. However the situation improved much in 2003. Probably the programme management did not take the findings seriously as it took after the third survey. At that time, long meeting between the programme management and the research team was held which helped the management to understand the areas of poor performance. The findings of the study were also presented in a regional managers meeting. The regional managers also disseminated the findings at team level. Moreover, the quality assurance specialists and the monitoring section of BEP had their drive on the issue of quality improvement. Now, it is important to keep this trend on. A collective effort of the teachers, programme organisers and the management is needed in this regard.

Annex 1. Competencies tested under this study

Subject area	Competencies
Bangla	Reading skills Writing skills Listening skills
English	Reading skills Writing skills Listening skills
Mathematics	Basic number skills Four basic rules of arithmetic Problem solving Measurement units Identification of geometric figures
Social Science	Duties as family member Duties as member of society Duties as citizen of Bangladesh Know about the country Manners with persons of various relationship Know about the children of other countries
General Science	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 Identification of cause and effect relationship Science and technology in everyday life
Religious Studies	Life sketch of prophet Mohammed (SM) or the preachers of own religion

Annex 2. Percentage of students achieving Bangla competencies by year and sex

Competencies	Year			
	2000	2001	2002	2003
<i>Reading skills</i>				
Girls	67.4	63.0	69.2	77.7
Boys	76.9	74.6	83.7	80.6
Significance	p<0.05	p<0.01	p<0.001	ns
<i>Writing skills</i>				
Girls	73.1	68.2	61.6	73.6
Boys	71.4	75.1	64.6	74.3
Significance	ns	ns	ns	ns
<i>Listening skills</i>				
Girls	81.7	88.6	83.4	90.6
Boys	84.1	93.8	88.5	88.0
Significance	ns	ns	ns	ns

Annex 3. Percentage of students made correct answers to various items on writing skills in Bangla by year

Items	Year			
	2000	2001	2002	2003
Description of a given scenery	71.8	61.3	58.2	74.3
Description of own home	78.6	77.7	75.0	58.6
Fill out a form	96.1	97.4	95.7	96.4
Writing application to teacher				
Date	46.2	32.8	30.0	43.9
Salutation	60.3	79.5	75.6	91.1
Message	77.5	79.6	50.6	88.8
Closing	62.5	66.4	57.1	76.3

Annex 4. Percentage of students achieving English competencies by year and sex

Competencies	Year			
	2000	2001	2002	2003
<i>Reading skills</i>				
Girls	73.7	65.4	74.4	80.9
Boys	75.8	72.2	79.9	79.2
Significance	ns	ns	ns	ns
<i>Writing skills</i>				
Girls	41.1	35.5	33.2	54.0
Boys	35.7	39.2	38.8	49.5
Significance	ns	ns	ns	ns
<i>Listening skills</i>				
Girls	68.6	73.6	79.1	86.2
Boys	67.0	85.6	81.3	81.7
Significance	ns	p<0.001	ns	p<0.05

Annex 5. Percentage of students achieving Mathematics competencies by year and sex

Competencies	Year			
	2000	2001	2002	2003
<i>Basic number</i>				
Girls	77.7	76.3	78.7	80.2
Boys	80.8	78.0	79.4	85.4
Significance	ns	ns	ns	p<0.05
<i>Four basic rules</i>				
Girls	81.1	70.6	73.0	82.8
Boys	83.5	78.0	81.3	86.6
Significance	ns	ns	p<0.05	ns
<i>Problem solving</i>				
Girls	37.1	30.8	32.2	45.7
Boys	43.4	32.1	44.0	56.0
Significance	ns	ns	p<0.01	p<0.01
<i>Measurement unit</i>				
Girls	45.7	45.5	39.8	56.6
Boys	48.9	48.8	52.2	64.1
Significance	ns	ns	p<0.01	p<0.05
<i>Geometric figures</i>				
Girls	52.6	49.8	55.5	69.2
Boys	53.3	54.5	67.9	72.0
Significance	ns	ns	p<0.01	ns

Annex 6. Percentage of students made correct answers to the items under 'basic four rules of arithmetic' by year

