

# Achievement of Competencies of the Students of BRAC Non-formal Primary Schools

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## Introduction

Competency-based education focuses on students' acquisition of specific competencies. The competencies are determined against a set of learning objectives. The whole programme is planned and implemented in such a way that it helps achieving learners' competency on behaviour and knowledge.

The National Curriculum and Textbook Board (NCTB) under the Ministry of Education of the Government of Bangladesh has specified 53 terminal competencies to be achieved by the students completing five year cycle of primary education. See Annex 1 for full list of the competencies. These competencies are accompanied by a set of learning continuum specified separately for each grade (NCTB 1988). The textbooks of primary classes are prepared on the broad basis of the competencies specified. It is expected that the students would achieve the competencies throughout the primary cycle starting from Class I and ending at Class V. Although specification of the competencies were done in 1988, but it took more four years to be reflected the competencies in the textbooks.

Classification of the terminal competencies by subject areas shows that there are four competencies in each of Bangla, English and Religious Studies, five in Mathematics, 28 in Environmental Studies and the 'rest' can be classified as 'others'. Of the competencies under Environmental Studies, 20 in Social Studies and 8 in General Science. Bloom and his colleagues (1956) classified the learning outcomes into three major categories, *cognitive*, *psychomotor* and *affective*. Of the 53 competencies, 29 fully or partially fall under cognitive domain. Of the cognitive competencies, four are on Bangla language; four on English language, five on Mathematics, six on Social Studies, nine on General science, and one on Religious Studies. It can be mentioned that the area of knowledge and thinking fall under cognitive domain.

BRAC has been operating non-formal primary education (NFPE) programme since 1985. Although it started as a three-year programme, but from 1996 the full cycle of primary education is provided through this programme. The first batch of such students came out in 1999. By this time more two cohorts of students were also received full cycle of primary education from BRAC schools. This programme follows the curriculum of the formal schools prepared by the NCTB. BRAC uses its own textbooks, based on the NCTB curriculum, for first three grades. But for Classes IV and V, NCTB prepared textbooks are directly used. The important features of BRAC non-formal schools are:

- 1) These are one-teacher schools with a classroom and 33 students. Two-thirds of the students are girls.
- 2) Teachers are preferably female with 10 years of schooling.
- 3) Five years of primary education is provided within a span of four years. This is done reducing long vacations.
- 4) A basic training is provided to the teachers at the beginning, refreshers' training is arranged once a month.
- 5) Programme organisers visit the schools regularly and provide supportive supervision.
- 6) Regular monitoring on various issues of the programme and issue-based research is part of the programme.

After completing primary education from BRAC schools students do enrol in the formal secondary schools (government or private) for further education. It may be mentioned that although there are many NGOs running non-formal education programme, BRAC's programme is the largest one. Over three quarters of the students of NGO run schools belong to BRAC schools (Chowdhury and Nath 1999).

Achievement of competencies of the students at the end of primary cycle was assessed under *Education Watch 2000* (Nath and Chowdhury 2001). Three types of schools were considered for the *Watch*, the non-formal sub-system was one of them. Of the 62 non-formal schools considered for the study 49 were BRAC schools (26 rural and 23 urban). These students were the second batch completing full cycle of primary education from BRAC non-formal schools. Although there was no scope of separate analysis of the achievement of these students under *Watch* project, the BRAC Education Programme (BEP) felt a need to do so for their understanding. BEP also requested the Research and Evaluation Division (RED) to do another survey of the students of next batch completing the primary cycle in 2001. Both of the requests of BEP were well taken by RED. This report is an outcome of the requests.

### **Objective**

This study aims to assess competency-based learning outcome of the students completing full cycle of primary education from BRAC schools respectively in 2000 and 2001. These students are the second and third batches of children completing full cycle of primary

education from BRAC schools. In addition to overall estimates for the graduates of the years 2000 and 2001, sex-wise analyses were done.

## **Methodology**

### ***The instrument***

The instrument used for the assessment of students was developed for the *Education Watch 2000*. This instrument assesses 27 of the 29 cognitive competencies mentioned earlier. Assessment of vocabulary in Bangla and English is out of the scope of this instrument. There are 64 question items in the test, of which 10 in Bangla, 7 in English, 15 in Mathematics, 13 in Social Studies, 18 in General Science, and one in Religious Studies. Table 1 presents the number of competencies and question items by subject. Details of the test development procedure is available elsewhere (Nath et al., 2000 and 2001).

Table 1. Number of competencies assessed and question items in the test by subject area.

| Subject           | Number of competencies | 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***

As already mentioned that data on assessment of BRAC school students of 2000 came from the *Education Watch 2000*. There were 26 BRAC non-formal primary schools located in rural areas. Number of students assessed was 357 (175 girls and 182 boys). Details of the sampling are available elsewhere (Nath et al., 2001).

For the survey of 2001, 30 team offices from rural Bangladesh were randomly selected where schools were at the end of completing fifth grade. From each team one school was randomly selected. Separate samples were drawn from the girls and the boys through a

systematic sampling procedure. From each school 7 girls and 7 boys were selected, combining 211 girls and 209 boys, altogether 420 (Table 2).

Table 2. Sample at a glance

| Sex   | Survey 2000 | Survey 2001 |
|-------|-------------|-------------|
| Girls | 175         | 211         |
| Boys  | 182         | 209         |
| Total | 357         | 420         |

### ***Administering the test***

The test was administered in a similar way in both the 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 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. Both the surveys were carried out in the months of October and November in 2000 and 2001, i.e., just before the ending of the respective cycles.

