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Assessment of Primary Competencies in Languages  
and Mathematics (APC-L&M)

# Test Development Procedure and Performance of BRAC School Students

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BRAC Research and Evaluation Division

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# ACRONYMS

APC-L&M	Assessment of Primary Competencies in Languages and Mathematics
BEP	BRAC Education Programme
BPS	BRAC Primary School
BRAC	An NGO, formerly known as Bangladesh Rural Advancement Committee
CAT	Competency-based Achievement Test
DPE	Directorate of Primary Education
ESP	Education Support Programme (of BRAC)
HCF	Highest Common Factor
KR	Kuder-Richardson
LCM	Lowest Common Multiple
MCQ	Multiple Choice Question
NCTB	National Curriculum and Textbook Board
NSA	National Student Assessment
PECE	Primary Education Completion Examination
PO	Programme Organiser (of BEP)
RED	Research and Evaluation Division (of BRAC)

# EXECUTIVE SUMMARY

Bangladesh introduced a competency-based primary curriculum in early 1990. A list of 53 competencies was considered initially, which was later shortened to 50 and then to 29. Though the list became shorter over time, the contents of the subject-specific competencies and grade-specific attainable learning outcomes, as well as their numbers were mostly the same throughout the revisions. The primary textbooks were also revised twice during this period. The test instrument to measure primary students' achievement of competencies was first developed in 2000 under *Education Watch* initiative. The test called Competency-based Achievement Test or CAT was used three times in *Education Watch*<sup>1</sup> studies. BRAC Research and Evaluation Division (RED) used the test several times to assess the learning achievement of BRAC school students. The *Education Watch* group members as well as the management of BRAC Education Programme (BEP) demanded a revision of this instrument.

In response to the above requests, the BRAC Research and Evaluation Division (RED) took an initiative to develop a new test, which is rigorous than the previous one. The test development team in RED was well aware that a rigorous test instrument containing all six subjects<sup>2</sup> of primary curriculum will be too long, which may not be suitable for the students of grade V to take it in one sitting. Therefore, three subjects were considered viz., Bangla, English and Mathematics. According to the latest curriculum, these three subjects contain four competencies— one each in Bangla and English, and two in Mathematics (NCTB 2012). However, subject-wise division of competencies shows 14 in Bangla, 31 in English, and 15 in Mathematics— 60 in total. The RED team developed

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<sup>1</sup> A civil society initiative to monitor progress in primary and basic education in Bangladesh ([www.campebd.org](http://www.campebd.org)).

<sup>2</sup> Bangla, English, Mathematics, Bangladesh & Global Studies, Primary Science, and Religion & Moral Education.

a new test called Assessment of Primary Competencies in Languages and Mathematics or APC-L&M in short. Fieldwork for test development was carried out in late 2016, subjects of which were the students of grade V in that year from the government, newly nationalised and BRAC primary schools. Consideration of three major types of schools in piloting the draft test made the final test nationally applicable. Twenty-four competencies were addressed in the new test– nine in Bangla, seven in English, and eight in Mathematics<sup>3</sup>. The number of items was 25 for Bangla, 26 for English, and 24 for Mathematics– totalling 75. The test was validated with regard to the national curriculum, teaching staff of the above-mentioned three types of schools, and the results in CAT and Primary Education Completion Examination (PECE). The reliability coefficients were 0.86 for Bangla, 0.93 for English, and 0.92 for Mathematics. Provision is there to assess the students in three categories– *full-achiever*, *partial-achiever*, and *non-achiever* against each of the competencies.

The new test APC-L&M was applied, for the first time, to the students of grade V of three types of BRAC schools in late 2017. Two of these viz., BRAC Primary School (BPS) and *Shishu Niketan* were directly operated by BEP, and the rest type of schools under Education Support Programme (or ESP schools) were operated under various NGO management by taking support from BRAC. All were one classroom, single teacher schools. The test was administered to 2,400 students, equally distributed by school type. They were sampled from 127 schools located throughout the country.

Of the three subject areas, the students showed much higher performance in Bangla, followed by English and Mathematics, respectively. The proportion of students *fully* achieving the competencies in Bangla ranged from 29-89%, while another 8-35% achieved these *partially*. Sixty per cent or more students *fully* achieved each of the four competencies in Bangla (understanding handwritten text (prose), use of conjunctive letters, ability to express own observations, and ability to write essence of prose), 40% or more but less than 60% of the students did so in each of another four competencies (writing own experience, understanding the essence of poems, writing an application, and writing the essence of poems), and less than 40% of the students did the same in the rest competency (use of punctuation marks in writing). Out of nine, the students, on an average, *fully* achieved 5.2 competencies; therefore, the average achievement was 57.7%. The average would have increased to seven if *partially* achieved competencies were also counted. This would have taken the average achievement to 77.6%. Regarding Bangla, the students were facing major challenges with the appropriate use of punctuation marks, writing with correct spelling and grammar. Though keeping answer-space blank was not a problem in Bangla test, but writing irrelevant words or sentences or copying from the

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<sup>3</sup> The list is available in Table A3 (page 9).

questions were problems with a significant proportion of the students. They were also facing challenges even with MCQ items, if the answers had to be produced manipulating the given text.

In English, the proportion of students *fully* achieving the competencies ranged from 1-80%, while another 2-50% achieved these *partially*. Less than 40% of the students *fully* achieved each of the six competencies in English (understanding stories through reading, making sentences, use of capital letters and punctuation marks, recognising sentences of various characteristics, writing a simple letter, and making short composition), and more than 60% of the students did so in only one competency (fill-up simple forms). Out of seven, the students, on an average, *fully* achieved 2.4 competencies; therefore, the average achievement was 34%. The average would have increased to 4.1 if *partially* achieved competencies were also considered. This would have taken the average achievement to 58.6%. The students were facing challenges in both reading and writing English. This also includes writing with correct spelling and grammar. A good proportion of the students kept answer-space blank in English part of the test, and another portion wrote irrelevant words or sentences or copied from the questions.

In Mathematics, the proportion of students *fully* achieving the competencies ranged from 4-79%, while another 9-60% achieved these *partially*. More than 60% of the students *fully* achieved only one competency in Mathematics (graphical presentation of data), a half of the students did so in another (knowing geometric shapes), and less than 40% of the students did the same in each of the remaining six competencies (basic rules in arithmetic, average, HCF and LCM<sup>4</sup>, fraction, percentage, and units of measurement). Out of eight, the students, on an average, *fully* achieved 2.34 competencies; therefore, the average achievement was 29.3%. The average would have increased to 4.54 if *partially* achieved competencies were also taken into account. This would have taken the average achievement to 56.8%. The students were facing challenges in most of the mathematical tasks including basic arithmetical rules. Not knowing the steps of solving mathematical word problems was a big challenge to them. A good proportion of the students did not take the initiative to solve the sums at all or did wrong in the calculation.

In general, the performance of the students was low for each type of school. However, of the three, the students of *Shishu Niketans* showed the best performance in the majority of the competencies followed by those of BPSs and the ESP schools, respectively. In 21 competencies, of which eight in Bangla, six in English and seven in Mathematics, the students of *Shishu Niketans* did better than those of other two types. The students of BPSs did

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<sup>4</sup> HCF = Highest Common Factor, LCM = Lowest Common Multiple

the same against the students of ESP schools in these competencies. The students of *Shishu Niketans* and BPSs performed equally in the competency on 'writing an application' in Bangla, and the students of BPSs and ESP schools also showed an equal performance in the competency on 'writing a short piece of composition' in English. The students of ESP schools were ahead of those of other two types in the competency on 'fraction' in Mathematics.

The boys and the girls performed equally in the majority of the competencies. Number of such competencies was fifteen, equally distributed by subject. The girls outperformed the boys in seven competencies– four in Bangla, two in English, and one in Mathematics. These were 'writing the essence of prose', 'writing the essence of poems', 'use of conjunctive letters', and 'writing own observations' in Bangla, 'fill-up simple forms' and 'writing simple letter' in English, and 'geometric shapes' in Mathematics. The boys were ahead of the girls in two competencies in Mathematics. These were on 'average', and 'HCF and LCM'.

Purpose of presenting three types of schools was not to show the superiority of one over another; rather, this study shows what type of learning achievement is possible to gain for what type of investment. Performance of the students was perfectly aligned with their socioeconomic background. To have the best result of this assessment the findings should be shared with the staff of BEP at all levels including the teachers and the teacher trainers. This is important for taking everyone on board so that they can contribute to the process of improvement. The research team can help in explaining the findings in further detail and reanalysis of data as needed in the improvement process. Yearly administer of this test can report on the results of such initiatives on a regular basis.

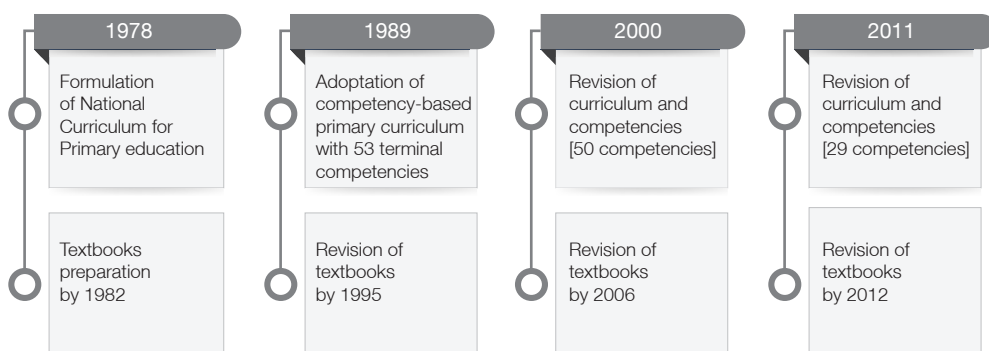
## CHAPTER ONE

# STUDY BACKGROUND

The primary education sub-sector in Bangladesh adopted a competency-based curriculum in the early 1990s. It took about five years to gradually implement this initiative in all grades of primary education throughout the country (Sedere 2011). The major task was to prepare the textbooks in line with the competencies adopted. Taking of the concept throughout the country along with the new textbooks was done by 1995. Therefore, it can be said that the competency-based primary education was started to implement *fully* in the classrooms from the academic year starting in January 1996.

The primary education in Bangladesh has gone through a competency-based curriculum for more than two-and-a-half decades. The curriculum as well as the competencies, were revised for several times during this period (Figure A1). In the beginning, there were 53 attainable terminal competencies, which were later shortened to 50 in 2000. It was revised last

Figure A1. Timeline of competency-based primary education in Bangladesh



Source: NCTB (2012)

in 2011 to make it a basket of 29 competencies. These revisions were mostly nothing but squeezing of the list in order to lower the number. Contents in the subject-specific competencies and grade-wise learning outcomes were mostly similar in each of the three sets of competencies.

Introduction of the competency-based curriculum should mean the assessment system to be tailor-made in line with the competencies adopted. Unfortunately, this was not the case in practice in Bangladesh. School-based half-yearly and annual examinations, and the then centrally administered primary scholarship examinations were held following a traditional method. On introduction of Primary Education Completion Examination (PECE) in 2009 as the gateway to secondary education, the Directorate of Primary Education (DPE) started thinking of gradual shifting of the examination system from traditional to competency-based. In recent years, the DPE has started to claim that PECE question papers are gradually shifting towards competency-based. There is a question on this. Any competency-based examination should be able to announce the examination results considering the competencies as units of assessment. For instance, it should be able to say how many of the tested competencies were achieved by each student. However, to date, no such attempt was observed in any school-based examination or the PECE. The case of National Student Assessment (NSA) is also the same. Figure A2 provides the characteristics of the three different assessment provisions currently exist in primary education in Bangladesh.

Figure A2. Students’ assessment at primary level in Bangladesh

Primary Education completion Examination (PECE)	National Student Assessment (NSA)	Competency-based Achievement Test (CAT)
<ul style="list-style-type: none"> <li>• Administered by the directorate of Primary Education (DPE)</li> <li>• Started in 2009, carried out every year</li> <li>• For the students of grade V only</li> <li>• All students reaching at the end of primary education covered</li> <li>• Subjects: Bangla, English, Mathematics, Primary Science, Bangladesh &amp; Global Studies, and Religion &amp; Moral Education</li> <li>• Gateway to secondary education</li> </ul>	<ul style="list-style-type: none"> <li>• Administered by the Directorate of Primary Education (DPE)</li> <li>• Introduced in 2006</li> <li>• Carried out every alternate year since 2011</li> <li>• For the students of grades III and V</li> <li>• Sample of students covered</li> <li>• Subjects: Bangla and Mathematics</li> </ul>	<ul style="list-style-type: none"> <li>• Administered by <i>Education Watch</i> Group of Campaign for Popular Education (CAMPE)</li> <li>• Carried out in 2000, 2008 and 2014</li> <li>• For the students of grade V only</li> <li>• Sample of students covered</li> <li>• Subjects: Bangla, English, Mathematics, Primary Science, Bangladesh &amp; Global Studies, and Religion &amp; Moral Education</li> <li>• Administered to the students of BRAC Primary Schools in 2001–2010 and 2017</li> </ul>

The first competency-based assessment instrument, called Competency-based Achievement Test or CAT, was developed in 2000 under the *Education Watch* initiative (Nath, Ghosh and Akter 2000). It is a civil society initiative to monitor progress in education in Bangladesh. The test was limited to assessment of the fifth graders. This instrument covered all six subjects taught at primary level viz., Bangla, English, Mathematics, Social Studies (later renamed as Bangladesh & Global Studies), General Science (later renamed as Primary Science), and Religious Studies (later renamed as Religion & Moral Education). Number of competencies addressed was 27 (out of 53 at that time). Only those competencies were considered which were suitable to assess through a paper-pencil-based test. The test had 64 items, and the duration of the test was two hours and 10 minutes with two breaks of 10 minutes each. It was a group test administered in the classrooms.

Using this instrument, three national surveys were conducted under *Education Watch* in 2000, 2008 and 2014 (Nath and Chowdhury 2001, 2009; Nath *et al.* 2015). BRAC Research and Evaluation Division (RED) assessed the students of BRAC Primary Schools once a year at the end of their fifth grade during 2001-2010 and in 2017 (Nath 2012, 2018).

Over the past decades, some changes have occurred in primary education sub-sector in Bangladesh. The curriculum has been revised as well as the terminal competencies. Changes also occurred in classroom teaching due to the introduction of PECE and question pattern of it. The CAT, however, considered Bloom's taxonomy in preparing the test items, but coverage of higher order items was limited in the instrument. In the meantime, Bloom's taxonomy has also been revised (Anderson and Karthwohl 2001). The competencies listed in the latest primary curriculum require higher order test items in the instrument. Considering all the reforms in curriculum and learning domain, it is therefore, demands revision of the existing *Education Watch* test instrument according to the new set of competencies, curriculum and updated version of Bloom's taxonomy. In the preparatory stage of the *Education Watch* study 2014, the *Education Watch* group members, as well as the technical committee members, raised a question regarding the usability of the existing instrument; they felt the need of a new instrument. The management of BRAC Education Programme (BEP) also raised a similar concern in early 2016.

In response to the above concern raised from two different corners, the Educational Research Unit of the Research and Evaluation Division (RED) of BRAC took an initiative to develop a new test. A test called 'Assessment of Primary Competencies in Languages and Mathematics' or APC-L&M, was therefore developed during 2016-17, and for the first time, administered the test to the students of three types of BRAC schools. This report presents the main features related to development of the new test and the results from its application to the BRAC school students.



After this introductory chapter, Chapter 2 provides the process of development of the new test including the main features of it. Chapter 3 presents the method of implementing the test to the students of BRAC schools, and the issues related to validity and reliability. Findings from implementation of the test are presented in Chapters 4 to 7; of them, Chapter 4 provides the background characteristics of the students and Chapters 5 to 7 provide performance of the students in the test. Concluding remarks are presented in Chapter 8. References and Annexe tables are provided afterwards.