Items	Year			
	2000	2001	2002	2003
Addition	87.9	86.4	89.1	87.6
Subtraction	80.3	77.0	74.2	80.5
Multiplication	69.6	65.0	66.3	69.8
Division	45.6	31.6	38.3	52.8
Simplification	60.0	56.0	57.2	69.4

Annex 7. Percentage of students made correct answers to the items under 'mathematical problem solving' by year

Items	Year			
	2000	2001	2002	2003
Basic arithmetic operation	53.5	37.8	36.7	42.6
Unitary method	22.5	8.1	2.5	18.5
Percentage	29.9	19.5	40.0	55.0
Graph	38.0	32.8	33.0	39.7

Annex 8. Percentage of students achieving Social Science competencies by year and sex

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

Annex 9. Percentage of students achieving General Science competencies by year and sex

Competencies	Year			
	2000	2001	2002	2003
<i>Importance of good health</i>				
Girls	88.6	91.0	89.1	90.8
Boys	91.8	92.3	94.3	92.4
Significance	ns	ns	p<0.05	ns
<i>Physical and environmental health systems</i>				
Girls	83.4	82.5	83.4	86.0
Boys	85.7	88.0	90.0	88.7
Significance	ns	ns	p<0.05	ns
<i>Importance of balanced diet</i>				
Girls	66.9	69.7	66.8	80.2
Boys	69.2	70.8	76.1	81.7
Significance	ns	ns	p<0.05	ns
<i>Prevention of common diseases</i>				
Girls	61.1	53.6	53.1	70.6
Boys	62.6	59.3	56.9	69.2
Significance	ns	ns	ns	ns
<i>Information collection ability</i>				
Girls	80.6	78.7	83.9	86.7
Boys	88.5	86.1	91.4	91.7
Significance	p<0.05	p<0.05	p<0.01	p<0.05
<i>Observation skills on natural objects</i>				
Girls	78.3	76.8	76.3	79.8
Boys	80.2	78.9	77.0	77.8
Significance	ns	ns	ns	ns
<i>Scientific investigation skills</i>				
Girls	63.4	62.6	64.5	70.6
Boys	67.6	67.5	71.8	73.1
Significance	ns	ns	ns	ns
<i>Cause and effect relationship</i>				
Girls	69.7	60.2	58.3	76.3
Boys	73.1	62.7	73.2	75.9
Significance	ns	ns	p<0.001	ns
<i>Science and technology in everyday life</i>				
Girls	54.9	69.7	71.6	79.3
Boys	63.7	78.5	78.5	78.7
Significance	ns	p<0.05	ns	ns

Annex 10. Percentage of students achieving Religious Studies competency by year and sex

Competencies	Year			
	2000	2001	2002	2003
<i>Life history of prophet Mohammed (SM) or the preachers of own religion</i>				
Girls	30.3	28.4	19.0	32.9
Boys	34.1	36.4	34.9	33.3
Significance	ns	p<0.05	p<0.001	ns

Annex 11. Classification of the competencies according to the level of performance, 2000

Level of performance	Competencies	Difficulty level
Poor	<ul style="list-style-type: none"> • Writing in English • Problem solving in Mathematics • Life history of prophet Mohammed (SM) or the preachers of own religion 	Very difficult
Mediocre	<ul style="list-style-type: none"> • Measurement units • Identification of geometric figures • Know about the country • Know about the children of other countries • Science and technology in everyday life 	Difficult
Satisfactory	<ul style="list-style-type: none"> • Reading in Bangla • Writing in Bangla • Reading in English • Listening in English • Basic number skills • Duties as citizen of Bangladesh • Importance of balanced diet • Observation skills on natural objects • Scientific investigation skills • Prevention of common diseases • Identification of cause and effect relationship 	Easy
Excellent	<ul style="list-style-type: none"> • Listening in Bangla • Basic rules of arithmetic • Duties as family member • Duties as member of society • Importance of good health • Manners with persons of various relationship • Physical and environmental health systems • Information collection ability 	Very easy

Annex 12. Classification of the competencies according to the level of performance, 2001