### ***Limitations***

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

## Findings

### Achievement of Bangla Competencies

Students start learning Bangla from Class I. There are four competencies in Bangla. However, only three were taken for test. These are *reading*, *writing* and *listening*. No test was taken for assessing vocabulary of the students. There were ten question items in the test. Table 3 gives 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"><li>• Answer two questions from a printed paragraph</li><li>• Answer two questions from a handwritten paragraph</li></ul>  | Answer one correctly<br><br>Answer one correctly |
| Writing    | <ul style="list-style-type: none"><li>• Describe a given scenery in four sentences</li><li>• Describe own home in four sentences</li><li>• Fill out a form with eight blanks (any six is acceptable)</li><li>• Write an application with date, salutation, and closing (message with any two acceptable)</li></ul> | Answer correctly any three on the left           |
| Listening  | Answer two MCQ questions based on a pre-recorded paragraph   | Answer one correctly                             |

### *Reading skills*

Students' ability to read printed and hand written materials was assessed. Nearly 71 percent of the students satisfied the minimum requirement for this competency in 2000, this was 67.1 percent in 2001 (Table 4). This difference was statistically insignificant. The boys out-performed the girls in both the surveys, 76.9 percent vs. 67.4 percent in 2000 and 74.6 percent vs. 63 percent in 2001 (Annex 2). This means that the gender gap has increased 2.1 percentage points (9.5% in 2000 to 11.6% in 2001) over a year. Of the four questions put in the test around 70 percent of the students made correct answers in each of the three questions separately. The students had very poor performance in one question which required reading skills from a printed material.



Table 4. Percentage of students achieving Bangla competencies by year

| Competencies | Year |      | Significance |
|--------------|------|------|--------------|
|              | 2000 | 2001 |              |
| Reading      | 70.9 | 67.1 | ns           |
| Writing      | 72.5 | 70.7 | ns           |
| Listening    | 82.6 | 90.4 | p<0.001      |
| All three    | 47.5 | 52.0 | ns           |

### ***Writing skills***

There were four questions on writing competency. These are descriptions of a seen and an unseen objects, fill up a form and write an application. The survey of 2000 showed that 72.5 percent of the students had writing competency in Bangla; this was 70.7 percent among the students of 2001 (Table 4). No gender difference was observed in any of the surveys (Annex 2).

Of the four areas of writing assessment students did very well in filling up the given form, over 95 percent could do this. Over three quarters of the students could write at least three sentences describing an unseen object. However, the performance of the students in describing a seen object deteriorated significantly from 71.8 percent in 2000 to 61.3 percent in 2001 ( $p<0.01$ ). On the other hand, only 53.2 percent of the students could write an application in 2000, which increased to 59.5 percent in 2001. In writing application students mostly missed the date of writing application. Only a third of the assessed students wrote date in 2001.

### ***Listening skills***

In both the surveys, students did better in listening test compared to other two areas of Bangla. The performance of the students in listening significantly increased from 82.6 percent in 2000 to 90.4 percent in 2001 ( $p<0.001$ ). The increment was slightly higher among the boys (Annex 2).

### ***Overall performance in Bangla***

Over 47 percent of the students achieved all three competencies in 2000; this was 52 percent in 2001. Sex-wise analysis shows that there was no gender difference in this respect in 2000 (45.1% girls and 51.6% boys achieved all three competencies). Otherwise, boys significantly out-performed the girls in 2001 (58.9% vs. 48.3%,  $p < 0.05$ ).

Some of the students did not achieve any of the competencies in Bangla, 3.7 percent in 2000 and 3.3 percent in 2001. On average, the students achieved 2.3 Bangla competencies in both the surveys.

### **Achievement of English Competencies**

Like others, students of BRAC schools start English as a second language from Class III. Three competencies were assessed in English – *reading*, *writing*, and *listening*. Vocabulary in English was not considered in the test. There were seven question items in the test instrument. Table 5 presents a summary of the competencies, test items and minimum level needed 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"><li>• Answer two questions from a printed paragraph</li><li>• Answer two questions from a handwritten paragraph</li></ul> | Answer one correctly<br>Answer one correctly |
| Writing    | <ul style="list-style-type: none"><li>• Describe a given picture in five sentences</li></ul>  | Write three sentences                        |
| Listening  | Answer two MCQ questions based on a pre-recorded dialogue between two friends   | Answer one correctly                         |

### ***Reading skills***

Students' ability to read a printed and a hand written material was assessed. Nearly three quarters of the students had reading skills in 2000, which significantly deteriorated to 67.8 percent in 2001 ( $p < 0.05$ ) (Table 6). Proportionately such deterioration was more among the girls. No gender difference was observed in any of the surveys, however boys were slightly ahead of the girls in both years (Annex 3).

Table 6. Percentage of students achieving English competencies by year

| Competencies | Year |      | Significance |
|--------------|------|------|--------------|
|              | 2000 | 2001 |              |
| Reading      | 74.5 | 67.8 | p<0.05       |
| Writing      | 39.2 | 36.8 | ns           |
| Listening    | 68.0 | 78.1 | p<0.01       |
| All three    | 26.0 | 30.3 | ns           |

### ***Writing skills***

The students were asked to write five sentences on a seen object. Writing three sentences were minimum for qualifying in this competency. Performance of the students in this competency was not satisfactory. Only 39.2 percent of the students achieved this competency in 2000, and 36.8 percent in 2001 (Table 6). There was no gender difference in any of the surveys (Annex 3).

It was observed that most of the students were not able to conceptualise what they wanted to write seeing the given object. Majority of them just picked a simple portion from the given scenario (for instance a table or a book) and made sentence with it. This part of the test was so hard to many students that 37.7 percent in 2000 and 31.5 percent in 2001 did not answer this question.

### ***Listening skills***

Students' performance in listening English significantly increased over time. Sixty eight percent of the students had listening skills in 2000, which increased to 78.1 percent in 2001 (p<0.01) (Table 6). Sex-wise analysis shows that increase in listening competency mostly occurred among the boys (67% to 85.6%, p<0.001), not the girls (Annex 3).

### ***Overall performance in English***

Only 26 percent of the students in 2000 and 30.3 percent in 2001 achieved all the three competencies in English. Such performance significantly increased among the boys, 22.5% in 2000 to 34.4 percent in 2001 (p<0.001), but was stagnant among the girls (28% in both surveys).

Ten percent of the students in 2000 and 7.6 percent in 2001 failed to achieve any of the competencies in English. On average, the assessed students attained 1.8 competencies in both the surveys.

***Overall performance in language***

Twenty percent of the students achieved all the six competencies of Bangla and English languages in 2000, this rate increased to 25.8 percent in 2001. On the other hand, one percent of the students in 2000 and 0.2 percent in 2001 failed to achieve any of the language competencies. On average, the students achieved 4.1 language competencies in 2000 and 4 competencies in 2001.