## CHAPTER TWO

# DEVELOPMENT OF THE TEST APC-L&M

Along with the concerns raised, as mentioned in the previous chapter, the test development team tried to understand the other limitations of CAT. On discussion, the team decided to develop a new test rigorous in nature than the existing one. For instance, in CAT, the length of the text, which was given to the students to read to assess their reading skills, was much shorter. The text was even shorter than that in PECE. Therefore, the number of questions following the text was limited. A bit longer text allows creating questions of various difficulty levels which is helpful to distinguish the test takers (Hughes 2001, Guszak 1967). Some competencies were measured based on only two items. Students correctly answering any of them were considered as having the competency. This may be unjust to the students as well as for the measurement of a particular competency. Increase of the length of the text for reading and setting of more items against each of the competencies was thought to be a solution. Again, the setting of a number of higher ordered items than before would require increased test time. Considering all these, it was decided to limit this initiative in three subject areas, viz., Bangla, English, and Mathematics. Similar to CAT, this test is suitable to assess the students at the end of grade V in Bangladesh. The test is called 'Assessment of Primary Competencies in Languages and Mathematics' or APC-L&M, in short.

## 2.1 THE COMPETENCIES ADDRESSED IN CURRICULUM

In the list of 29 competencies, only four were found belonging to the three subjects under consideration. Of them, one for Bangla, another for English and the remaining two for Mathematics. These competencies are aligned

with two of the 19 objectives of primary education in Bangladesh. The four principal competencies are as follows:

1. Acquire basic skills of Bangla language and ability to use the skills effectively everywhere in life.
2. Acquire basic skills of English as a foreign language and ability to use them.
3. Acquire mathematical concepts and skills.
4. Ability to solve mathematical problems through logical thinking.

In the curriculum, acquisition of skills/concepts and ability to use them were combined in one competency in each of Bangla and English, which was not the case in Mathematics. No explanation was observed in the curriculum in favour of such a difference (NCTB 2012). Similarly, to Bangla and English, only one competency could be placed in Mathematics. Alternatively, to be consistent, there could be two competencies for each of the other two subjects.

There were subject-specific competencies and grade-wise attainable learning outcomes as well. Against one principal competency in Bangla, there were 14 terminal competencies, which were broken down into 46 attainable learning outcomes for grade V (Table A1). Similarly, there were 31 terminal competencies in English and 15 in Mathematics. The number of attainable learning outcome for grade V was 48 in English and 47 in Mathematics. In total, 60 competencies and 141 attainable learning outcomes in three subject areas.

**Table A1. Number of competencies and attainable learning outcomes for grade V**

Subjects	Number of competencies in curriculum	Number of subject-wise competencies	Number of attainable learning outcomes
Bangla	1	14	46
English	1	31	48
Mathematics	2	15	47
Total	4	60	141

Four types of skills were addressed through the terminal competencies in Bangla and English. These include listening, speaking, reading, and writing skills. In Bangla, three terminal competencies were put against each in listening and reading, and four terminal competencies each in speaking and writing. Otherwise, in English, four competencies in listening, eight in speaking, seven in reading, and 12 in writing. In Mathematics, five

competencies are there on basic number skills, three on fractions, two on various measurement units, and one each on LCM and HCF (lowest common multiplier and highest common factor), percentage, data collection and distribution, geometry, and use of calculator.

## 2.2 TEST DEVELOPMENT PROCESS

The test was developed during 2016-17. A team of five members was formed in the Research and Evaluation Division of BRAC for the assignment. The first task of the team was to analyse the principal list of competencies, subject-specific terminal competencies, and grade-wise learning outcomes. Analysing the above and considering the practicality, it was decided to address the subject-specific terminal competencies in the test with the help of grade-wise learning outcomes. The second task of the team was to explore the textbooks of grade V to know how the competencies were addressed in the text materials. The team then drafted a test addressing 32 subject-wise terminal competencies— nine in Bangla and English each, and 14 in Mathematics. To address these competencies 41 items were put in Bangla section, 62 in English section, and 42 in Mathematics section. Varieties of items were constructed. In languages, the types include MCQ, short written answer, identifying true/false, fill in the blanks, matching words and sentences, and medium-length written answer. In Mathematics, these were MCQ, numeric operation, word problem, and short written answer. The draft was then taken to half a dozen of teachers of government, newly nationalised, and BRAC primary schools who teach these subjects. Some modifications were made in the draft according to their suggestions. This final draft was taken to the students for piloting.

The subjects for piloting the draft test were the students of fifth graders belonging to three types of schools in 2016. The types included government, newly nationalised, and BRAC primary schools. The schools were located in three *upazilas* of Kishoregonj district where the literacy and the primary enrolment rates were close to the national average. From these *upazilas*, 30 primary schools were selected, wherein 18 from government, nine from newly nationalised, and three from BRAC. The number of randomly selected students was 606, of which 414 from government, 180 from newly nationalised, and 12 from BRAC schools. Proportionate distribution of the selected students was closely similar to the proportionate distribution of students participating in PECE in 2015 from these three types of schools. As the test was too long, containing 145 items, the selected students were divided into three equal groups to pilot three sections of the test. Therefore, 202 students took part in the piloting of each section of the draft test. Of the students participating in each section, 138 were from the government schools, 60 from the newly nationalised schools, and four from BRAC primary schools.

The draft test was administered to the above students twice in their classrooms. The first time, one month prior to the PECE of 2016 and the second time, 10 days after the first. This means that the same students took the draft test in their classrooms twice with a gap of 10 days. The research team administered the tests with the help of some research assistants. Time allocated for each part of the draft test was two hours.

The research team and the research assistants collectively assessed the answer papers. The data were then entered into the computers. Analyses of these data aimed to find out a reliable test which is practically feasible to administer. Firstly, *Kappa* statistic was used to assess the reliability of each of the items in the draft test. It measures agreement in the results observed twice. Only those items were selected which appeared statistically significant (at  $p < 0.05$ ) with high *kappa* coefficient. Over 90% of the items passed in this analysis. The test was still too long. In order to make the test feasible to administer, it was decided to discard some of the competencies. Those competencies were discarded, which containing items with relatively lower *kappa* value. At the same time, it was decided to consider students skills in prose and poetry as two separate competencies. The second draft of the test contained 25 items in Bangla, 26 in English and 24 in Mathematics addressing nine, seven and eight competencies respectively. Secondly, to understand the reliability of the whole test Kuder-Richardson formula number 20 (or KR 20) was used (Kuder and Richardson 1937). The reliability coefficient for the Bangla section was found to be 0.86; it was 0.93 for English section, and 0.92 for Mathematics section (Table A2). Similar results were found for boys and girls separately. This test was then considered as the final.

**Table A2. Number of competencies addressed and number of items in the test**

Subjects	Number of subject-wise competencies addressed	Number of items in the test	Reliability coefficient
Bangla	9	25	0.86
English	7	26	0.93
Mathematics	8	24	0.92
Total	24	75	

To check the duration of the test, the final test was taken to four schools nearby Dhaka. It was observed that the majority of the students could complete each section within an hour. Therefore, it was decided to allow one hour for each section of the test eg, Bangla, English and Mathematics, with 10 minutes break between the two sections. Note that speaking skills in Bangla and English, and the use of calculator in Mathematics were not addressed in the draft test. Although listening skills was addressed in the draft test, it was not taken finally. Table A3 shows the competencies addressed in the final test.

Table A3. Subject-wise terminal competencies addressed in the test

Bangla
1. To be able to read and understand handwritten texts (prose)
2. To be able to read and understand the essence of poems
3. To be able to express the essence of prose in writing
4. To be able to express the essence of poems in writing
5. To be able to write own experience correctly, clearly and neatly
6. To be able to write correctly and clearly using punctuation
7. To be able to write correctly and clearly using conjunctive letters
8. To be able to express own observation in clear and correct writing
9. To be able to write an application
English
1. To be able to understand stories through reading
2. To be able to make sentences using words and following instructions
3. To be able to use capital letters and punctuation in writing
4. To be able to recognise sentences bearing statements, commands, greeting, questions and answers
5. To be able to fill-up simple forms about oneself
6. To be able to write simple letter to communicate with near and dear one
7. To be able to write a short piece of composition by answering a set of questions
Mathematics
1. To have skills in basic rules of arithmetic and use them in problem-solving
2. To have the concept of average and use it in problem-solving
3. To have the concept of HCF and LCM and apply them in problem-solving
4. To have the concept of fraction and use it in problem-solving
5. To have the concept of percentage and use it in problem-solving
6. To know various units of measurement and use them in problem-solving
7. To know simple geometric shapes and ability to draw them
8. To understand graphical presentations of data

## 2.3 MEASUREMENT OF COMPETENCIES

To address each of the competencies, the number of items in the test varied from one to six. Whatever the case, there was a provision of categorising the students based on their performance in each competency. Scores were provided to the students against their performance in each item. They were then added to have scores for each competency. Instead of categorising students' performance in each of the competencies dichotomously (competent or not), the research team decided to categorise them into three. These are *fully-achieved*, *partially-achieved* and *not-achieved*. In most of the cases, achievement of 60% or more score was considered as

*fully*-achieved, and achievement of 40-59% of the score was considered as *partially*-achieved. However, in some cases, achievement of 66% or more score had to be considered as *fully*-achieved and achievement of 33-65% of score had to be considered as *partially*-achieved. The remaining was considered as *not*-achieved– less than 40% in most cases and less than 33% in other cases. Description of test items and measurement of competency according to the above rule against each of the competencies are provided in Tables A4 to A6.

**Table A4. Competencies, test items and minimum criteria for levels of achievement in Bangla**

Competency	Test items	Levels of achievement
1. To be able to understand handwritten texts (proses)	A handwritten text of 13 sentences containing 103 words followed by five MCQ items	Total score five. 3-5 = fully, 2 = <i>partially</i> , 0-1 = not
2. To be able to understand the essence of poems	A printed poem of eight lines containing 32 words followed by five MCQ items	Total score five. 3-5 = fully, 2 = <i>partially</i> , 0-1 = not
3. To be able to express the essence of prose in writing	A printed prose of 12 sentences containing 121 word followed by five single-word-answer questions	Total score five. 3-5 = fully, 2 = <i>partially</i> , 0-1 = not
4. To be able to express the essence of poems in writing	A printed poem of eight lines containing 37 words followed by five short-answer questions	Total score five. 3-5 = fully, 2-2.5 = <i>partially</i> , 0-1.5 = not
5. To be able to write own experience correctly, clearly and neatly	Write a paragraph of five sentences on a given familiar topic	Total score five. 3-5 = fully, 2-2.5 = <i>partially</i> , 0-1.5 = not
6. To be able to write correctly and clearly using punctuation marks	Given four sentences keeping five punctuation marks missing	Total score five. 3-5 = fully, 2 = <i>partially</i> , 0-1 = not
7. To be able to write correctly and clearly using conjunctive letters	Three conjunctive letters given to break down and make an word and a sentence for each	Total score six. 3.5-6 = fully, 2.5-3 = <i>partially</i> , 0-2 = not
8. To be able to express own observation in clear and correct writing	Describe a given scenario in five sentences	Total score five. 3-5 = fully, 2-2.5 = <i>partially</i> , 0-1.5 = not
9. To be able to write an application	Nine points were brought under assessment: Address, subject, salutation, three specific contents, sincerely, name of applicant, date	Total score nine. 6-9 = fully, 4-5 = <i>partially</i> , 0-3 = not

**Table A5. Competencies, test items and minimum criteria for levels of achievement in English**

Competencies	Test items	Levels of achievement
1. To be able to understand stories through reading silently (with six items)	A story of 18 sentences containing 145 words followed by three True/False and three short-answer questions	Total score six. 4-6 = fully, 2-3 = partially, 0-1 = not
2. To be able to make sentences using words and following instructions	Three words given to make sentences. Fill-up the blanks in three sentences with three words exploring from three photos	Total score six. 3.5-6 = fully, 2.5-3 = partially, 0-2 = not
3. To be able to use capital letters and punctuation marks in writing	Rewrite six given sentences correcting missing punctuation marks and capital letters (three each)	Total score six. 4-6 = fully, 2-3 = partially, 0-1 = not
4. To be able to recognise sentences bearing statements, commands, greeting, questions and answers	Five sentences given to identify their characteristics	Total score five. 3-5 = fully, 2 = partially, 0-1 = not
5. To be able to fill-up simple forms about oneself	A simple form containing 10 points	Total score ten. 6-10 = fully, 4-5 = partially, 0-3 = not
6. To be able to write a simple letter to communicate with near and dear one	Five points were brought under assessment: date, salutation, two on contents, sincerely	Total score five. 3-5 = fully, 2-2.5 = partially, 0-1.5 = not
7. To be able to write a short piece of composition by answering a set of questions	Six questions put on a familiar issue and asked to write a short description answering the questions	Total score six. 3.5-6 = fully, 2.5-3 = partially, 0-2 = not



**Table A6. Competencies, test items and minimum criteria for levels of achievement in Mathematics**

Competencies	Test items	Levels of achievement
1. To have skills in basic rules of arithmetic and use them in problem-solving	<ul style="list-style-type: none"> <li>• A multiplication</li> <li>• A division</li> <li>• A two-stage word problem</li> </ul>	Total score four. 2.5-4 = fully, 1.5-2 = <i>partially</i> , 0-1 = not
2. To have the concept of average and use it in problem-solving	<ul style="list-style-type: none"> <li>• An MCQ of simple average</li> <li>• Two simple word problems</li> </ul>	Total score four. 2.5-4 = fully, 1.5-2 = <i>partially</i> , 0-1 = not
3. To have the concept of HCF and LCM and apply them in problem-solving	<ul style="list-style-type: none"> <li>• Find HCF of three numbers</li> <li>• Find LCM of three numbers</li> <li>• A simple word problem</li> </ul>	Total score three. 2-3 = fully, 1-1.5 = <i>partially</i> , 0-0.5 = not
4. To have the concept of fraction and use it in problem-solving	<ul style="list-style-type: none"> <li>• Identify certain fraction of a whole</li> <li>• Arrange fractions in ascending order</li> <li>• A simple word problem</li> </ul>	Total score three. 2-3 = fully, 1-1.5 = <i>partially</i> , 0-0.5 = not
5. To have the concept of percentage and use it in problem-solving	<ul style="list-style-type: none"> <li>• Transform fraction to percentage</li> <li>• Find certain percentage of a whole</li> <li>• A simple word problem</li> </ul>	Total score three. 2-3 = fully, 1-1.5 = <i>partially</i> , 0-0.5 = not
6. To know various units of measurement and use them in problem-solving	<ul style="list-style-type: none"> <li>• An addition</li> <li>• A simple word problem</li> <li>• Transform one unit to another</li> </ul>	Total score three. 2-3 = fully, 1-1.5 = <i>partially</i> , 0-0.5 = not
7. To know simple geometric shapes and ability to draw them	<ul style="list-style-type: none"> <li>• Draw a geometric figure</li> <li>• Two short-answer questions</li> </ul>	Total score three. 2-3 = fully, 1 = <i>partially</i> , 0 = not
8. To understand graphical presentation of data	<ul style="list-style-type: none"> <li>• Three questions followed by a graph</li> </ul>	Total score three. 2-3 = fully, 1 = <i>partially</i> , 0 = not

## CHAPTER THREE

# METHOD OF TEST ADMINISTRATION IN BRAC SCHOOLS

The new test instrument ‘Assessment of Primary Competencies in Languages and Mathematics’ or APC-L&M was, for the first time, administered to the students of three types of BRAC schools to assess their learning achievement. The three types of schools were BRAC Primary School (BPS), *Shishu Niketan* (SN), and schools under Education Support Programme (ESP schools). All these are one classroom, single teacher school.

### 3.1 POPULATION AND SAMPLE

In 2017, 92,648 students from 3,677 BRAC schools of three types have participated in the Primary Education Completion Examination (PECE). Of them, 60,050 students were from 2,451 BRAC Primary Schools (BPS), 26,438 students from 951 *Shishu Niketans*, and 6,160 students from 275 schools under Education Support Programme (ESP). In terms of proportion, 64.8% was from BPSs, 28.5% from *Shishu Niketans*, and 6.7% from ESP schools.