Level of performance	Competencies	Difficulty level
Poor	<ul style="list-style-type: none"> • Writing in English • Problem solving in Mathematics • Life history of prophet Mohammed (SM) or the preachers of own religion 	Very difficult
Mediocre	<ul style="list-style-type: none"> • Measurement units • Identification of geometric figures • Know about the country • Know about the children of other countries • Prevention of common diseases 	Difficult
Satisfactory	<ul style="list-style-type: none"> • Reading in Bangla • Writing in Bangla • Reading in English • Listening in English • Basic number skills • Basic rules of arithmetic • Duties as family member • Duties as citizen of Bangladesh • Importance of balanced diet • Observation skills on natural objects • Scientific investigation skills • Science and technology in everyday life • Identification of cause and effect relationship 	Easy
Excellent	<ul style="list-style-type: none"> • Listening in Bangla • Duties as member of society • Importance of good health • Manners with persons of various relationship • Physical and environmental health systems • Information collection ability 	Very easy

Annex 13. Classification of the competencies according to the level of performance, 2002

Level of performance	Competencies	Difficulty level
Poor	<ul style="list-style-type: none"> • Writing in English • Problem solving in Mathematics • Life history of prophet Mohammed (SM) or the preachers of own religion 	Very difficult
Mediocre	<ul style="list-style-type: none"> • Measurement units • Identification of geometric figures • Know about the country • Know about the children of other countries • Prevention of common diseases 	Difficult
Satisfactory	<ul style="list-style-type: none"> • Reading in Bangla • Writing in Bangla • Reading in English • Listening in English • Basic number skills • Basic rules of arithmetic • Duties as family member • Manners with persons of various relationship • Importance of balanced diet • Observation skills on natural objects • Scientific investigation skills • Identification of cause and effect relationship • Science and technology in everyday life 	Easy
Excellent	<ul style="list-style-type: none"> • Listening in Bangla • Duties as member of society • Duties as citizen of Bangladesh • Importance of good health • Physical and environmental health systems • Information collection ability 	Very easy

Annex 14. Classification of the competencies according to the level of performance, 2003

Level of performance	Competencies	Difficulty level
Poor	<ul style="list-style-type: none"> • Life history of prophet Mohammed (SM) or the preachers of own religion 	Very difficult
Mediocre	<ul style="list-style-type: none"> • Writing in English • Problem solving • Measurement units • Know about the country • Know about the children of other countries 	Difficult
Satisfactory	<ul style="list-style-type: none"> • Reading in Bangla • Writing in Bangla • Identification of geometric figures • Prevention of common diseases • Observation skills on natural objects • Scientific investigation skills • Identification of cause and effect relationship • Science and technology in everyday life 	Easy
Excellent	<ul style="list-style-type: none"> • Listening in Bangla • Reading in English • Listening in English • Basic number skills • Four basic rules of arithmetic • Duties as family member • Duties as member of society • Duties as citizen of Bangladesh • Manners with persons of various relationship • Importance of good health • Physical and environmental health systems • Importance of balanced diet • Information collection ability 	Very easy

Annex 15. Mean number of competencies and mean number of items by year and sex

Subject	Sex	Year				Significance
		2000	2001	2002	2003	
Competencies	Boys	18.7	18.8	19.6	20.2	
	Girls	17.8	17.4	17.5	19.7	
	Both	18.1	17.9	18.2	19.9	
	Significance	ns	p<0.01	p<0.001	ns	
Items	Boys	36.8	35.1	36.7	39.3	
	Girls	35.5	32.5	32.8	37.8	
	Both	36.0	33.4	34.8	38.3	
	Significance	ns	p<0.01	p<0.001	p<0.05	

Annex 16. Quartiles of number of competencies and number of items by year

Subject	Year	Quartiles		
		First	Second	Third
Number of competencies	2000	14.0	18.0	22.0
	2001	14.0	18.0	21.0
	2002	15.0	19.0	22.0
	2003	17.0	21.0	24.0
Number of items	2000	27.0	34.0	43.0
	2001	25.0	33.0	41.0
	2002	27.0	35.0	42.0
	2003	31.0	38.0	47.0