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

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

**Achievement of Mathematics Competencies**

Competencies in Mathematics mostly cover skills in arithmetic and geometry. There are five competencies in Mathematics. These are on basic numbers, four basic rules of

arithmetic, problem solving, measurement of units and geometric figures. To assess these competencies 15 question items were put in the test instrument. Table 7 presents the competencies, test items and minimum level required for qualifying the Mathematics competencies.

Table 8 provides percentage of students achieving various Mathematics competencies in the surveys. Students did comparatively better in two competencies; these are knowledge about basic numbers and skills in four basic rules of arithmetic. Over three quarters of the students had knowledge in basic numbers. On the other hand, 82 percent of the students had competency on four basic rules in 2000, however it significantly reduced to 73.2 percent in 2001 ( $p < 0.01$ ). Of the four rules around 80 percent of the students could correctly answer the addition and the subtraction, nearly 70 percent could do the multiplication and less than a half of them could do the division. Sixty percent of the students in 2000 and 56 percent in 2001 could correctly answer the given simplification.

Table 8. Percentage of students achieving Mathematics competencies by year

| Competencies      | Year |      | Significance |
|-------------------|------|------|--------------|
|                   | 2000 | 2001 |              |
| Basic number      | 78.8 | 76.9 | ns           |
| Four basic rules  | 82.0 | 73.2 | $p < 0.01$   |
| Problem solving   | 39.4 | 30.2 | $p < 0.05$   |
| Measurement units | 46.9 | 46.7 | ns           |
| Geometric figures | 52.8 | 51.5 | ns           |
| All five          | 23.6 | 21.7 | ns           |

Students' performance in problem solving in Mathematics significantly deteriorated from 39.4 percent in 2000 to 30.2 percent in 2001 ( $p < 0.05$ ). Sex-wise analysis shows that deterioration in the performance occurred more among the boys than girls. To assess the competency there were four sums needing skills on basic arithmetic operation, unitary method, percentage, and graph. Students of the year 2001 did worst in all the above four areas compared to the students of 2000. For instance, in 2000, 53.6 percent of the students could correctly answer the problem on basic arithmetic operation which reduced

to 37.8 percent in 2001. Again, proportion of students could do the sum needing skill on unitary method reduced from 22.5 percent in 2000 to only 8 percent in 2001. The students were asked to find the percentage of 640 on 800; only 29.7 percent in 2000 and 19.5 percent in 2001 could make the correct answer of this problem. The 2001 assessment shows that students' performance did not exceed 40 percentage points in any of the sums under problem solving competency.

Over 46 percent of the students attained the competency on measurement unit in both the surveys. Here, the students were asked to identify the length of a pencil. Only 29.6 percent of the students in 2000 and 17.4 percent in 2001 could do it. Another problem was to convert 5 hours and 25 minutes into seconds; 41.3 percent of the students in 2000 and 36.6 percent in 2001 could solve it.

Nearly 53 percent of the students in 2000 and 51.5 percent in 2001 attained the competency on geometric figures. Here, in one question the students were asked to identify four basic geometric figures viz., rectangle, triangle, square, and circle. Forty three percent of the students in 2000 and 44.3 percent in 2001 could identify any three of these four figures.

Although the boys were tend to do better than the girls in each of the competencies in both the years, but such differences were not statistically significant (Annex 4).

Students' achieving all the five competencies in Mathematics was 23.6 percent in 2000 and 21.7 percent in 2001. In 2000, 25.8 percent of the boys and 22.3 percent of the girls achieved all Mathematics competencies, however these were respectively 24.4 percent and 19.9 percent in 2001. Over four percent of the students in 2000 and three percent in 2001 did not attain any of the Mathematics competencies. On average, the students attained three Mathematics competencies in 2000 and 2.8 competencies in 2001.

### **Achievement of 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 MCQ type of question items were put in the

test instrument to assess the above six competencies. Table 9 gives summary of the competencies, test items and minimum level of qualifying the competencies in Social Studies.

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"> <li>• How a family becomes a happy family</li> <li>• Responsibility of family members</li> </ul>              | Answer correctly any one of the items on the left |
| Duties as a member of the society           | <ul style="list-style-type: none"> <li>• Responsibility as a member of the society</li> <li>• Why one should not play radio/TV loudly</li> </ul> | Answer correctly any one of the items on the left |
| Duties as citizen of Bangladesh             | <ul style="list-style-type: none"> <li>• Responsibility as a citizen</li> <li>• Eligibility to vote in national elections</li> </ul>             | Answer correctly any one of the items on the left |
| Knowledge about the country                 | <ul style="list-style-type: none"> <li>• Independence day</li> <li>• Major transportation system</li> <li>• Place of highest rainfall</li> </ul> | Answer correctly any one of the items on the left |
| Manners with other people                   | <ul style="list-style-type: none"> <li>• Right manners with teachers</li> <li>• Right manners with younger siblings</li> </ul>                   | Answer correctly any one of the items on the left |
| Knowledge about children of other countries | <ul style="list-style-type: none"> <li>• Main food of the children of Maldives</li> <li>• Popular games in Nepal</li> </ul>                      | Answer correctly any one of the items on the left |

Table 10 provides percentage of students achieving the competencies in Social Studies in both the surveys. The Table shows that the students under both the surveys did equally in the Social Studies competencies. A higher proportion of the students had very well knowledge about their duties as family member or member of society. They also knew how to behave with various persons. Two-thirds of the students knew their duties as citizen of Bangladesh and around a half had knowledge about different aspects of the country. Around half of the students had knowledge about the children of neighbouring countries, such as main food of the children of Maldives and popular games of Nepali children.

In both the surveys, statistically significant gender difference favouring boys was seen in the knowledge about their duties as member of society (Annex 5). In addition, boys under 2001 survey had better knowledge about their duties as citizen of Bangladesh compared to girls.

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

| Competencies                    | Year |      | Significance |
|---------------------------------|------|------|--------------|
|                                 | 2000 | 2001 |              |
| Duties as family member         | 80.0 | 75.4 | ns           |
| Duties as member of society     | 86.3 | 84.4 | ns           |
| Duties as citizen of Bangladesh | 66.8 | 67.1 | ns           |
| Knowledge about the country     | 51.6 | 46.3 | ns           |
| Manners with other people       | 84.6 | 83.5 | ns           |
| Children of other countries     | 48.6 | 51.6 | ns           |
| All six                         | 26.2 | 23.6 | ns           |

Over a quarter of the students of 2000 attained all the six competencies in Social Studies, which reduced to 23.6 percent among the students of 2001. However, this difference was not statistically significant. In both the surveys, less than two percent of the students failed to achieve any of the competencies in Social Studies. On average, students attained 4.2 Social Studies competencies in 2000 and 4.1 competencies in 2001.