In the new initiative called APC-L&M, the competencies are categorically measured. As the determination of sample size for a valid estimate does not vary in the cases of a dichotomous and categorical variables, we used the following formula:

$$n = \frac{pqz^2}{e^2} \times d$$

Here, n is the sample size to be determined, p is the probability of a student achieving a particular competency *fully* or *partially*, q is the probability of

a student not achieving a particular competency (ie,  $q=1-p$ ),  $z$  is the area under standard normal curve within certain confidence limit,  $e$  is the error of precision, and  $d$  is the design effect. Considering  $p = 0.5$ ,  $q = 1 - p = 0.5$ ,  $z = 1.96$  at 95% confidence limit,  $e = 0.05$ , and  $d = 2$ , the sample size stands 768 for a school type.

$$n = \frac{pqz^2}{e^2} \times d = \frac{0.5 \times 0.5 \times (1.96)^2}{(0.05)^2} \times 2 = 768$$

Instead of the above, it was decided to take a sample of size 800 from each type, totalling 2,400 (800 x 3). It was also decided to randomly pick 40 schools of each type and 20 students from each selected school. Forty schools were randomly selected from each type of schools completing in 2017. Twenty students were selected randomly from most of the selected schools. However, in some cases, mostly in the ESP category, it was not possible due to the smaller number of course completing students. Therefore, the number of schools had to be increased. Finally, 2,400 students were randomly selected from 127 schools of three types (Table A7). The proportion of girls in the sample was 57.3%.

**Table A7. Sample at a glance**

School type	Number of school	Gender		All	% of girls
		Boys	Girls		
BRAC Primary School	41	320	480	800	60.0
<i>Shishu Niketan</i>	40	371	429	800	53.6
Education Support Programme	46	328	472	800	59.0
Total	127	1,019	1,381	2,400	57.3

Note that a total of 87 schools including 31 BRAC Primary Schools, 38 *Shishu Niketans* and 18 ESP schools had 20 students each in the sample. Twenty-six schools (7 BRAC Primary Schools, 1 *Shishu Niketan* and 18 ESP schools) had less than 20 students each and more than 20 students had to be selected from 14 schools (3 BRAC Primary Schools, 1 *Shishu Niketan* and 10 ESP schools).

### 3.2 ADMINISTERING THE TEST

It took three weeks to administer the test to 2,400 students of 127 schools. Starting from 13 October, it ended on 7 November 2017. Thirty Research Assistants divided into 15 teams (two in each) carried out the fieldwork. A

three-day training workshop was arranged to equip them with the procedure of test administration and other data collection. The other data included some socioeconomic background information of the students and some school related information. The research team members and the members of the Field Operations Unit in the BRAC Research and Evaluation Division supervised the whole activities.

Surprise visit was given to the sampled schools to administer the test in the classrooms. Administering the test was started five weeks prior to the Primary Education Completion Examination (PECE) of the students and ended two weeks to PECE. In each school, 20 students were sampled applying simple random sampling technique. As these were single-room schools, the other students could not be accommodated in the classrooms. The teachers took them outside the classrooms, preferably to a nearby courtyard to give some instructions. No one except the sampled students and the Research Assistants was present in the classrooms while administering the test.

The sampled students took their seats in such a way so that one cannot copy from the others. The students were asked to read the procedure of taking the test, which was written down at the beginning of the test instrument. The Research Assistants also described the whole process of the test before they start to administer it. Charts and blackboards were used in making the students understand the process. Before starting the test, the Research Assistants made it sure that all the sampled students were ready to take the test with full understanding on the types of items they are going to face and the procedure to answer them. All sampled students in a classroom started to take the test at a time.

The test started with Bangla, followed by English and Mathematics, respectively. The students got a maximum of an hour to take the test on each subject with 10 minutes break in between two subjects. If any student completed the test on a subject before an hour, s/he was not allowed to move to the next. However, s/he could check answers on the specific subject. Therefore, the students in a classroom went for break at a time and restarted the test together. When they took test on a specific subject, jumping on to the previous or the next subject was prohibited.

### **Other fieldwork**

Students' socioeconomic background information was collected at their homes interviewing their parents. The mothers were the information providers in most cases; however, fathers' were also available in some cases. The teachers' interview was conducted in the schools preferably after administering the test. In some cases, they were not willing to stay in school after the test was over. These teachers were interviewed while

administering the test. It did not create any problem after starting the test, as there were two Research Assistants in a team. The POs also provided some information.

### 3.3 VALIDITY OF THE TEST AND RELIABILITY OF DATA

Validity of the test was ensured during its construction. The competencies measured under the test were taken from the national curriculum, which the students are supposed to achieve on completion of primary education. An experienced team of researchers drafted the test. The lead researcher of the team also led the team which developed the first competency-based test instrument for *Education Watch* in 2000. The curriculum, competencies and the primary textbooks were reviewed and consulted before drafting the new test. Therefore, the test used in this study is validated with respect to the national curriculum and the textbooks used by the students.

A team of practising teachers— two from government primary schools, two from newly nationalised schools, and two from BRAC primary schools, reviewed the draft test. They helped to ensure that the difficulty level and the language of the items are aligned with the textbooks of grade V, and the way they teach in the classrooms and the examinations hold at the school level. The members of the test development team talked to the students of various quality (as defined by class teachers) while doing the pilot test. This included their understanding of the language and difficulty of the test. The team tried its best to incorporate all the suggestions made by the teachers and the students to make the test as practical as possible.

The piloting of the draft test was carried out with quite a big sample of students from three major types of primary schools (government, newly nationalised, and BRAC). This made the test generalisable to all fifth graders in Bangladesh irrespective of school type.

Reliability of each item and the whole test separately by subjects was ensured during construction of the test (Chapter 2). Reliability of the test data presented in the following chapters of this report was calculated in the same manner using Kuder-Richardson formula number 20. The reliability of the whole test containing all 75 items was found to be 0.90. The figure was the same when the coefficient was calculated for the boys and the girls separately. However, school type-wise, the reliability coefficient was 0.88 for BRAC Primary School, 0.90 for *Shishu Niketan*, and 0.89 for Education Support Programme. Subject-wise reliability coefficient was also calculated— 0.76 for Bangla, 0.80 for English, and 0.80 for Mathematics.

## CHAPTER FOUR

# BACKGROUND OF THE STUDENTS

Students' age at the time of offering them the test was collected. The students of the three types of schools were mostly homogeneous with regard to their age. Age of the students ranged from 8-15 years in each of the three types of schools (Annex A1). The mean age of the students was 10.8 years– 10.7 years for BPSs, and 10.9 years for *Shishu Niketans* and ESP schools. The median age of the students of each of the three types of schools was the same– 1 years. Majority of the students were of age 10-11 years (63.3%), followed by those of age 12 years or more (24.9%), and the rest were below than 10 years (11.8%).

Nearly two-fifths of the students received pre-primary education before admitting in the three types of primary schools of BRAC (Annex A2). Mostly an equal proportion of the students of BPSs and *Shishu Niketans* received pre-primary education– 39%. A significantly lower proportion of the students of ESP schools (31%) received this education.

Nearly a third of the students availed private tutoring to supplement their education at grade V, and 64.8% received support from the household members for the same (Annex A2). No difference was observed in any of these between the students of *Shishu Niketans* and ESP schools. Both of them were significantly ahead of the students of BPSs in availing private supplementary tutoring. The difference was only observed between the students of BPSs and ESP schools in availing support from household members where the former was ahead of the latter. Over a fifth of the students availed both the support, which was 26.9% among the students of *Shishu Niketans*, 22.1% among those of ESP schools, and 19.2% among those of BPSs. Nearly 65% of the students used guidebooks in grade V. Whereas, a half of the students of BPSs used guidebooks, it was over 81% among those of ESP schools and 94% among those of *Shishu Niketans* ( $p < 0.001$ ).

Nearly one-third of the mothers and 37.7% of the fathers of the students did not complete a single year of school education (Annex A3). Combining these two, it was observed that none of the parents of 19.1% of the students had been to school ever. These students are the first generation learners. Any of the parents of 31.6% of the students did not complete a single grade in school and both the parents of 49.4% of the students completed at least one grade in school. The proportion of the first generation learners was 29.3% in the ESP schools, 21.1% in the BPSs, and 11.7% in the *Shishu Niketans* ( $p < 0.001$ ). Both the parents of 27.6% of the students had at least five years of schooling. This figure was 44.4% among the students of *Shishu Niketans*, 21.5% among those of BPSs, and 16.5% among those of ESP schools ( $p < 0.001$ ). Therefore, it can be said that the students of *Shishu Niketans* were ahead of the others with regard to parental education, followed by those of BPSs and ESP schools, respectively.

Electricity facility was available at home of 88.8% of the students, and at least one member of the households of 53.7% of the students was NGO *samity* members (Annex A4). Electricity was available at the homes of 91.4% of the students of *Shishu Niketans*, 88% of the students of BPSs, and 84.9% of the students of ESP schools ( $p < 0.001$ ). NGO *samity* member was found in the households of 57.6% of the students of *Shishu Niketans*, 57.1% of the students of BPSs, and 37.2% of the students of ESP schools ( $p < 0.001$ ). No difference was observed between the students of BPSs and ESP schools in terms of availability of electricity at home; however, both of them were significantly behind than those of *Shishu Niketans*. An equal proportion of the students of BPSs and *Shishu Niketans* had at least one NGO *samity* member in their households, which was far less in the households of the students of ESP schools.

With regard to food security status of the households – 7.6% of the students came from always in deficit households, 31% from the sometimes in deficit households, 36.7% from the breakeven households, and 24.7% from the surplus households (Annex A4). The proportion of students belonging to the deficit households (the first two categories together) was 48.1% in ESP schools, 40.2% in BPSs, and 32.5% in *Shishu Niketans* ( $p < 0.001$ ). On the other hand, the proportion of students belonging to the surplus households was 36.1% in *Shishu Niketans*, 20.4% in BPSs, and 16.6% in the ESP schools ( $p < 0.001$ ). Overall, the households of the students of *Shishu Niketans* were at the top with regard to food security status followed by those of BPSs and ESP schools. A similar relationship was observed between school type and parents using cellular phones.

Overall, 9.3% of the students belonged to non-Muslim households, and 6.4% belonged to small ethnic groups. The proportion of the students of both types was much higher in the ESP schools, followed by BRAC Primary Schools. These figures were far low in the *Shishu Niketans*.

Three-quarters of the students had to pay monthly tuition fees for their studies in BRAC schools, which ranged from BDT 30 to BDT 300. The proportion of students paid tuition fees was 99.2% for the *Shishu Niketans*, 71.5% for the BPSs, and 14.6% for the ESP schools ( $p < 0.001$ ). These proportions significantly varied from one to another at a high level ( $p < 0.001$ ).



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## PERFORMANCE IN BANGLA

### 5.1 COMPETENCY-WISE ACHIEVEMENT

Nine competencies were considered in assessing Bangla language skills of the students. Of them, two on reading skills and seven on writing skills. Total number of items was 25; 10 items to assess competencies addressing reading skills and 15 items to assess competencies addressing writing skills.

#### **BANGLA COMPETENCY 1.**

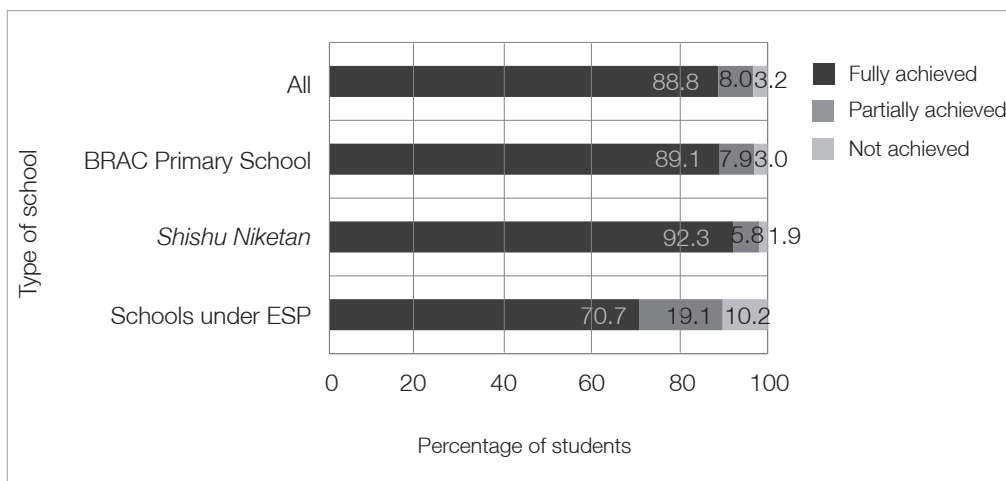
##### **To be able to read and understand handwritten texts**

A handwritten text (prose) was given to the students to read which had 13 sentences containing 103 words. The text was followed by five MCQ type of items. Students correctly answering at least three questions was considered as *fully* achieving this competency. Correctly answering two questions was considered as *partially* achieving and correctly answering one or nil was considered as *not* achieving this competency.

On an average, 88.8% of the students under assessment *fully* achieved this competency, 8% achieved *partially*, and 3.2% did not achieve this competency (Figure B1). The proportion of students *fully* achieving this competency was 92.3% in *Shishu Niketans*, 89.1% in BRAC Primary Schools, and 70.7% in ESP schools ( $p < 0.001$ ). No gender difference was observed in any of the school types in *fully* achieving this competency (Annex B1). It seems that the students of ESP schools were much behind the students of other two school types in *fully* achieving this competency, about a fifth of them *partially* achieved this. A tenth of ESP school students also failed to achieve this competency.

Various proportions of students provided correct answers to the items under assessment. Over 96% of the students provided the correct answer to one of the five MCQ items, 91% to another, 68.4% to the other, and 64.5% to the remaining two items. The proportions varied from 67-95.6% for the students of *Shishu Niketans*, from 60.6-96.9% for those of BPSs, and from 45.4-92.5% for those of ESP schools.

Figure B1. Percentage distribution of students achieving the Bangla competency on ‘understanding handwritten texts (prose)’ by level of achievement and school type



Of the students under assessment, 35.2% provided correct answers to each of the five MCQ items, 31.2% provided correct answers to four items, 22.4% provided the same to three items, 8% two items, 2.4% one item, and 0.8% none. Correct answers to all five items were provided by 36% of the boys and 34.6% of the girls. This was 44.8% among the students of *Shishu Niketans*, 33.4% among those of BPSs, and 12.1% among those of ESP schools ( $p < 0.001$ ). Whereas, 3.4% of the students of ESP schools provided the correct answer to none of the items, it was 0.5% among the students of *Shishu Niketans* and 0.6% among those of BPSs.

## BANGLA COMPETENCY 2.

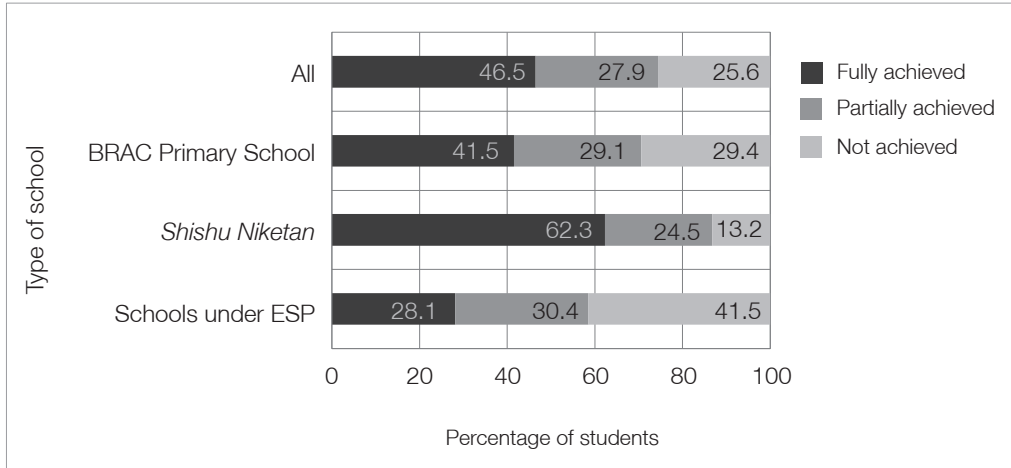
### To be able to read and understand the essence of poems

The first eight lines of a poem (printed form) containing 32 words along with the names of the poem and the poet were given to the students to read. This was followed by five MCQ type of items. Similar to the above,

students correctly answering at least three items was considered as *fully* achieving this competency, correctly answering two items was considered as *partially* achieving, and correctly answering one or nil was considered as *not* achieving this competency.