### **Achievement of General Science Competencies**

Nine General Science competencies were assessed, five of them are on 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 importance of balanced diet, know the preventive measure 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 MCQ type of questions were put 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.

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"> <li>• How good health is achieved</li> <li>• Why one takes carbohydrate</li> </ul>                                      | Answer correctly any of the items on the left |
| Knowledge about physical and environmental health | <ul style="list-style-type: none"> <li>• Which tube well water is safe</li> <li>• How diarrhoea spreads</li> </ul>   | Answer correctly any of the items on the left |
| Knowledge of balanced diet                        | <ul style="list-style-type: none"> <li>• What is a balanced diet</li> <li>• Why should adolescents take extra food</li> </ul>                              | Answer correctly any of the items on the left |
| Knowledge about prevention of common illnesses    | <ul style="list-style-type: none"> <li>• Transmission of worms</li> <li>• Skin diseases</li> </ul>   | Answer correctly any of the items on the left |
| Information collection ability                    | <ul style="list-style-type: none"> <li>• What is the fastest mass media</li> <li>• Highest and lowest temperatures during summer</li> </ul>                | Answer correctly any of the items on the left |
| Observation skills                                | <ul style="list-style-type: none"> <li>• Which tree has no branch</li> <li>• Plant without a flower</li> </ul>   | Answer correctly any of the items on the left |
| Scientific investigation                          | <ul style="list-style-type: none"> <li>• Identification of preventive measures for given illness</li> <li>• Identify effects of over population</li> </ul> | Answer correctly any of the items on the left |
| Cause and effect relationship                     | <ul style="list-style-type: none"> <li>• Energy that causes a boiling kettle lid to move up</li> <li>• Energy which drives a bullock cart</li> </ul>       | Answer correctly any of the items on the left |
| Everyday science                                  | <ul style="list-style-type: none"> <li>• What is information communication</li> <li>• What are modern agricultural technologies</li> </ul>                 | Answer correctly any of the items on the left |

Of the nine competencies of General Science students did very well in three in both the surveys. These are: understanding the importance of good health, knowing physical and environmental health systems, and having information collection ability. Over 80 percent of the students attained these competencies. The students also did well in two other competencies – importance of balanced diet and observation skills on natural objects. Over two-thirds of the students attained the competency of scientific observation. No statistically significant improvement or deterioration was seen in the performance of above five competencies including knowledge on prevention of common diseases.

Statistically significant variation in the performance of the students was observed in two competencies. In identifying cause and effect relationship the performance significantly deteriorated from 70.9 percent in 2000 to 61.1 percent in 2001 ( $p < 0.01$ ). On the other hand, students' performance significantly improved in knowledge on science and technology in everyday life, 58.1 percent in 2000 to 72.8 percent in 2001 ( $p < 0.001$ ).

There was no gender variation in most of the cases. More boys than girls showed skills in information collection ability in both the surveys ( $p < 0.05$ ) (Annex 6). Again, the boys also scored more in knowledge on science and technology in everyday life ( $p < 0.05$ ).

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

| Competencies                             | Year |      | Significance |
|--|------|------|--------------|
|  | 2000 | 2001 |              |
| Importance of good health                | 89.7 | 91.5 | ns           |
| Physical and environmental health system | 84.3 | 84.4 | ns           |
| Importance of balanced diet              | 67.7 | 70.1 | ns           |
| Prevention of common diseases            | 61.7 | 55.6 | ns           |
| Information collection ability           | 83.4 | 81.1 | ns           |
| Observation skills on natural objects    | 79.0 | 77.3 | ns           |
| Scientific investigation skills          | 64.9 | 64.3 | ns           |
| Cause and effect relationship            | 70.9 | 61.1 | $p < 0.01$   |
| Science and technology in everyday life  | 58.1 | 72.8 | $p < 0.001$  |
| All nine                                 | 22.8 | 20.3 | ns           |

Nearly 23 percent of the students in 2000 and 20.3 percent in 2001 attained all the nine competencies in General Science. Sex-wise analysis shows that 23.6 percent of the boys and 22.3 percent of the girls achieved all the nine competencies in 2000. These were 22 percent and 19.4 percent in 2001. A few students attained none of the competencies in both the surveys. On average, the students achieved 6.6 General Science competencies in each of the surveys.

Combining both Social Studies and General Science it can be said that on average, the students attained 10.8 Environmental Studies competencies in 2000 and 10.7 competencies in 2001.

### **Achievement in Religious Studies**

Out of six competencies in Religious Studies only one was assessed. This was students' 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 was considered as minimum qualification of achievement. Less than a third of the students attained this competency in both the surveys. Boys out-performed the girls in both the surveys.

### **Overall Learning Achievement**

Overall learning achievement of the students was assessed in three ways. Firstly, classifying the competencies on the basis of the performance of the students, secondly, finding out the proportion of students achieving all the 27 competencies, and finally, by computing average number of competencies attained.

### ***Classification of the competencies***

As was seen in the previous sections that of the 27 competencies no statistically significant change was noticed in the performance of the students in 20 competencies. Performance of the students significantly improved in three competencies, these are:

- Listening of Bangla,
- Listening of English; and
- Knowledge on science and technology in everyday life.

On the other hand, students' performance significantly deteriorated over the period in four competencies, these are:

- Reading of English;
- Four basic rules of Mathematics;
- Problem solving in Mathematics; and
- Identification of cause and effect relationship.

Let us now categorise the competencies according to the performance of the students. In doing so, the competencies were classified into four categories as follows:

*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 Tables 13 and 14. In 2000, the students did ‘excellent’ in 8 competencies, ‘satisfactory’ in 11, ‘mediocre’ in 5 and ‘poor’ in 3 competencies. However, 2001 survey shows that the students did ‘excellent’ in 6 competencies, ‘satisfactory’ in 13, ‘mediocre’ in 5 and ‘poor’ in 3 competencies.

Table 13. Classification of the competencies according to the level of performance, 2000

| Level of performance | Competencies  | Difficulty level |
|----------------------|---|------------------|
| Poor                 | <ul style="list-style-type: none"> <li>• Writing in English</li> <li>• Problem solving in Mathematics</li> <li>• Life history of prophet Mohammed (SM) or the preachers of own religion</li> </ul>  | Very difficult   |
| Mediocre             | <ul style="list-style-type: none"> <li>• Measurement units</li> <li>• Identification of geometric figures</li> <li>• Know about the country</li> <li>• Know about the children of other countries</li> <li>• Science and technology in everyday life</li> </ul>   | Difficult        |
| Satisfactory         | <ul style="list-style-type: none"> <li>• Reading in Bangla</li> <li>• Writing in Bangla</li> <li>• Reading in English</li> <li>• Listening in English</li> <li>• Basic number skills</li> <li>• Duties as citizen of Bangladesh</li> <li>• Importance of balanced diet</li> <li>• Observation skills on natural objects</li> <li>• Scientific investigation skills</li> <li>• Prevention of common diseases</li> <li>• Identification of cause and effect relationship</li> </ul> | Easy             |

|           |  |           |
|-----------|--|-----------|
| Excellent | <ul style="list-style-type: none"> <li>• Listening in Bangla</li> <li>• Basic rules of arithmetic</li> <li>• Duties as family member</li> <li>• Duties as member of society</li> <li>• Importance of good health</li> <li>• Manners with persons of various relationship</li> <li>• Physical and environmental health systems</li> <li>• Information collection ability</li> </ul> | Very easy |
|-----------|--|-----------|

Performance of the students in ‘basic four rules of arithmetic’ and ‘knowledge on duties as family member’ deteriorated from ‘excellent’ level to ‘satisfactory’ level, and in ‘knowledge about prevention of common diseases’ deteriorated from ‘satisfactory’ level to ‘mediocre’ level. On the other hand, the performance on ‘knowledge about science and technology in everyday life’ uplifted from ‘mediocre’ level to ‘satisfactory’ level.

Table 14. Classification of the competencies according to the level of performance, 2001

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

|           |  |           |
|-----------|--|-----------|
| Excellent | <ul style="list-style-type: none"> <li>• Listening in Bangla</li> <li>• Duties as member of society</li> <li>• Importance of good health</li> <li>• Manners with persons of various relationship</li> <li>• Physical and environmental health systems</li> <li>• Information collection ability</li> </ul> | Very easy |
|-----------|--|-----------|

### *Achievement of all competencies*

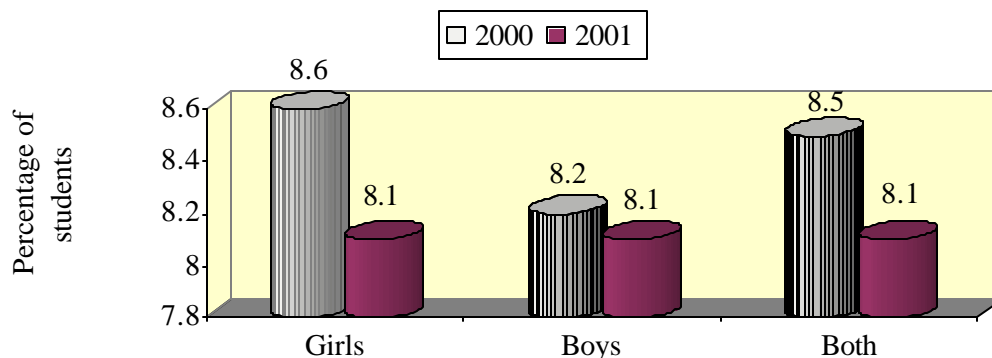
As was already seen that in both the surveys, highest proportion of the students achieving all the competencies in Bangla, followed by English, Social Studies, Mathematics and General Science respectively (Table 15). No statistically significant variation was observed among the students of 2000 and 2001 in this respect. However, proportionately, students made slight progress in Bangla and English languages. On the other hand, it decreased in Mathematics, Social Studies and General Science. Such analyses separately done for boys and girls also show mostly the similar picture. However, progress of the boys in English was tremendous, 22.5 percent in 2000 to 34.4 percent in 2001.

Table 15. Percentage of students achieving all the competencies by subject and sex

| Subject         | Boys |      | Girls |      | All students |      |
|-----------------|------|------|-------|------|--------------|------|
|                 | 2000 | 2001 | 2000  | 2001 | 2000         | 2001 |
| Bangla          | 51.6 | 58.9 | 45.1  | 48.3 | 47.5         | 52.0 |
| English         | 22.5 | 34.4 | 28.0  | 28.0 | 26.0         | 30.3 |
| Mathematics     | 25.8 | 24.9 | 22.3  | 19.9 | 23.6         | 21.7 |
| Social Studies  | 29.1 | 28.7 | 24.6  | 20.9 | 26.2         | 23.6 |
| General Science | 23.6 | 22.0 | 22.3  | 19.4 | 22.8         | 20.3 |

Figure 1 presents the proportion of students achieving all the 27 competencies. Not much difference was observed in the performance of the students of two successive cohorts. In 2000, 8.5 percent of the students achieved all the 27 competencies, which slightly decreased to 8.1 percent in 2001. Such deviation was slightly bigger for girls than boys.

Figure 1. Percentage of students achieving all the 27 competencies by year and sex



***Mean number of competencies achieved***

On average, the students of 2000 achieved 18.1 competencies, which reduced to 17.9 in 2001 (Table 16). This indicates that the students all together achieved 66 percent of the competencies tested. Not much difference was observed in the performances of the boys and the girls. Calculation of co-efficient of variation of the number of competencies achieved shows that student-to-student variation slightly reduced from 2000 to 2001. However, variability was higher among the girls than boys.

Table 16. 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                     |

### ***Mean number of correctly answering items***

Of the 64 question items put in the whole test, on average, the students of 2000 made correct answer to 36 items which reduced to 33.4 in 2001 (Table 17). Mean number of correctly answering items reduced from 36.8 to 35.1 for boys and from 35.5 to 32.5 for girls. Other way, the students collectively made correct answer to 56.3 percent of the question items in 2000 and 52.2 percent in 2001. Subject-wise analysis of this is also presented in Table 17. Students' weak performance in Mathematics, Social Studies and General Science is noticeable. No student of any cohort made correct answer to all the question items in Mathematics.