Students' performance in understanding poems was much lower than that of the prose. On an average, 46.5% of the students of the three types of BRAC schools *fully* achieved this competency, 27.9% achieved *partially*, and 25.6% did not achieve it (Figure B2). *Shishu Niketan* was much ahead of the other two in *fully* achieving this competency with 62.3% of the students doing so. Among others, 41.5% of BPSs and 28.1% of ESP school students performed at a similar level. Here too, no gender difference was observed in any of the school type (Annex B2). The proportion of BPS students *partially* achieving this competency was mostly equal to that failed to achieve it. Proportionately more *Shishu Niketan* students *partially* achieved this competency than that of those who did not achieve it (24.5% and 13.2%); otherwise, a reverse result was observed in the case of ESP students (30.4% and 41.5%).

Figure B2. Percentage distribution of students achieving the Bangla competency on 'understanding the essence of poems' by level of achievement and school type



Likely to the first competency, various proportions of students provided correct answers to the items put for assessing this competency. The proportions varied from 34.5-84.3%. More than 80% of the students provided the correct answer to one of the five items, more than half of the students provided the correct answer to another, and less than 40% did so

to the remaining two items. The proportions varied from 41.9-88.6% for the students of *Shishu Niketans*, from 32-82.9% for those of BPSs, and from 24.9-79% for those of ESP schools.

On an average, 8.2% of the students provided correct answers to each of the five MCQ items, 15.6% provided correct answers to four items, 22.7% three items, 27.9% two items, 20.8% one item, and 4.8% none. Correct answers to all five items were provided by 8.6% of the boys and 7.8% of the girls. This was 14.2% among the students of *Shishu Niketans*, 6% among those of BPSs, and 3% among those of ESP schools. Whereas, 10.1% of the students of ESP schools provided the correct answer to none of the items, it was 2.5% among the students of *Shishu Niketans* and 5.2% among those of BPSs.

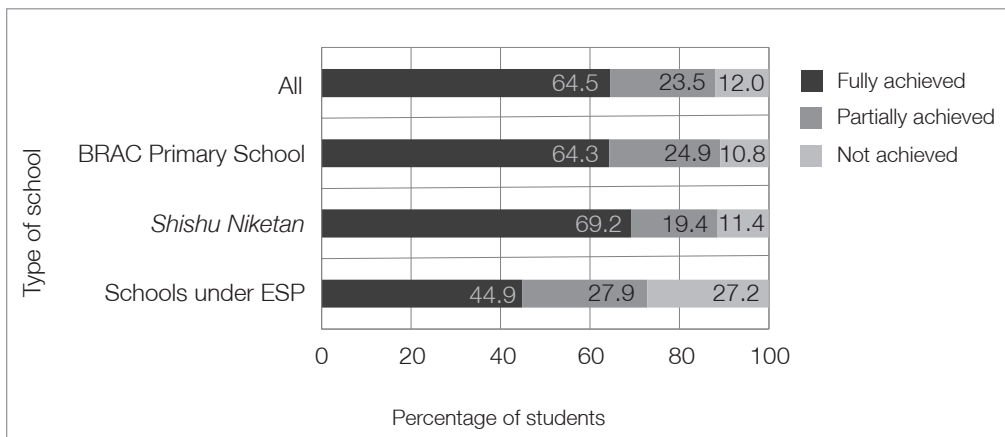
### BANGLA COMPETENCY 3.

#### To be able to express the essence of prose in writing

Printed prose of 12 sentences containing 121 words was placed to read, which was followed by two questions. One of them was a single-word-answer question, and the other had four independent single-word-answer question. Of the five answers, students correctly answering at least three was considered as *fully* achieving this competency, correctly answering two was considered as *partially* achieving and correctly answering one or nil was considered as *not* achieving.

On an average, 64.5% of the students of three types of BRAC schools *fully* achieved this competency, 23.5% achieved *partially*, and 12% did not achieve it (Figure B3). School type-wise, 69.2% of the students of *Shishu*

Figure B3. Percentage distribution of students achieving the Bangla competency on 'writing the essence of prose' by level of achievement and school type



*Niketans*, 64.3% of those of BRAC Primary Schools, and 44.9% of those of Education Support Programme *fully* achieved this competency ( $p < 0.001$ ). A quarter of the students of BPSs, about a fifth of those of *Shishu Niketans*, and nearly 28% of those of ESP schools *partially* achieved this competency. The girls were ahead of the boys in expressing the essence of prose in writing (Annex B3). On an average, 69.2% of the girls and 57.9% of the boys *fully* achieved this competency ( $p < 0.001$ ). Less than 10% of the girls and over 15% of the boys failed to achieve this competency. The girls' outstanding performance in this competency over boys was also observed in each of the three types of schools. Three-quarters of the girls of *Shishu Niketans* and 37.8% of the boys of ESP schools *fully* achieved this competency (Annex B3).

The proportion of students providing correct answers to the items varied from one item to another. Seventy per cent or more students provided the correct answers to three items, 46.2% provided the correct answer to one item, and 27.8% provided the same to the remaining item. The proportions varied from 31.8-79.5% for the students of *Shishu Niketans*, from 26.8-73.2% for those of BPSs, and from 21.1-62.5% for those of ESP schools.

On an average, 7.5% of the students provided correct answers to each of the five items, 22.9% provided correct answers to four items, 34% three items, 23.5% two items, 9.3% one item, and 2.7% none. Correct answers to all five items were provided by 9% of the students of *Shishu Niketans*, 7.2% of those of BPSs, and 3.4% of those of ESP schools. This was 5.8% among the boys and 8.7% among the girls. Whereas, 10.9% of the students of ESP schools provided the correct answer to none of the items, it was 2.5% among the students of *Shishu Niketans* and 2% among those of BPSs.

#### **BANGLA COMPETENCY 4.**

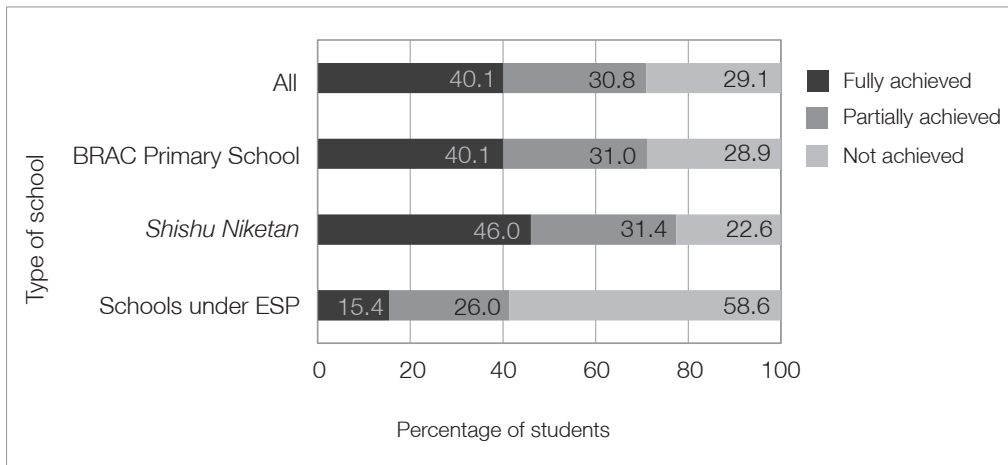
##### **To be able to express the essence of poems in writing**

A printed poem of eight lines containing 37 words was given to the students to read, which was followed by two single-word-answer questions and a short-answer question demanding three sentences. Total score was five. Out of five, students scoring 3-5 was considered as *fully* achieving this competency, scoring 2-2.5 was considered as *partially* achieving the competency, and scoring 1.5 or less was considered as *non-achiever*.

On an average, 40.1% of the students *fully* achieved this competency, 30.8% achieved *partially*, and 29.1% did not achieve it (Figure B4). School type-wise, 46% of the students of *Shishu Niketans*, 40.1% of those of BPSs, and 15.4% of those of ESP schools *fully* achieved this competency ( $p < 0.001$ ). Nearly 29% of the students of BPSs, 22.6% of those of *Shishu Niketans*, and

58.6% of those of ESP schools failed to achieve this competency. Overall, the girls were ahead of the boys in *fully* achieving this competency (42.4% versus 37%;  $p < 0.01$ ) (Annex B4). School type-wise, statistically significant gender difference was observed only in *Shishu Niketans*. No statistically significant gender difference was noticed among the students of BPSs and ESP schools.

Figure B4. Percentage distribution of students achieving the Bangla competency on ‘writing the essence of poems’ by level of achievement and school type



The students, in general, did better in answering the questions requiring single-word answers than those demanding a sentence. For instance, 79.4% of the students provided correct answers to a question requiring a single-word answer, and 54.8% of the students did so in another such question. On the other hand, the proportion of students provided *fully* correct answers to each of the three questions demanding a sentence as an answer was 39.2, 22.3 and 17.7%, respectively. A wide variation by school type was noticed in each item.

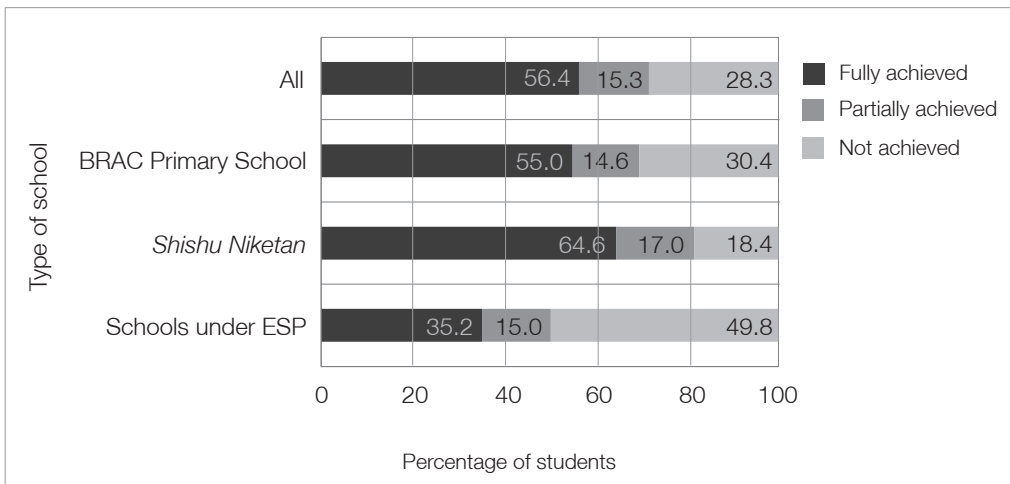
On an average, 4.1% of the students achieved the full score, and 6.6% scored zero. The full score was obtained by 5% of the students of *Shishu Niketans*, 4% of those of BPSs, and 0.6% of those of ESP schools. This was 3.6% among the boys and 4.4% among the girls. On the other hand, over a fifth of the students of ESP schools, 6.4% of those of BPSs, and 4% of those of *Shishu Niketans* obtained no score.

**BANGLA COMPETENCY 5.****To be able to write own experience correctly, clearly and neatly**

A familiar topic was given to the students to write a paragraph of five sentences on it. Construction of the sentences in the paragraph including spelling and grammar were the subjects to assessment. Total score was five. Out of five, students scoring 3-5 was considered as *fully* achieving this competency, scoring 2-2.5 was considered as *partially* achieving the competency, and scoring 1.5 or less was considered as *non-achiever*.

On an average, 56.4% of the students achieved this competency *fully*, 15.3% achieved *partially*, and 28.3% did not achieve it (Figure B5). Whereas, 64.6% of the students of *Shishu Niketans* *fully* achieved this competency, such a performance was observed among 55% of the students of BPSs and 35.2% of those of ESP schools ( $p < 0.001$ ). Nearly a half of the students of ESP schools, 30.4% of those of BPSs, and 18.4% of those of *Shishu Niketans* could not overcome the threshold of *partially* achieving this competency. Therefore, they were not able to achieve this competency. No gender difference was observed in the proportion of the students *fully* achieving this competency (Annex B5).

Figure B5. Percentage distribution of students achieving the Bangla competency on ‘writing own experience correctly’ by level of achievement and school type



On an average, 11.3% of the students obtained the full score, and 12.1% obtained nil. The full score was bagged by 8.1% of the boys and 13.6% of the girls. This was 13% among the students of *Shishu Niketans*, 11.2% among those of BPSs, and 4.2% among those of ESP schools. Over 28%



of the students of ESP schools, 13% of those of BPSs, and 5.9% of those of *Shishu Niketans* achieved no score. This was 11.8% among the boys and 12.3% among the girls.

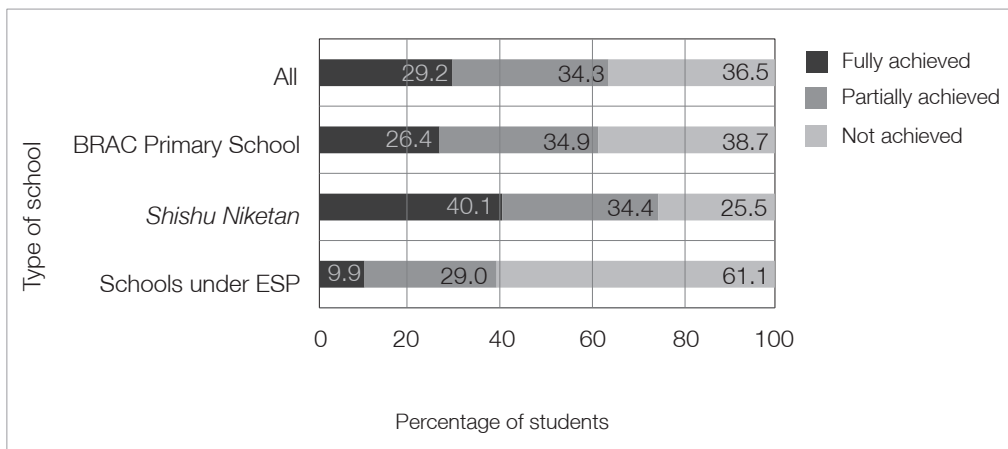
**BANGLA COMPETENCY 6.**

**To be able to write correctly and clearly using punctuation marks**

Four sentences were placed before the students in the test keeping five punctuation marks missing. The marks include two commas, a question mark, an exclamation mark, and a full stop. These marks were not mentioned in the test paper. The students were asked to find out the missing marks and place them appropriately. Of the five, correctly answering three or more was considered as *fully* achieving the competency, correctly answering two was considered as *partially* achieving, and correctly answering one or nil was considered as *non-achiever*.

Of the students under test, 29.2% achieved this competency *fully*, 34.3% achieved *partially*, and 36.5% did not achieve it (Figure B6). The *Shishu Niketan* students were ahead of the others with 40.1% of them *fully* achieving this competency, they were followed by the students of BPSs (26.4%) and ESP schools (9.9%), respectively ( $p < 0.001$ ). A major proportion of the students failed to achieve this competency. They were 61.1% of the students of ESP schools, 38.7% of those of BPSs, and 25.5% of those of *Shishu Niketans*. The boys and the girls performed equally in this competency not only at the aggregated level, but also separately by school type (Annex B6).

**Figure B6.** Percentage distribution of students achieving the Bangla competency on ‘correct use of punctuation marks in writing’ by level of achievement and school type



The proportion of students correctly putting the missing punctuation marks varied from one mark to another. The proportion was highest for putting a full stop, followed by a question mark. Nearly 69% of the students put the full stop in the right place and 65.4% of them rightly put the question mark. The major deficiency was observed in using exclamatory sign and comma. Among these, 18.7% of the students rightly placed the exclamatory sign, and 14.2% of the students rightly put a comma, and 10.1% of them rightly put the other comma. A substantial variation was observed in these by school type too.

Overall, only 1.6% of the students correctly put each of the five missing punctuation marks. School type-wise, 3.5% of the students of *Shishu Niketans*, 0.9% of those of BPSs, and none of the students of ESP schools rightly put all the five punctuation marks. On the other hand, a quarter of the students did not put any of the punctuation marks. They were 43.5% of the students of ESP schools, 26.8% of those of BPSs and 16.8% of those of *Shishu Niketans* ( $p < 0.001$ ). No difference in using punctuation marks was observed by gender.

## BANGLA COMPETENCY 7.

### To be able to write correctly and clearly using conjunctive letters

Three conjunctive letters were given in the test, and the students were asked to split them and make a word with each of them and then make one sentence with each word. The total score was six. Students obtaining 3.5 or more was considered as *fully* achieving the competency, obtaining from 2.5-3 was considered as *partially* achieving the competency, and obtaining two or less was considered as not achieving the competency.