Table 17. Mean number of correctly answering items by year

| Subjects        | Number of question item | 2000 |            | 2001 |            |
|-----------------|-------------------------|------|------------|------|------------|
|                 |                         | Mean | Percentage | Mean | Percentage |
| Bangla          | 10                      | 7.0  | 70.0       | 7.0  | 70.0       |
| English         | 7                       | 4.3  | 61.4       | 4.1  | 58.6       |
| Mathematics     | 15                      | 7.4  | 49.3       | 6.4  | 42.7       |
| Social Studies  | 13                      | 7.1  | 54.6       | 6.4  | 49.2       |
| General Science | 18                      | 9.6  | 53.3       | 9.1  | 50.6       |
| All             | 64                      | 36.0 | 56.3       | 33.4 | 52.2       |

### ***Analysis at school level***

The performance of the students was also analysed at school level (Table 18). Earlier analysis presented central tendency of number of competencies achieved by the students, where the unit of analysis was individual student. This analysis considers each school as unit of analysis. This allows seeing how far the achievement of the students varies from one school to another. A wide variation among the schools was observed in both the surveys, however it reduced over time. On average, the students of sample schools achieved between 9.4 to 26.7 competencies in 2000. This was 12.8 to 23.9 in 2001. Range and co-efficient of variation indicate the reduction of variation among the surveyed schools (Table 18).



Table 18. School level analysis: some basic statistics of mean number of competencies achieved

| Year | n  | 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                      |

***Performance according to the taxonomic class level of items***

The question items put in the test instrument can be classified according to taxonomic class level. Of the 64 question items 45 are of knowledge level, and 19 are of understanding level (6 comprehensive, 3 synthesis, 3 analysis, and 7 application). This section presents students performance on the basis of such classification.

Table 19. Performance of the students according to the taxonomic class level of items

| Taxonomic class level | Number of question items | 2000 |            | 2001 |            |
|-----------------------|--------------------------|------|------------|------|------------|
|                       |                          | Mean | Percentage | Mean | Percentage |
| Knowledge             | 45                       | 26.8 | 59.6       | 25.3 | 56.2       |
| Understanding         | 19                       | 8.9  | 46.8       | 8.0  | 42.1       |
| Comprehension         | 6                        | 3.3  | 55.0       | 3.2  | 53.5       |
| Application           | 7                        | 2.7  | 38.6       | 2.0  | 28.6       |
| Analysis              | 3                        | 1.1  | 36.7       | 1.0  | 33.0       |
| Synthesis             | 3                        | 1.9  | 63.3       | 1.8  | 60.0       |

On average, the students did better in the items of knowledge level than those of understanding level (Table 19). Of the 45 knowledge level items students' on average correctly answered 59.6 percent of the items in 2000 and 56.2 percent in 2001. On the other hand, average achievement in the understanding level items was 46.8 percent in 2000 and 42.1 percent in 2001. Students' performance was lowest in those items which are of analysis level.

## **Discussion and Conclusion**

The National Curriculum and Textbook Board (NCTB) has specified 53 terminal competencies which are expected to be achieved by the students completing five years primary curriculum. BRAC provides primary education to the children through its Non-formal Primary Education (NFPE) programme. This report explores competency-based learning attainment of the students completing primary cycle in BRAC schools. It should be mentioned here that although BRAC schools are called non-formal schools, NCTB curriculum of formal schools is followed there. Other important feature is that BRAC completes five years curriculum within four years through reducing long vacations. There are two limitations of this study. It did not take into account the urban schools and the non-cognitive competencies. The readers should take the results considering the above limitations. On the other hand, as two cohorts of students graduated in 2000 and 2001 (respectively second and third batches) were assessed in this study it gives a better picture.

The findings of this study clearly show that over eight percent of the students of BRAC schools attained all the 27 cognitive competencies tested. Again, on average the students of each cohort attained 66 percent of the competencies (18 out of 27). Such consistent results indicate some sort of validity of the test instrument and reliability in the findings. Again, the findings confirm that a majority of the students of BRAC schools do not attain all the competencies. Although there was no statistically significant difference in the performances of the students of two batches, but the overall performance tend to be better in Bangla and English languages over the period. However, it went down for Mathematics, Social Studies and General Science. Languages are the basics for the children to be learned, because without having a standard level in language students would face difficulty in learning or expressing themselves in other subjects. The Education Programme of BRAC could maintain a similar level in language, but not in other subjects.

The *Education Watch* first studied competency-based learning attainment in 2000, however, such education was introduced 10 years back. This study also considered the non-formal schools. The study results show that on average the students of non-formal schools did better compared to the State owned and private primary schools (registered and un-registered) (Nath and Chowdhury 2001). However, they performed less than their counterpart in urban private schools. It is a good symptom of the rural non-formal

schools that these are providing better education compared to the nearby government and private primary schools. Moreover, the non-formal schools of BRAC also did slightly better than other non-formal schools (Nath and Chowdhury 2001). At this point the position of BRAC's education programme is significant in providing quality education. Now the question comes, is it the right level that one can expect from BRAC schools? The answer should clearly be NO! Actually the findings of *Education Watch* show that none of the sub-systems at primary level had satisfactory level of achievement. The non-formal sub-system did better among the poor performers.

Students' should learn all the attainable competencies irrespective of school type. BRAC schools are in a better position to produce better results compared to other sub-systems (Nath and Chowdhury 2001). Its strength lies in its process. It has limited class size and teachers are given refreshers training once a month. The programme organisers visit the schools frequently and provide academic supervision. Teachers continuously assess the students. Regular monitoring and research on the BRAC school system is a common feature. All these may help the programme to be better compared to other sub-systems. Are these initiatives adequate to acquire more competencies for the students? It is not easy to answer this question, or such a question is out of scope of this study. After preparing the draft report of the *Education Watch 2000* the research team sat with the teachers and officials of different sub-systems to enquire the reasons, from their perspective, behind such poor performance. In one of such meeting the programme organisers of BRAC viewed the following:

- As the study of the year 2000 covered the second batch, the students did not get much time to get prepared. Some of the contents had to be shortened to complete the course.
- Although the teachers may know the competencies, they do not consider those during teaching or assessing the students.
- Teachers of BRAC schools are relatively weak in English and Mathematics than other subjects. Some of the topics of these subjects are too difficult to work on.

Probably the above-mentioned constraints continued with the programme at least for the next one year, that is why we did not see any noticeable change in the performances of the students of two successive batches. Students' competency achievement primarily (and probably mostly) depends on teachers' preparation and application of training in classroom situation. In BRAC situation the second important factor may be the leadership

quality of the programme organisers. Teacher trainers and the monthly refreshers' training sessions are two important components which should be examined thoroughly. The objective of which should be to inquire the limitations (if any) of the components in relation to competency-based education system and the ways that can also help improve students learning attainment. An assessment of the monthly refreshers' training can help understand its limitations in competency achievement. Moreover, assessment of knowledge of the programme organisers and the teacher trainers on competency-based education may improve our knowledge in this regard.

There is a provision in BRAC education programme to assess the schools on the basis of some criteria. This is done by two groups of people. The programme organisers assess all the schools under their own supervision. Again, the internal monitoring unit of BEP does the same on a sample of schools. However, both the group consider school as unit of analysis. Such evaluation is a good practice to improve school quality. These initiatives of BEP have some limitations (Nath 2002). Firstly, the learning assessment part of these evaluations is not standardised. Secondly, these school evaluations do not take into account the national competencies. Thirdly, the evaluations are done frequently (e.g., POs do it twice a month), so quality of evaluation cannot be maintained. Finally, the curriculum developers or the teacher trainers do not get adequate information from these. Although the school evaluation, done by the monitoring unit, is relatively more informative than the other one, there is a need to combine both and make a sound and standardised school evaluation system that can help the programme managers, quality managers, curriculum developers and the teacher trainers. Such initiative targeting quality improvement of the schools may contribute in competency achievement of the students.

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## Annex 1. The 53 terminal competencies (English version)

1. To place unflinching trust in the oneness of Allah, the Almighty creator and Custodian of the universe.
2. To feel grateful to Allah for His infinite mercy and to express such gratefulness by remembering him in all deeds.
3. To know the life history of Hazarat Mohammed (peace be on him), the prophet of Allah and in case of the followers of other religions the life history of the preachers of their respective religions.
4. To love all creations of the Creator.
5. To show respect and tolerance to the followers of all religions.
6. To show respect to all irrespective of their sex, financial status occupation and lifestyle.
7. To be interested in manual work and to be respectful to people living on manual work.
8. To show respect and do duty towards parents, elders, neighbours and relatives.
9. To be aware of one's own duties and responsibilities as a member of the family and to take part in household work.
10. To be aware of one's own duties and responsibilities as a member of the society and to take part in social activities.
11. To be aware of one's own duties and responsibilities as a citizen of Bangladesh and to discharge civic duties.
12. To allow others to express their opinions and to show respect for such opinions.
13. To play active part in combined decision-making about different programmes undertaken by the school.
14. To grow as a competent team leader and team member by performing duties and responsibilities with honesty and devotion.
15. To know and love the country.
16. To take pride in national tradition and culture (language, folksong, arts & crafts and eminent personalities).
17. To show respect to the national flag and national anthem.
18. To avoid wastage of resources.
19. To realise the importance of building up healthy body for living a healthy life.
20. To be willing to build up a healthy body through participation in games and sports and physical exercise.
21. To know and observe the rules for the preservation of physical health and environmental health.
22. To know and realise the importance of balanced food and to develop the habit of eating such food.
23. To know about the common diseases, their causes and preventive measures and to be willing to take preventive measures against them.
24. To understand and correctly read materials printed and hand written in easy Bangla and through reading skill to continue acquiring knowledge by reading material written in Bangla.

25. To express by writing correctly and distinctly in plain Bangla his/her own observation, experience and intention, to be able to write simple letters and applications and to be able to fill in different kinds of forms.
26. To talk in correct colloquial Bangla in order to accurately and effectively express as well as exchange thoughts and feeling with classmates and others.
27. To comprehend the main theme by listening attentively to conversations, speeches, descriptions etc. in Bangla.
28. To gain basic ideas of numeracy and to be able to make use of numbers.
29. To know four fundamental operation and to be able to use them.
30. To apply the simple methods of computing/calculating in solving the day to-day problems.
31. To know and to use the units of money, length, weight, square measure, measurement and time.
32. To know and understand the geometrical signs and figures.
33. To develop the ability to collect facts and information.
34. To develop the habit of reading newspapers, periodicals as well as books outside the syllabus.
35. To think independently and to develop the ability to express own opinions.
36. To accept new ideas and to feel interested in discussing them with others.
37. To accept and to feel interested in accepting constructive criticism of others for self-development.
38. To know and understand through observation and enquire the immediate natural and social environment.
39. To attain the skill of “scientific enquiry” in respect of specifying the aim of enquiry, observing and classifying different aspects of environment and drawing simple generalizations.
40. To identify the relationship between cause and effect and to make simple study in respect of the ordinary problems of day-to-day life.
41. To observe and identify the improvement in the standard of day to-day life due to application of science and technology and realise its importance.
42. To express oneself through arts like sketching, drawing, clay-work, paper-work, paper-work, music, dance, drama etc.
43. To observe and appreciate the beauty of natural and social environment.
44. To develop the habit of keeping tidy one’s own belonging and environment.
45. To observe discipline.
46. To take care of individual as well as public property.
47. To develop punctuality.
48. To know how to behave with people of different relationship and to develop manners accordingly.
49. To know about the children of other countries and to get interested in their ways of life.
50. To read simple material hand written or printed in English.
51. To listen to and understand simple conversation, story and rhymes in English and to get pleasure out of them.
52. To speak simple sentences in English in order to make others understand one’s own observation and ideas.

### 53. To write brief accounts of known things in correct English.

Source: National Curriculum and Textbook Board (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.