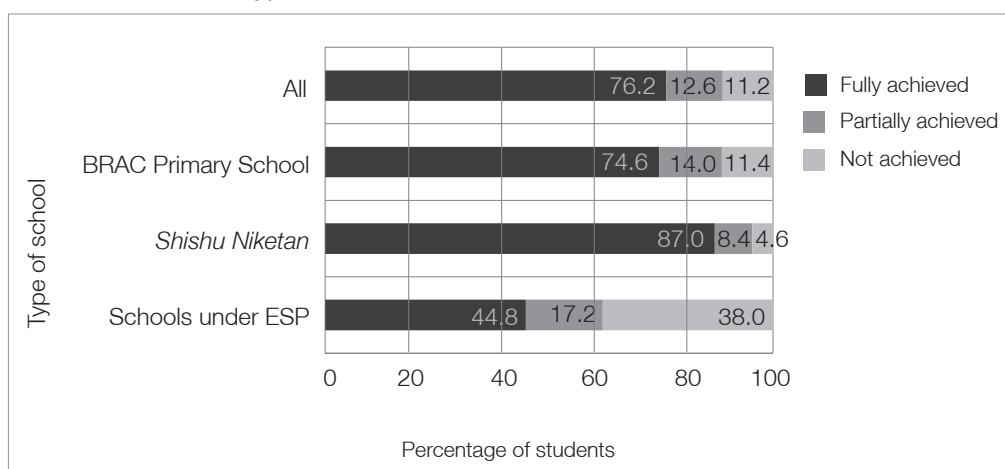
On an average, 76.2% of the students *fully* achieved this competency, 12.6% achieved *partially*, and 11.2% did not achieve it (Figure B7). School type-wise, 87% of the students of *Shishu Niketans*, 74.6% of those of BPSs, and 44.8% of those of ESP schools *fully* achieved this competency ( $p < 0.001$ ). The non-achievers constituted 38% of the students of ESP schools, 11.4% of those of BPSs, and 4.6% of those of *Shishu Niketans*.

The girls of the three types of schools collectively outperformed the boys of the three types of schools in *fully* achieving this competency (78.4% versus 73.2%;  $p < 0.01$ ) (Annex B7). School type-wise, the gender difference was observed only among the students of BPSs where 77.5% of the girls and 70.3% of the boys *fully* achieved this competency ( $p < 0.05$ ).

The students, in general, did best in identifying the alphabets in the given conjunctive letters, followed by making a word by each of the conjunctive letters and making sentences, respectively. For instance, 70.9% of the

students correctly identified the alphabets of all three given conjunctive letters and 22.4% did so for two conjunctive letters. Nearly 44% of the students made three different words by the given conjunctive letters, and 34.6% made two words. Nearly 40% of the students made three sentences with the three words, and 32.7% made two sentences. Ten per cent of the students did not make a single sentence, 7.6% of them did not write a single word, and 3.1% was not able to identify any alphabet. School type-wise variation was persisted in each of the above cases.

Figure B7. Percentage distribution of students achieving the Bangla competency on ‘correct use of conjunction letters in writing’ by level of achievement and school type



On an average, 34.4% of the students achieved the full score in this competency, and 7.5% of the students achieved nil. The full score was achieved by 48.6% of the students of *Shishu Niketans*, 30.9% of those of BPSs, and 7.9% of those of ESP schools ( $p < 0.001$ ). This was 31.5% among the boys and 36.4% among the girls. No score was achieved by 15.6% of the students of ESP schools, 1.4% of those of BPSs, and 0.8% of those of *Shishu Niketans*.

### BANGLA COMPETENCY 8.

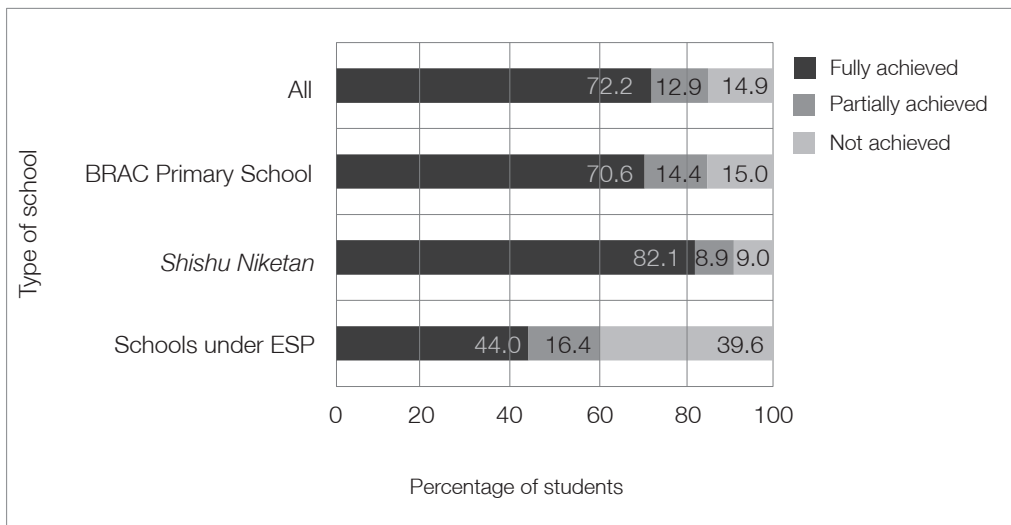
To be able to express own observation in clear and correct writing

Drawing of a very common scenario in Bangladesh context was placed in the test, and the students were asked to describe it in five sentences in correct and clear writing. Total score for this was five. Students scoring

three or more was considered as *fully* achieving this competency, scoring 2-2.5 was considered as *partially* achieving the competency, and scoring 1.5 or less was considered as *not* achieving the competency.

On an average, 72.2% of the students of the three types of schools *fully* achieved this competency, 12.9% achieved *partially*, and 14.9% did not achieve it (Figure B8). School type-wise, over 82% of the students of *Shishu Niketans*, 70.6% of those of BPSs, and 44% of those of ESP schools *fully* achieved this competency ( $p < 0.001$ ). The proportion of non-achievers was 39.6% in the schools under ESP, 15% in BPSs, and 9% in *Shishu Niketans*.

Figure B8. Percentage distribution of students achieving the Bangla competency on 'expressing own observation in writing' by level of achievement and school type



Overall, the girls were significantly ahead of the boys in *fully* achieving this competency (74.3% versus 69.2%;  $p < 0.01$ ) (Annex B8). School type-wise, no gender difference in *fully* achieving this competency was observed in BPSs or ESP schools. However, the girls of *Shishu Niketans* outperformed their boys counterparts in this competency— 85.8% of the girls and 77.9% of the boys of *Shishu Niketans* *fully* achieved this competency ( $p < 0.01$ ).

Overall, 17.4% of the students correctly wrote five sentences in describing the given scenario and therefore achieved the full score. Fifteen per cent of the boys and 19.2% of the girls achieved the full score. Over a quarter of the students of *Shishu Niketans*, 15.2% of those of BPSs, and 5.1% of those of ESP schools also showed a similar performance. No score was obtained

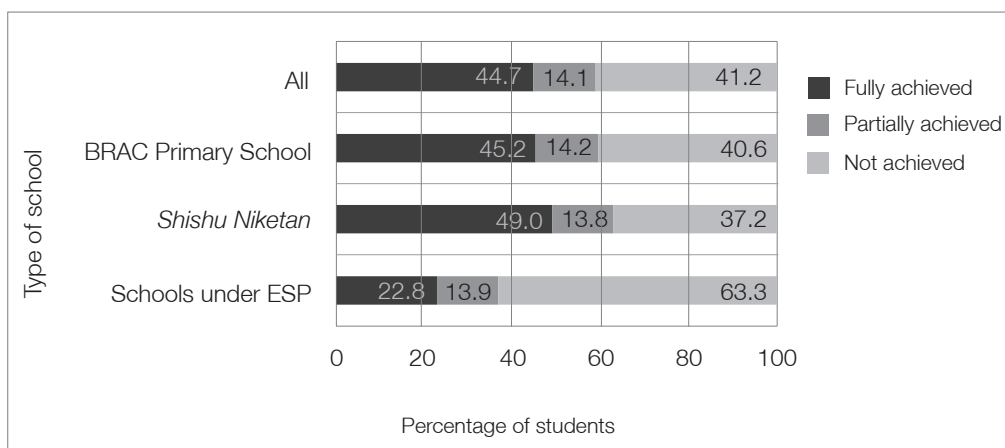
by 7.5% of the students – 6.7% among boys and 8% among girls. School type-wise, 23% of the students of ESP schools, 7.8% of those of BPSs, and 3.1% of those of *Shishu Niketans* scored nil.

### BANGLA COMPETENCY 9. To be able to write an application

The students were asked to write an application to their teacher seeking leave. The reason of leave and the number of days were mentioned in the question. Issues of assessment included to whom the application was written, the subject of application, addressing, the content of application in line with the demand in the question, salutation, name of the applicant, date of application, etc. The total score was nine. Students scoring six or more was considered as *fully* achieving the competency, achieving a score of 4-5 was considered as *partially* achieving the competency, and achieving a score of three or less was considered as *not* achieving the competency.

On an average, 44.7% of the students of three types of schools *fully* achieved this competency, 14.1% achieved *partially*, and 41.2% did not achieve it ( $p < 0.001$ ) (Figure B9). School type-wise, 49% of the students of *Shishu Niketans*, 45.2% of those of BPSs, and 22.8% of those of ESP schools *fully* achieved this competency ( $p < 0.001$ ). The proportion of non-achievers was 63.3% in the schools under ESP, 40.6% in BPSs and 37.2% in *Shishu Niketans*. No gender difference was observed in the proportion of students *fully* achieving this competency (Annex B9).

Figure B9. Percentage distribution of students achieving the Bangla competency on ‘writing an application’ by level of achievement and school type



Overall, 64.9% of the students addressed at the top of the application to whom it was written, and 56.4% wrote the date of application, but 47.5% of them wrote the specific subject of the application. Before writing the main text, 54.9% of the students addressed to their teacher. The main text of the application had three principle points– 54% of the students wrote the cause of leave, 45% wrote the dates of leave, and 31.3% wrote the reason of seeking leave. Among others, 40.4% of the students wrote salutation, and 51% of the students wrote the name of the applicant.

Fifteen per cent of the students correctly wrote all the nine points of application under assessment, and 23% did not write any. These figures were 13.6% and 23.7%, respectively for the boys, and 15.9% and 22.6%, respectively for the girls. Thirteen per cent of the students of *Shishu Niketans*, 16.9% of those of BPSs, and 4.6% of those of ESP schools wrote all nine points correctly. Otherwise, 41.6% of the students of ESP schools, 23.1% of those of BPSs, and 18.6% of those of *Shishu Niketans* did not write any of the points correctly.

## 5.2 OVERALL PERFORMANCE IN BANGLA

Of the nine competencies in Bangla, the students of the three types of BRAC schools collectively showed the best performance in ‘understanding handwritten texts (prose)’ which was followed by ‘use of conjunctive letters’, and ability to express ‘own observation’, and the ‘essence of prose’ in writing. Note that the first of the above competencies falls under the broad category of ‘reading skills’ and the rest three under ‘writing skills’. About 89% the students *fully* achieved the first competency, 76.2% achieved the second competency, 72.2% achieved the third competency, and 64.5% achieved the fourth competency.

The second layer of competencies in Bangla with regard to students’ performance comprises of another four competencies. The competencies and the proportions of students *fully* achieving them are the following: writing own experience (56.4%), understand the essence of poems (46.5%), writing an application (44.7%), and writing the essence of poems (40.1%). The second of the above competencies measured ‘reading skills’ whereas the remaining three measured ‘writing skills’.

The remaining competency, which is on ‘use of punctuation marks in writing’ can be put at the third layer. The students showed the worst performance in this with only 29.2% of them *fully* achieving this competency.

The students of BRAC Primary Schools and the *Shishu Niketans* showed significantly better performance in each of the Bangla competencies than the students under ESP (Annex B10). The students of BRAC Primary

Schools and *Shishu Niketans* performed equally in one competency while the students of *Shishu Niketans* were significantly ahead of those in BRAC Primary Schools in eight. The competency in which they performed equally is on ‘writing an application’.

At the aggregated level, the gender difference was observed in four competencies, where the girls showed significantly better performance than the boys (Annexes B1 to B9). All these competencies reflect ‘writing skills’ in Bangla. The competencies are on ‘writing the essence of prose’, ‘writing the essence of poems’, writing punctuation marks correctly, and ‘expressing own observations’. Gender difference of a similar direction was observed in all three types of schools in the competency on ‘writing the essence of prose’. In addition, the girls of *Shishu Niketans* outperformed their boys in two competencies; these are on ‘writing the essence of poems’ and ‘expression of own observations’. Similarly, the girls of BPSs showed significantly better performance than the boys of similar institutions in ‘writing punctuation marks correctly’. No gender difference was observed in the remaining five competencies whether at the aggregated level or by school type.

At the aggregated level, 5.8% of the students *fully* achieved all nine competencies in Bangla, and 1.8% of them achieved none. Proportions of students *fully* achieving all nine competencies are 4.5% in BPSs, 9.8% in *Shishu Niketans*, and 1.1% in ESP schools. Thirteen per cent of the students of ESP schools, 0.8% of those of *Shishu Niketans*, and 1.1% of those of BPSs achieved none of the Bangla competencies (Table B1). Overall, 22.3% of the students *fully* achieved 1-3 competencies, 45.5% of the students achieved 4-6 competencies, and 30.4% of the students achieved 7-9 competencies. School type-wise, 26.1% of the students of BPSs, 44.8% of those of *Shishu Niketans*, and 9% of those of ESP schools *fully* achieved seven or more competencies (Table B1).

**Table B1.** Percentage distribution of students by number of Bangla competencies they *fully* achieved and school type

Number of competencies	School type			All
	BRAC Primary School	<i>Shishu Niketan</i>	ESP School	
Nil	1.1	0.8	13.0	1.8
1 – 3	23.5	14.5	45.5	22.3
4 – 6	49.3	39.9	32.5	45.5
7 – 9	26.1	44.8	9.0	30.4
Total	100.0	100.0	100.0	100.0

Table B2 shows, out of nine, the students, on an average, *fully* achieved 5.19 competencies; the boys achieved 4.98 competencies, and the girls achieved 5.33 competencies ( $p < 0.001$ ). School type-wise, the mean number of Bangla competencies *fully* achieved by the students was 5.93 for *Shishu Niketans*, 5.07 for BRAC Primary Schools, and 3.16 for ESP schools ( $p < 0.001$ ). The girls of each of the three types of schools performed significantly better than the boys of similar institutions, The level of significance of the difference was  $p < 0.01$  for BPSs and *Shishu Niketans*, and  $p < 0.05$  for ESP schools. School type-wise significant difference was observed separately for the boys and the girls ( $p < 0.001$ ).

**Table B2. Mean and percentage of number of Bangla competencies *fully* achieved by the students by school type and gender**

School type	Mean			Percentage		
	Boys	Girls	Both	Boys	Girls	Both
BRAC Primary School	4.83	5.23	5.07	53.7	58.1	56.3
<i>Shishu Niketan</i>	5.71	6.11	5.93	63.4	67.9	65.9
ESP School	2.97	3.29	3.16	33.0	36.6	35.1
All	4.98	5.33	5.19	55.3	59.2	57.7

In other words, the students collectively achieved 57.7% of the competencies in Bangla (Table B2). The boys achieved 55.3% of the competencies, and the girls achieved 59.2% of the competencies. School type-wise, this was 65.9% among the students of *Shishu Niketans*, 56.3% among those of BPSs, and 35.1% among those of ESP schools.

In addition, the students, on an average, *partially* achieved 1.8 competencies, which was 1.9 for the boys and 1.7 for the girls (Annex B11). The mean of *partially* achieved Bangla competencies was 1.9 for the students of BPSs, 1.6 for those of *Shishu Niketans*, and 1.9 for those of ESP schools. If the *partially* achieved competencies are also considered with that of *fully* achieved competencies, the overall achievement would increase by about 20 percentage points. It would vary from 18-21.5 percentage points for various groups of students. Of the six groups of students (by school type and gender), the best performance was observed among the girls of *Shishu Niketans* and the worst performance among the boys of ESP schools.



### 5.3 CHALLENGES FOR IMPROVEMENT

In general, writing with correct spelling was found to be the major challenge for those students who did not do so well in Bangla, followed by their struggle with grammar. A good proportion of the students were facing difficulty with grammatical rules as well as with correct spelling. Although keeping the answer-space blank was not a serious problem in Bangla, writing irrelevant words or sentences or copying from the questions were observed among a significant proportion of the students under assessment.

In cases where the students were asked to write five sentences, a section of them (10-12%) stopped after writing three or four sentences. Instead of writing a paragraph the majority of the students wrote independent sentences with lack of continuation among them. They also put a serial number while writing sentences. In most cases, the sentences were simple and too short in length, which were limited to three to four words. Choice of words was also observed minimal. Some students took words from the test items. The students were also facing challenges with the MCQ items if the answers had to be created through some manipulation of the given texts.

Relatively a much higher proportion of the students of the schools under ESP were facing the above challenges, followed by those of BRAC Primary Schools. The students of the *Shishu Niketans* were comparatively better positioned in combating with the above challenges.

## PERFORMANCE IN ENGLISH

### 6.1 COMPETENCY-WISE ACHIEVEMENT

Seven competencies were considered in assessing English language skills of the students. Of them, one on reading skills and six on writing skills. Total number of items was 26; six items to assess the competency addressing reading skills and 20 items to assess competencies addressing writing skills.

#### ENGLISH COMPETENCY 1.

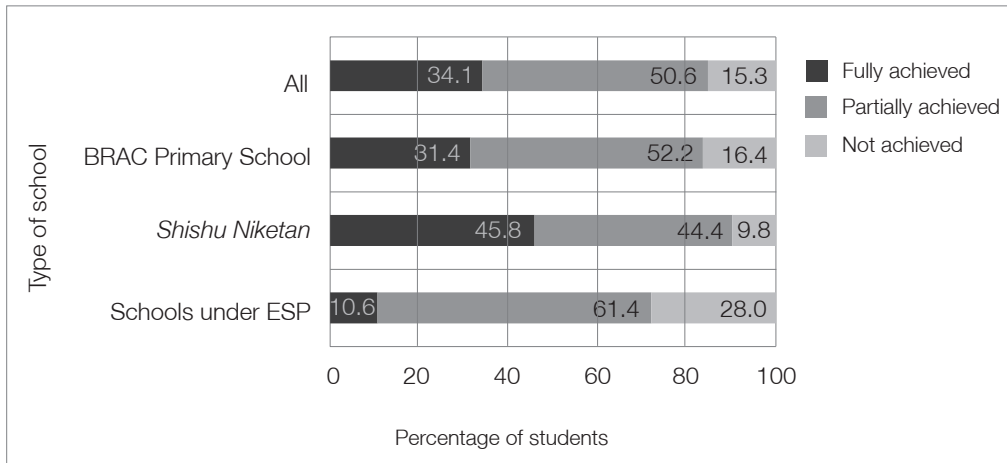
##### To be able to understand stories through reading silently

A short story of 18 sentences containing 145 words was given to the students to read silently which was followed by three true/false type questions and three short-answer questions. The total score was six. Students scoring four or more was considered as *fully* achieving this competency, scoring 2-3 was considered as *partially* achieving the competency, and scoring one or nil was considered as *not* achieving the competency.

On an average, 34.1% of the students under test *fully* achieved this competency, 50.6% achieved *partially*, and 15.3% did *not* achieve it (Figure E1). The proportion of students *fully* achieving this competency was 45.8% in *Shishu Niketans*, 31.4% in BPSs, and 10.6% in the schools under ESP ( $p < 0.001$ ). The proportion of students *fully* or *partially* achieving this competency was mostly equal in the case of *Shishu Niketans*. On the other hand, in the other two types of school, the proportion of students *partially* achieving this competency was much higher than that of achieving *fully*. School type-wise, 28% of the students of ESP schools, 16.4% of those of BPSs, and 9.8% of those of *Shishu Niketans* were unable to achieve this competency. No gender difference was observed in *fully* achieving

this competency – in any of the school type or at the aggregated level (Annex E1).

Figure E1. Percentage distribution of students achieving the English competency on ‘understanding stories through reading’ by level of achievement and school type



It seems that the students did comparatively better in the true/false type items than short-answer type items. Overall, 26-60% of the students provided correct answers to the short-answer type items, whereas, it was 49-62% in the true/false type items. Again, 27.1% of the students failed to provide the correct answer to any of the short-answer type questions, but it was 8.2% in the case of true/false type items. These figures were 18.2% and 6.1%, respectively for the students of *Shishu Niketans*, 28.6% and 8.6%, respectively for the students of BPSs, and 50.4% and 13.1%, respectively for the students of ESP schools.

Only 1% of the students provided correct answers to all the six items and 2.2% none. School type-wise, 1.5% of the students of *Shishu Niketans*, 0.8% of those of BPSs, and 0.2% of those of ESP schools provided correct answers to all six items; whereas, 7% of the students of ESP schools, 2.2% of those of BPSs, and 1% of those of *Shishu Niketans* failed to provide correct answer to any of the items.

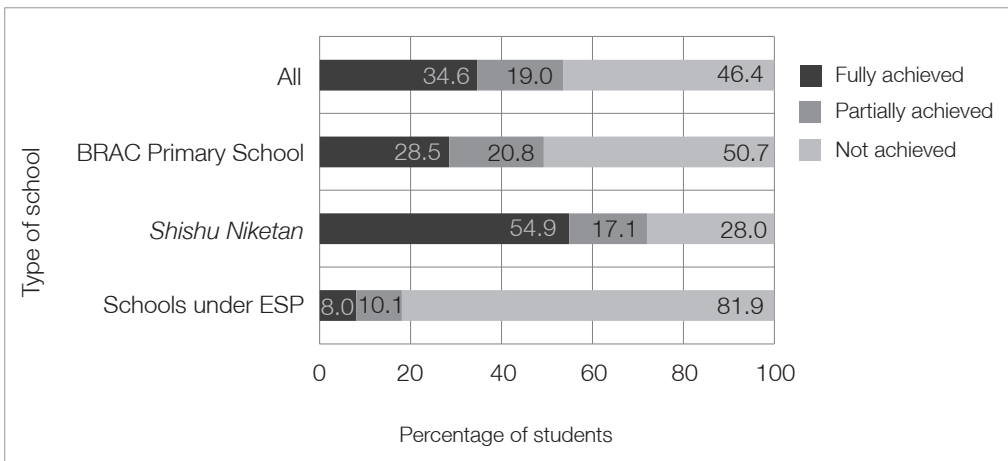
## ENGLISH COMPETENCY 2.

### To be able to make sentences using given words and following instructions

Two types of questions were there to address this competency. Firstly, three words were given to the students to make one sentence with each. Secondly, three blanks were kept in three sentences and the students were asked to fill in those with three words exploring from the three given photos. The total score was six. Students attaining a score of 3.5 or more was considered as *fully* achieving this competency, attaining a score from 2.5-3 was considered as *partially* achieving the competency, and attaining a score of two or below was considered as *not* achieving the competency.

On an average, 34.6% of the students *fully* achieved this competency, 19% achieved *partially*, and 46.4% did not achieve it (Figure E2). School type-wise, nearly 55% of the students of *Shishu Niketans*, 28.5% of those of BPSs, and only 8% of those of ESP schools *fully* achieved this competency ( $p < 0.001$ ). No gender difference was observed in the proportion of students *fully* achieving this competency (Annex E2). Nearly 82% of the students of ESP schools, over a half of the students of BPSs, and 28% of the students of *Shishu Niketans* did not achieve this competency.

Figure E2. Percentage distribution of students achieving the English competency on ‘making sentences using given words and following instructions’ by level of achievement and school type



Of the two types of items, the students did comparatively better in ‘fill in the blanks’ using appropriate words taking hints from the given photos than making independent sentences with the words given. For instance,

proportions of students' correctly making sentences with the three given words were 12.9, 26.6, and 36%, respectively; whereas, these were 39.3, 49, and 57.8%, respectively for fill in the blanks. Again, 45% of the students failed to provide the correct answer to any of the items in the first set of items and it was 18.5% for the second set. Whereas, 6.5% of the students made three correct sentences with the given words, a quarter of the students provided correct answers to all the fill in the blanks questions.

School type-wise, about three-quarters of the students of ESP schools, over a half of those of BPSs, and about a quarter of those of *Shishu Niketans* were not able to make any of the sentences. However, 13.9% of the students of *Shishu Niketans*, 3.9% of those of BPSs, and 0.6% of those of ESP schools were able to make all the sentences correctly. On the other hand, 37.9% of the students of *Shishu Niketans*, 21.5% of those of BPSs, and 4.2% of those of ESP schools provided the correct answers to all the three 'fill in the blanks' items; however, a half of the students of ESP schools, about a fifth of the students of BPSs, and nearly 9% of the students of *Shishu Niketans* were unable to provide a single correct answer. Overall, 43.9% of the students of ESP schools, 15.6% of those of BPSs, and 5.8% of those of *Shishu Niketans* did *not* provide a single correct answer to the six items.

### ENGLISH COMPETENCY 3.

#### To be able to use capital letters and punctuation marks in writing

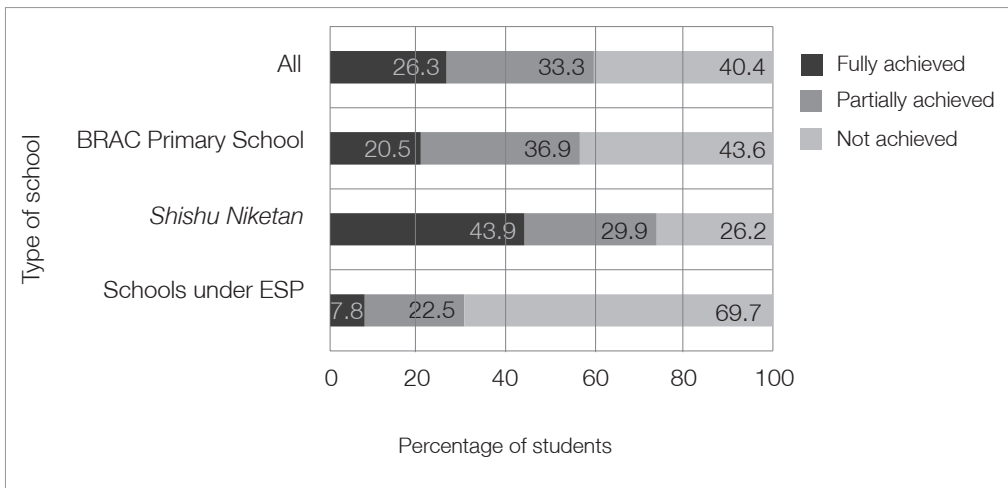
Six sentences were placed in the test keeping three punctuation marks and three capital letters missing. The students were asked to put the correct punctuation marks and write the capital letters wherever applicable. The total score was six. Students attaining a score of 4 or more was considered as *fully* achieving this competency, attaining a score from 2-3 was considered as *partially* achieving the competency, and attaining a score of one or nil was considered as *not* achieving the competency.

Overall, 26.3% of the students under test *fully* achieved this competency, 33.3% achieved *partially*, and 40.4% did not achieve it (Figure E3). School type-wise, 43.9% of the students of *Shishu Niketans*, 20.5% of those of BPSs, and 7.8% of those of ESP schools *fully* achieved this competency ( $p < 0.001$ ). No gender difference was observed in the proportion of students *fully* achieving this competency (Annex E3). Nearly 70% of the students of ESP schools, 43.6% of those of BPSs, and 26.2% of those of *Shishu Niketans* did not achieve this competency.

A wide variation was observed in the performance of the students in the correctly answering items under this competency. The students did better in using capital letters in appropriate places than putting the punctuation marks. The proportion of students writing capital letters in three appropriate

places were 59.8, 39.5 and 19.1%, respectively. The same for the punctuation marks was 50.4, 45.4 and 2.4%, respectively. On an average, nearly a third of the students were unable to write any of the capital letters, and two-fifths of them were not able to use the appropriate punctuation marks. A quarter of the students failed to provide the correct answer to any of the six items and only 1.1% provided correct answers to all six.

Figure E3. Percentage distribution of students achieving the English competency on ‘use of capital letters and punctuation marks in writing’ by level of achievement and school type



About 65% of the students of ESP schools failed to provide correct answer to any of the items concerning punctuation marks and over three-fifths of them showed a similar performance in the items concerning capital letters. These figures were 44% and 33.8%, respectively among the students of BPSs and 26.8% and 21%, respectively among the students of *Shishu Niketans*. Nearly 15% of the students of *Shishu Niketans*, 26.9% of those of BPSs, and 52.5% of those of ESP schools were not able to provide correct answers to any of the six items.

#### ENGLISH COMPETENCY 4.

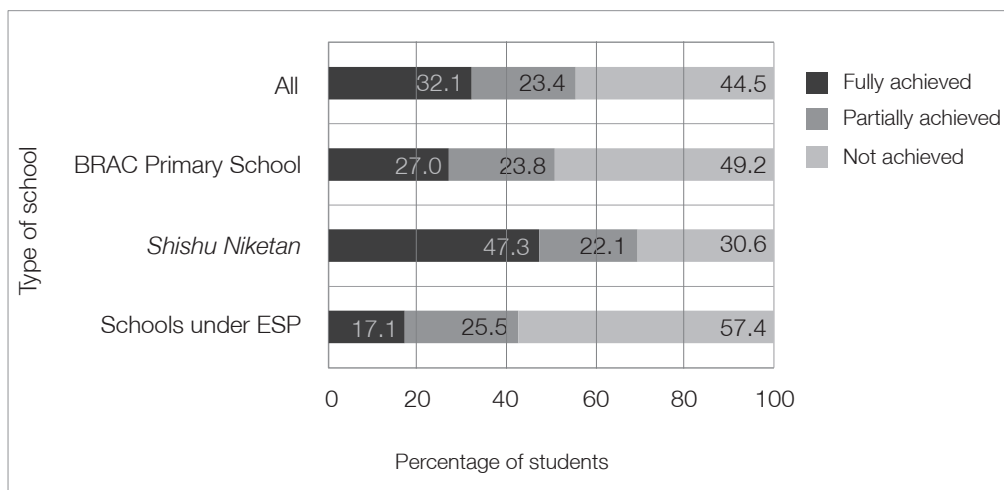
To be able to recognise sentences characterising statement, command, greeting, question and answer

Five sentences were given in the test to identify their characteristics. The characteristics included the question, answer, statement, command, and

greetings. Out of five, students correctly answering at least three was considered as *fully* achieving this competency, correctly answering two was considered as *partially* achieving the competency and correctly answering one or nil was considered as *not* achieving the competency.

Overall, 32.1% of the students *fully* achieved this competency, 23.4% achieved *partially*, and 44.5% did not achieve it (Figure E4). School type-wise, 47.3% of the students of *Shishu Niketans*, 27% of those of BPSs, and 17.1% of those of ESP schools *fully* achieved this competency. No gender difference was observed in the proportion of students *fully* achieving this competency (Annex E4). The proportion of students who did not achieve this competency was 57.4% among those in ESP schools, 49.2% among those in BPSs, and 30.6% among those in *Shishu Niketans*.

Figure E4. Percentage distribution of students achieving the English competency on ‘recognise sentences of various characteristics’ by level of achievement and school type



Over a half of the students correctly recognised the sentence characterising a question, 48.2% recognised the statement, 35.3% recognised greetings, 30.2% recognised an answer, and 27.6% recognised a command. Only 11.6% of the students recognised the characteristics of all five sentences and 19.4% recognised none. Characteristics of all five sentences were recognised by 18% of the students of *Shishu Niketans*, 9.6% of those of BPSs, and 3.5% of those of ESP schools. None of these was recognised by 26.4% of the students of ESP schools, 21.8% of those of BPSs, and 12.5% of those of *Shishu Niketans*.