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

| Competencies     | Year   |        | Significance |
|------------------|--------|--------|--------------|
|                  | 2000   | 2001   |              |
| <b>Reading</b>   |        |        |              |
| Girls            | 67.4   | 63.0   | ns           |
| Boys             | 76.9   | 74.6   | ns           |
| Significance     | p<0.05 | p<0.01 |              |
| <b>Writing</b>   |        |        |              |
| Girls            | 73.1   | 68.2   | ns           |
| Boys             | 71.4   | 75.1   | ns           |
| Significance     | ns     | ns     |              |
| <b>Listening</b> |        |        |              |
| Girls            | 81.7   | 88.6   | p<0.05       |
| Boys             | 84.1   | 93.8   | p<0.01       |
| Significance     | ns     | ns     |              |

#### Annex 3. Percentage of students achieving English competencies by year and sex

| Competencies     | Year |        | Significance |
|------------------|------|--------|--------------|
|                  | 2000 | 2001   |              |
| <b>Reading</b>   |      |        |              |
| Girls            | 73.7 | 65.4   | ns           |
| Boys             | 75.8 | 72.2   | ns           |
| Significance     | ns   | ns     |              |
| <b>Writing</b>   |      |        |              |
| Girls            | 41.1 | 35.5   | ns           |
| Boys             | 35.7 | 39.2   | ns           |
| Significance     | ns   | ns     |              |
| <b>Listening</b> |      |        |              |
| Girls            | 68.6 | 73.6   | ns           |
| Boys             | 67.0 | 85.6   | p<0.001      |
| Significance     | ns   | p<0.01 |              |



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

| Competencies      | Year |      | Significance |
|-------------------|------|------|--------------|
|                   | 2000 | 2001 |              |
| Basic number      |      |      |              |
| Girls             | 77.7 | 76.3 | ns           |
| Boys              | 80.8 | 78.0 | ns           |
| Significance      | ns   | ns   |              |
| Four basic rules  |      |      |              |
| Girls             | 81.1 | 70.6 | p<0.05       |
| Boys              | 83.5 | 78.0 | ns           |
| Significance      | ns   | ns   |              |
| Problem solving   |      |      |              |
| Girls             | 37.1 | 30.8 | ns           |
| Boys              | 43.4 | 32.1 | p<0.05       |
| Significance      | ns   | ns   |              |
| Measurement units |      |      |              |
| Girls             | 45.7 | 45.5 | ns           |
| Boys              | 48.9 | 48.8 | ns           |
| Significance      | ns   | ns   |              |
| Geometric figures |      |      |              |
| Girls             | 52.6 | 49.8 | ns           |
| Boys              | 53.3 | 54.5 | ns           |
| Significance      | ns   | ns   |              |

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

| Competencies                           | Year   |        | Significance |
|--|--------|--------|--------------|
|  | 2000   | 2001   |              |
| <b>Duties as family members</b>        |        |        |              |
| Girls                                  | 78.3   | 73.0   | ns           |
| Boys                                   | 83.0   | 79.9   | ns           |
| Significance                           | ns     | ns     |              |
| <b>Duties as member of society</b>     |        |        |              |
| Girls                                  | 83.4   | 81.0   | ns           |
| Boys                                   | 91.2   | 90.4   | ns           |
| Significance                           | p<0.05 | p<0.01 |              |
| <b>Duties as citizen of Bangladesh</b> |        |        |              |
| Girls                                  | 65.7   | 63.0   | ns           |
| Boys                                   | 68.7   | 74.6   | ns           |
| Significance                           | ns     | p<0.01 |              |
| <b>Knowledge about the country</b>     |        |        |              |
| Girls                                  | 49.7   | 45.5   | ns           |
| Boys                                   | 54.9   | 45.0   | p<0.05       |
| Significance                           | ns     | ns     |              |
| <b>Manners with other people</b>       |        |        |              |
| Girls                                  | 84.6   | 83.4   | ns           |
| Boys                                   | 84.6   | 83.7   | ns           |
| Significance                           | ns     | ns     |              |
| <b>Children of other countries</b>     |        |        |              |
| Girls                                  | 47.4   | 52.1   | ns           |
| Boys                                   | 50.5   | 50.7   | ns           |
| Significance                           | ns     | ns     |              |

Annex 6. Percentage of students achieving Social Studies competencies by year and sex

| Competencies                                     | Year   |        | Significance |
|--|--------|--------|--------------|
|  | 2000   | 2001   |              |
| <b>Importance of good health</b>                 |        |        |              |
| Girls  | 88.6   | 91.0   | ns           |
| Boys   | 91.8   | 92.3   | ns           |
| Significance                                     |        |        |              |
| <b>Physical and environmental health systems</b> |        |        |              |
| Girls  | 83.4   | 82.5   | ns           |
| Boys   | 85.7   | 88.0   | ns           |
| Significance                                     |        |        |              |
| <b>Importance of balanced diet</b>               |        |        |              |
| Girls  | 66.9   | 69.7   | ns           |
| Boys   | 69.2   | 70.8   | ns           |
| Significance                                     |        |        |              |
| <b>Prevention of common diseases</b>             |        |        |              |
| Girls  | 61.1   | 53.6   | ns           |
| Boys   | 62.6   | 59.3   | ns           |
| Significance                                     |        |        |              |
| <b>Information collection ability</b>            |        |        |              |
| Girls  | 80.6   | 78.7   | ns           |
| Boys   | 88.5   | 86.1   | ns           |
| Significance                                     | p<0.05 | p<0.05 |              |
| <b>Observation skills on natural objects</b>     |        |        |              |
| Girls  | 78.3   | 76.8   | ns           |
| Boys   | 80.2   | 78.9   | ns           |
| Significance                                     | ns     | ns     |              |
| <b>Scientific investigation skills</b>           |        |        |              |
| Girls  | 63.4   | 62.6   | ns           |
| Boys   | 67.6   | 67.5   | ns           |
| Significance                                     | ns     | ns     |              |
| <b>Cause and effect relationship</b>             |        |        |              |
| Girls  | 69.7   | 60.2   | p<0.05       |
| Boys   | 73.1   | 62.7   | p<0.05       |
| Significance                                     | ns     | ns     |              |
| <b>Science and technology in everyday life</b>   |        |        |              |
| Girls  | 54.9   | 69.7   | p<0.01       |
| Boys   | 63.7   | 78.5   | p<0.01       |

Significance

ns

$p < 0.05$

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