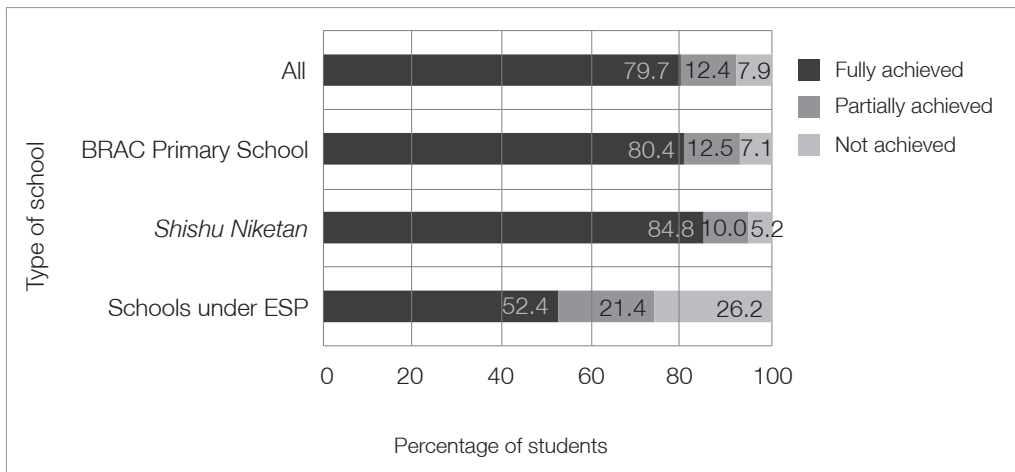
## ENGLISH COMPETENCY 5.

### To be able to fill-up simple forms about oneself

A simple form containing 10 points was placed before the students in the test. These include basic information about the students, their education, and parents. Students correctly answering at least six was considered as *fully* achieving this competency, correctly answering 4-5 was considered as *partially* achieving the competency, and correctly answering three or less was considered as *not* achieving the competency.

Of the seven competencies in English, BRAC school students did best in this. Nearly four-fifths of the students *fully* achieved this competency, 12.4% achieved *partially*, and 7.9% did not achieve it (Figure E5). School type-wise, 84.8% of the students of *Shishu Niketans*, 80.4% of those of BPSs, and 52.4% of those of ESP schools *fully* achieved this competency ( $p < 0.001$ ). At the aggregated level, the girls outperformed the boys in terms of *fully* achieving the competency (81.3% versus 77.6;  $p < 0.05$ ), but separately, no gender difference was observed in any of the school types (Annex E5). Over a quarter of the students of ESP schools, 7.1% of those of BPSs, and 5.2% of those of *Shishu Niketans* did not achieve this competency.

Figure E5. Percentage distribution of students achieving the English competency on ‘fill-up simple forms’ by level of achievement and school type



Of the 10 points in the form, 7.5% of the students correctly wrote each of them and 1.9% none. Correctly answering all 10 points was observed among 11% of the students of *Shishu Niketans*, 6.5% of those of BPSs, and 2.6% of those of ESP schools. Eight per cent of the students of ESP



schools, 1.8% of those of BPSs, and 0.9% of those of *Shishu Niketans* failed to write a single point correctly. Though a small proportion of the students provided correct answers to all 10 points of the form, about 24% of the students provided correct answers to nine points, and 23% did so to eight points.

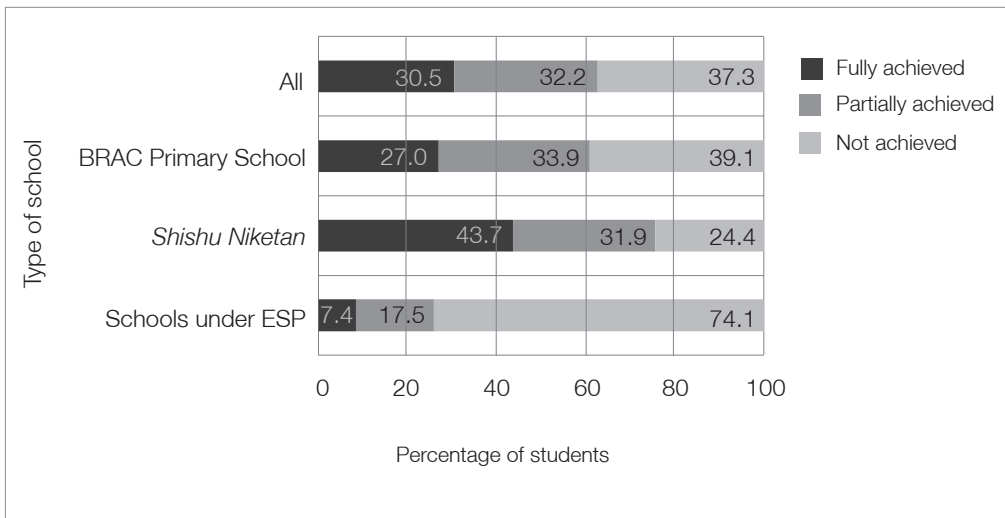
**ENGLISH COMPETENCY 6.**

**To be able to write a simple letter to communicate with near and dear one**

The students were asked to write a letter to their friends describing a given issue. Four points were brought under assessment. These are the date of writing letter, salutation or greeting, main text or body, and complimentary closing. The total score was five. Students attaining a score of three or more was considered as *fully* achieving this competency, attaining a score of 2-2.5 was considered as *partially* achieving the competency, and attaining a score less than two was considered as *not* achieving the competency.

On an average, 30.5% of the students *fully* achieved this competency, 32.2% achieved *partially*, and 37.3% did not achieve the competency (Figure E6). School type-wise, 43.7% of the students of *Shishu Niketans*, 27% of those of BPSs, and 7.4% of those of ESP schools *fully* achieved this competency ( $p < 0.001$ ). A similar level of statistically significant difference was observed by school type when the analysis was done for boys and girls separately.

**Figure E6. Percentage distribution of students achieving the English competency on ‘writing simple letter to communicate’ by level of achievement and school type**



Overall, the girls outperformed the boys in *fully* achieving this competency—32.8% of the girls and 27.4% of the boys did so ( $p < 0.01$ ) (Annex E6). The same was observed among the students of BPSs and *Shishu Niketans*, but no such difference was observed in ESP schools. In BPSs, 29.6% of the girls and 23.1% of the boys *fully* achieved this competency ( $p < 0.05$ ) and in *Shishu Niketans*, 47.1% of the girls and 39.9% of the boys *fully* achieved this competency ( $p < 0.05$ ). Nearly three-quarters of the students of ESP schools, two-fifths of those of BPSs, and a quarter of those of *Shishu Niketans* were unsuccessful in achieving this competency.

However, 70.3% of the students mentioned the date of writing letter, 67% greeted their friends, and 37.9% wrote complementary closing section. School type-wise, these figures were 76.6, 81 and 49.2%, respectively for the students of *Shishu Niketans*, 71.5, 64 and 35.4%, respectively for the students of BPSs, and 32.2, 36.8 and 14.8%, respectively for the students of ESP schools. The major deficiency was observed in writing the main text of the letter—only 5.3% of the students mentioned the given topic, and only 3.6% wrote a description of it. Here too, the students of *Shishu Niketans* did best followed by those of BPSs and ESP schools.

Only below than 1% of the students attained the total score five, but 15.8% attained no score. School type-wise, a half of the students of ESP schools, 15% of those of BPSs, and 9.4% of those of *Shishu Niketans* attained no score.

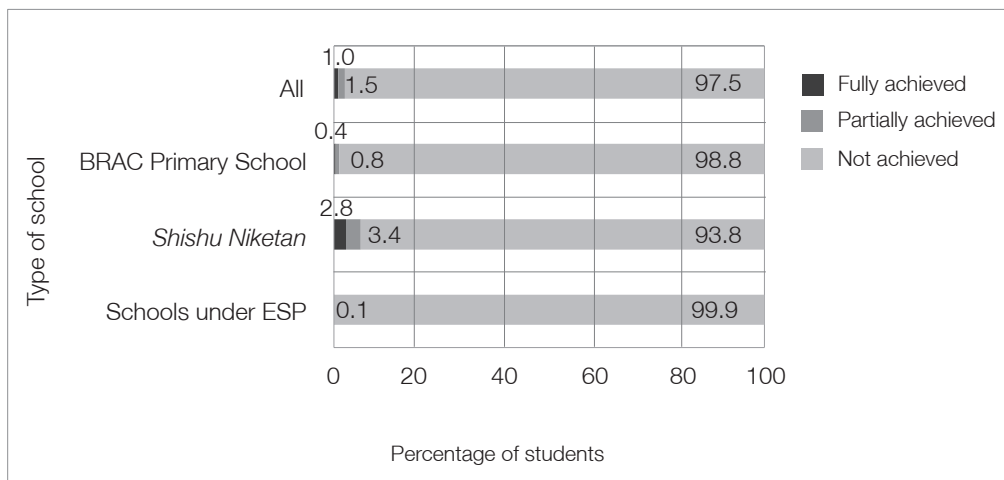
## ENGLISH COMPETENCY 7.

### To be able to write a short piece of composition by answering a set of questions

Six questions were put before the students on a familiar object and asked them to write a short description on that object answering the given questions. The total score was six. Students attaining a score from 3.5-6 was considered as *fully* achieving the competency, attaining a score from 2.5-3 was considered as *partially* achieving the competency, and attaining a score from 0-2 was considered as *not* achieving the competency.

This was the hardest competency in English, and therefore, the students did very poor in this. Overall, only 1% of the students *fully* achieved this competency, 1.5% achieved *partially*, and 97.5% did not achieve it (Figure E7). School type-wise, none of the students of ESP schools, 0.4% of those of BPSs, and 2.8% of those of *Shishu Niketans* *fully* achieved this competency. The non-achievers include 99.9% of the students of ESP schools, 98.8% of those of BPSs, and 93.8% of those of *Shishu Niketans*. No gender difference was observed in achieving this competency (Annex E7).

Figure E7. Percentage distribution of students achieving the English competency on ‘writing a short piece of composition’ by level of achievement and school type



Except writing the name of the object correctly to some extent, the students were not able to provide answers to any of the given questions, and therefore, most of the students could not write on the given object. Only a fifth of the students wrote the name of the object fully, and another one fifth wrote it partially. School type-wise, these figures were 38.5% and 21.8%, respectively for the students of *Shishu Niketans*, 13.9% and 20.9%, respectively for the students of BPSs, and 6.1% and 3.9%, respectively for the students of ESP schools.

## 6.2 OVERALL PERFORMANCE IN ENGLISH

The proportions of students of three types of BRAC schools collectively achieved (fully) the English language competencies ranged from 1% to 79.7%. The best performance was observed in the competency on ‘fill up a simple form’ and the worst performance in ‘writing a short piece of the composition by answering a set of questions’. The performance in the remaining five competencies was far below than the top one; however, they were closer to each other with regard to students’ achievement. Proportions of students achieving these five competencies ranged from 26.3% to 34.6%.

The students of *Shishu Niketans* showed a significantly better performance than the students of BRAC Primary Schools and those of ESP schools in each of the seven competencies in English (Annex E8). On the other hand,

the students of BRAC Primary Schools performed significantly better than those of ESP schools in six of the seven competencies in English. An equal performance of these two types of school was observed in the remaining competency, which is about ‘writing a short piece of the composition by answering a set of questions’.

At the aggregated level, no gender difference was observed in five competencies, and the girls outperformed the boys in two. The two competencies where the girls did better than the boys are ‘fill up a simple form’ and ‘writing a simple letter to communicate with near and dear one’. School type-wise, the gender difference was observed only among the students of BPSs and *Shishu Niketans* in ‘writing a simple letter to communicate with near and dear one’.

Only 0.6% of the students *fully* achieved all the seven competencies in English, and 11.8% of the students achieved none. None of the students of the schools under ESP, 0.1% of those of BPSs, and 1.9% of those of *Shishu Niketans* *fully* achieved all the seven competencies in English. About 37% of the students of ESP schools, 11.6% of those of BPSs, and 6.4% of those of *Shishu Niketans* achieved none of the English competencies (Table E1). Overall, nearly 24% of the students achieved only one competency, 22% of the students achieved two, 17.6% achieved three, 11.8% achieved four, and 13% achieved five or more competencies. School type-wise, 27.9% of the students of *Shishu Niketans*, 7.6% of those of BPSs, and 1.5% of those of ESP schools *fully* achieved five or more competencies in English (Table E1). Over 90% of the students of ESP schools achieved two or less number of competencies in English, which was 62.8% in the case of BPSs and 37.3% in the case of *Shishu Niketans*.

**Table E1.** Percentage distribution of students by number of English competencies they *fully* achieved and school type

Number of competencies	School type			All
	BRAC Primary School	<i>Shishu Niketan</i>	ESP School	
Nil	11.6	6.4	36.9	11.8
1	26.6	14.8	36.4	23.9
2	24.9	16.1	17.6	21.9
3	19.0	17.2	5.5	17.6
4	10.2	17.6	2.1	11.8
5 – 7	7.6	27.9	1.5	13.0
Total	100.0	100.0	100.0	100.0

Out of seven, the students, on an average, achieved 2.38 competencies in English (Table E2). The boys achieved 2.32 competencies, and the girls achieved 2.43 competencies with no statistically significant difference between them. School type-wise, the mean number of English competencies achieved by the students was 3.23 for *Shishu Niketans*, 2.15 for BPSs, and 1.04 for ESP schools ( $p < 0.001$ ). Separate analysis for boys and girls also shows statistically significant difference by school type at the same level of significance. However, no gender difference was observed in any of the school types.

**Table E2. Mean and percentage of number of English competencies *fully* achieved by the students by school type and gender**

School type	Mean			Percentage		
	Boys	Girls	Both	Boys	Girls	Both
BRAC Primary School	2.05	2.22	2.15	29.3	31.7	30.7
<i>Shishu Niketan</i>	3.11	3.33	3.23	44.4	47.6	46.1
ESP School	1.02	1.06	1.04	14.6	15.1	14.9
All	2.32	2.43	2.38	33.1	34.7	34.0

In other words, the students collectively achieved 34% of the English competencies under test (Table E2). This was 33.1% among the boys and 34.7% among the girls. School type-wise, the students of *Shishu Niketans* achieved 46.1% of the competencies in English, BPS students achieved 30.7% of the competencies, and the students of ESP schools achieved 14.9% of the competencies.

In addition, the students, on an average, *partially* achieved 1.7 competencies in English, which was 1.6 for the boys and 1.7 for the girls (Annex E9). The mean of *partially* achieved English competencies was 1.8 for the students of BPSs, and 1.6 for those of *Shishu Niketans* and ESP schools. If the *partially* achieved competencies are also considered with that of *fully* achieved competencies, the overall achievement in English would increase by about 25 percentage points. It would vary from 22.6-25.7 percentage points for various subgroups of students. Likely to Bangla, the best performance was observed among the girls of *Shishu Niketans* and the worst performance among the boys of ESP schools.

## 6.3 CHALLENGES FOR IMPROVEMENT

Similar to Bangla, writing with correct spelling was observed as the prime challenge for the students in writing English, followed by misconception with English grammar. Proportionately a very small section of the students under assessment showed their competence in both. Also, a significant proportion of the students were facing challenges with both. Writing irrelevant words or sentences were also observed among many students under assessment. Compared to Bangla, a much higher proportion of the students (over 20%) kept answer-space empty or did not write the expected number of words or sentences in English. Such a tendency was observed more in the free writing items. Here too, the students wrote independent sentences with serial number while asked to write a paragraph.

The students of *Shishu Niketans* were more competent than others in facing the above challenges. Therefore, they did relatively better than others in the assessment. The above challenges were more prominent among the students of ESP schools, followed by those in the BRAC Primary schools.

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## PERFORMANCE IN MATHEMATICS

### 7.1 COMPETENCY-WISE ACHIEVEMENT

Eight competencies were considered in assessing Mathematics skills of the students. Total number of items was 24, equally distributed by the competencies under assessment. Total score for the first two competencies was four each, and it was three for each of the remaining six. If the total score for assessing a competency was four, students had to score at least 2.5 for *fully* achieving the competency, from 1.5-2 for *partially* achieving the competency, and one or nil for *not* achieving the competency. If the total score was three, a score of 2-3 was considered as *fully* achieving the competency, a score from 1-1.5 was considered as *partially* achieving the competency, and a score below than one was considered as *not* achieving.

#### MATHEMATICS COMPETENCY 1.

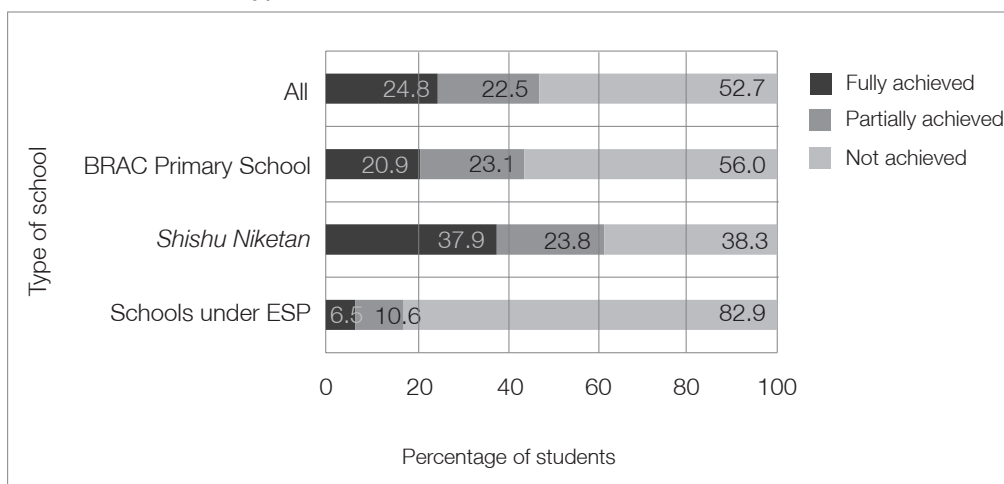
**To have skills in basic rules of arithmetic and use them in problem-solving**

A multiplication, a division and a two-stage word problem was given to solve in assessing this competency. On an average, 24.8% of the students *fully* achieved this competency, 22.5% achieved *partially*, and 52.7% did not achieve it (Figure M1). The proportion of students *fully* achieving this competency was 37.9% in *Shishu Niketans*, 20.9% in BPSs, and only 6.5% in the ESP schools ( $p < 0.001$ ). A similar pattern was observed when data were analysed for the boys and the girls separately. No gender variation was observed at the aggregated level or by school type (Annex E1). Majority of the students failed to achieve this competency. They were 52.7% of all the students. This figure was 82.9% among the students of ESP schools, 56% among those in BPSs, and 38.3% among those in *Shishu Niketans*.



Of the three items, 36.9% of the students correctly did the multiplication, 59.6% did the division, and 20.2% solved the word problem. A small portion of the students provided partial answer to the multiplication (3.3%), but no such case was observed in division. In the case of word problem, although 37.2% of the students provided the correct answer to the first part of it, only 20.2% provided the same to the second part. Together, 62.2% of the students were unable to do any part of this word problem, 17.6% of them provided *partially* correct answer to it. Note that the first part was a multiplication and the second part a division.

Figure M1. Percentage distribution of students achieving the Mathematics competency on ‘basic rules of arithmetic’ by level of achievement and school type



A third of the students of BPSs correctly did the multiplication, three-fifths did the division, and 15.4% did the word problem. Although a third of them provided the correct answer to the first part of the word problem, 15.4% who did so for the second part. Two-thirds of the BPS students failed to answer any part of the word problem correctly and 18.4% provided *partially* correct answer.

A half of the students of *Shishu Niketans* correctly did the multiplication, 63.9% did the division, and 34.6% did the word problem. Of the two parts of the word problem, 52.6% made the correct answer to the first part and 34.6% made so to the second part. None of the 47.2% of the students was able to provide the correct answer to any of the parts of the word problem, but 18.2% provided *partially* correct answer.

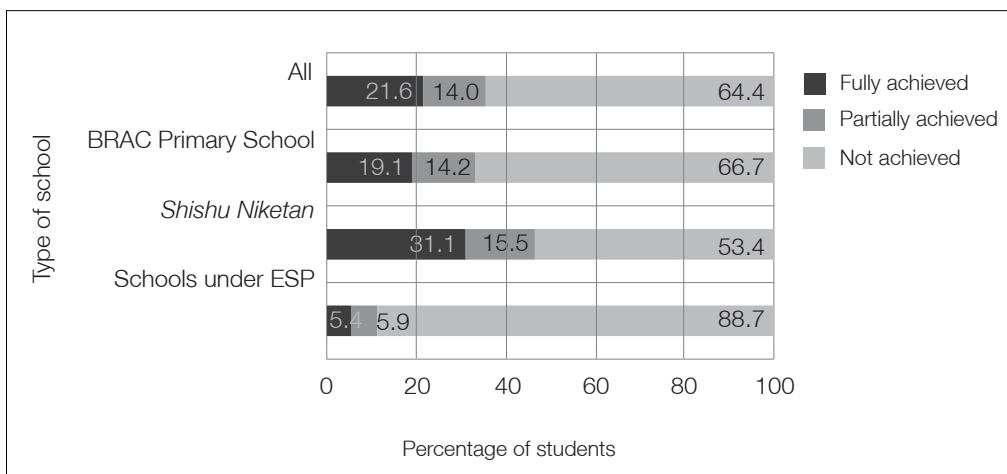
Among the students of ESP schools, 18.8% made the correct answer to the multiplication, 39.1% did so for the division, and only 5.1% did so for the word problem. Only 11.6% of the students made the correct answer to the first part of the word problem, and 5.1% did so for the second part. A high proportion of the students of ESP schools failed to do any part of the word problem correctly (88.5%) and only 6.4% made *partially* correct answer.

## MATHEMATICS COMPETENCY 2.

### To have the concept of average and use of it in problem-solving

An MCQ on simple average and two simple word problems needing the concept of average to solve them were given in the test. On an average, 21.6% of the students *fully* achieved this competency, 14% achieved *partially*, and 64.4% failed to achieve it (Figure M2). School type-wise, 31.1% of the students of *Shishu Niketans*, 19.1% of those in BPSs, and only 5.4% of those in ESP schools *fully* achieved this competency ( $p < 0.001$ ). A similar pattern was observed when data were analysed for the boys and the girls separately. At the aggregated level, the boys were significantly ahead of the girls in *fully* achieving this competency (24.7% versus 19.4%;  $p < 0.01$ ) (Annex M2). However, no gender difference was observed in any of the school types when a separate analysis was done.

Figure M2. Percentage distribution of students achieving the Mathematics competency on ‘average’ by level of achievement and school type



Majority of the students in each of the three types of schools failed to achieve this competency. This figure was 64.4% at the aggregated level, which was higher than the similar figure for the first competency. School

type-wise, 88.7% of the students of ESP schools, 66.7% of those in BPSs, and 53.4% of those in *Shishu Niketans* failed to achieve this competency.

The item-wise analysis shows that nearly two-thirds of the students of three types of schools were able to provide the correct answer to the MCQ, 9.7% of the students were able to do so to the first word problem and 8.4% to the second word problem. A much higher proportion of the students failed to provide the correct answer to the first word problem (86.2%). Failure to provide the correct answer to the second word problem was recorded to 64.8% of the students and *partially* correct answer to 26.8% of the students. Of the two parts of the second word problem, 26.8% of the students was able to do the first part (addition), and 8.4% was able to do the second part (division).

Two-thirds of the students of BPSs were able to provide the correct answer to the MCQ, 8.5% of them to the first word problem, and 6.8% to the second word problem. The proportion of students failing to answer the first word problem correctly was 87.8% and the second word problem 67.6%. Over a quarter of the students were able to provide *partially* correct answer to the second word problem. Less than a quarter of the students were able to do the first part, and 6.8% were able to do the second part of the second word problem.

Among the students of *Shishu Niketans*, 72.1% provided the correct answer to the MCQ, 14.1% the first word problem, and 13.9% the second word problem. Over 80% of the students of this type of school failed to provide the correct answer to the first word problem, and 53.6% failed to do so to the second word problem. Nearly a third of the students provided *partially* correct answer to the second word problem. Of the two parts of this item, 36.5% of the students were able to do the addition, and 13.9% were able to do the division.

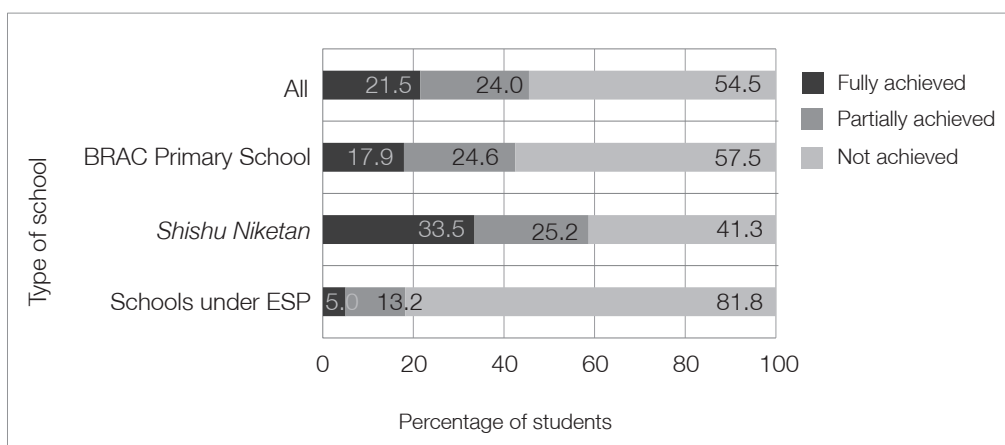
Among the students of ESP schools, 41.2% provided the correct answer to the MCQ, only 2.2% the first word problem, and 1% the second word problem. A very high proportion of the students of this type of schools failed to provide the correct answers to the two word problems – 96.6% in the case of the first and 84.8% in the case of the second. Only 14.2% of the students provided *partially* correct answer to the second word problem. Only 8% of the students of these schools were able to answer the first part (addition) correctly and 1% were able to do so the second part (division) of the second word problem.

### MATHEMATICS COMPETENCY 3.

#### To have the concept of HCF and LCM and apply them in problem-solving

Two separate sets containing three numbers in each were given to the students to find out HCF (highest common factor) of one set of numbers and LCM (lowest common multiple) of another. A simple word problem was also given to solve, which needs the concepts of HCF and LCM. On an average, 21.5% of the students of the three types of BRAC schools *fully* achieved this competency, 24% achieved *partially*, and 54.5% did not achieve it (Figure M3). School type-wise, a third of the students of *Shishu Niketans*, 17.9% of those of BPSs, and only 5% of those of ESP schools *fully* achieved this competency. At the aggregated level, the boys were significantly ahead of the girls in *fully* achieving this competency (24.6% versus 19.2%;  $p < 0.01$ ) (Annex M3). School type-wise, no gender difference was observed in *Shishu Niketans* and ESP schools. However, 22.5% of the boys and 14.8% of the girls of BPSs *fully* achieved this competency ( $p < 0.01$ ).

Figure M3. Percentage distribution of students achieving the Mathematics competency on ‘HCF and LCM’ by level of achievement and school type



Likely to the first two Mathematics competencies, the majority of the students of BRAC schools failed to achieve this competency. It was 54.5% at the aggregated level. School type-wise, 81.8% of the students of ESP schools, 57.5% of those in BPSs, and 41.3% of those in *Shishu Niketans* failed to achieve this competency.

Of the students under study, 30.7% were able to correctly find out the HCF, 25.6% the LCM, and 12.3% were able to do the word problem. In

addition, 5.6% of the students provided *partially* correct answer in finding out the HCF, 8.7% the LCM, and 14% the word problem. The proportion of students failed to provide correct answer was 63.7% for HCF, 65.7% for LCM, and 73.7% for the word problem.

Among the students of BPSs, 27.8% correctly find out the HCF, 22% the LCM, and 11.8% provided the correct answer to the word problem. An equal proportion of the students *partially* made correct answer to the word problem, 7.8% did so for LCM, and 4.6% did so for HCF. Over two-thirds of the students failed to find out the HCF, 70.2% the LCM, and over three-quarters could not solve the word problem.

Among the students of *Shishu Niketans*, 42.8% correctly find out the HCF, 37.6% the LCM, and 15.9% provided the correct answer to the word problem. The proportion of students provided *partially* correct answer to these items was 8.1, 11.2 and 20.5%, respectively. Around a half of the students failed to find out the HCF and LCM, and 63.6% provided incorrect answer to the word problem.

Less than 10% of the students of ESP schools correctly find out the HCF and LCM and only 3% of the same provided correct answer to the word problem. A very high proportion of the students of these schools failed to provide the correct answer to each of the items– HCF 87.4%, LCM 83.4%, and word problem 89.6%.

#### **MATHEMATICS COMPETENCY 4.**

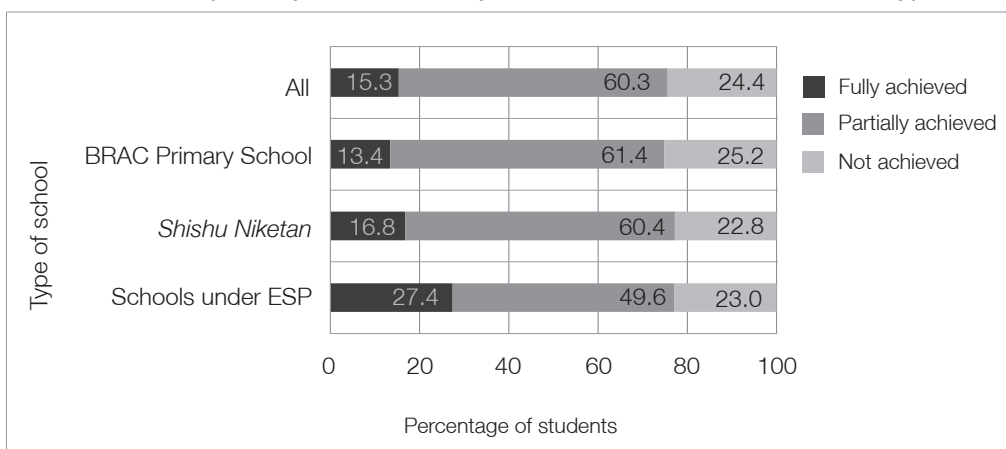
##### **To have the concept of fraction and use it in problem-solving**

Identification of certain fraction in a whole, arranging fractions in ascending order, and a simple word problem were given in the test. The unitary method was required to solve the word problem. On an average, 15.3% of the students of the three types of BRAC schools *fully* achieved this competency, 60.3% achieved *partially*, and 24.4% did not achieve it (Figure M4). This is the only competency under this test where the students of ESP schools were ahead of those of other two types of school. The proportion of students *fully* achieving this competency was 27.4% among them. They were followed by the students of *Shishu Niketans* (16.8%) and the BPSs (13.4%), respectively. No gender difference was observed in the achievement of this competency (Annex M4).

Unlikely, this is the only Mathematics competency in which majority of the students of all three types of schools *partially* achieved the competency. A half of the students of ESP schools and over three-fifths of the students of other two types fell in this category. A quarter of the students of BPSs, 23% of those of ESP schools, and 22.8% of those of *Shishu Niketans* did not achieve this competency.

On an average, 72.1% of the students identified a certain fraction in a whole, 13% arranged fractions in ascending order, and 5.2% provided the correct answer to the word problem. A *partially* correct answer was provided by 16.5% of the students to the first item, none to the second item, and 14% of the students to the third item.

Figure M4. Percentage distribution of students achieving the Mathematics competency on 'fraction' by level of achievement and school type



Among the students of BPSs, 71.2% correctly identified a certain fraction in a whole, 12.2% arranged the given fractions in ascending order, and only 4.2% correctly solved the word problem. *Partially* correct answers to these items were provided by 17.2, 12.2 and 13% of the BPS students, respectively.

Of the *Shishu Niketan* students, 73.5% made the correct answer to the identification of certain fraction, 11.2% arranged the given fractions in ascending order, and 8.2% did the word problem correctly. In addition, 17% of the students provided *partially* correct answers to the first item, 11.2% did so for the second item, and 18% did so for the third item.

Three-quarters of the students of ESP schools correctly identified certain a fraction in a whole, 27.5% of the same arranged the given fractions in ascending order, and only 1.6% made correct answer to the word problem. In addition, *partially* correct answers were provided by 7.5% of the students to the first item, none to the second item, and 7.4% to the third item.

Overall, although a good proportion of the students of each of the three types of schools were able to identify a certain fraction in a whole, a very high portion of them was unable to arrange a set of fractions in ascending

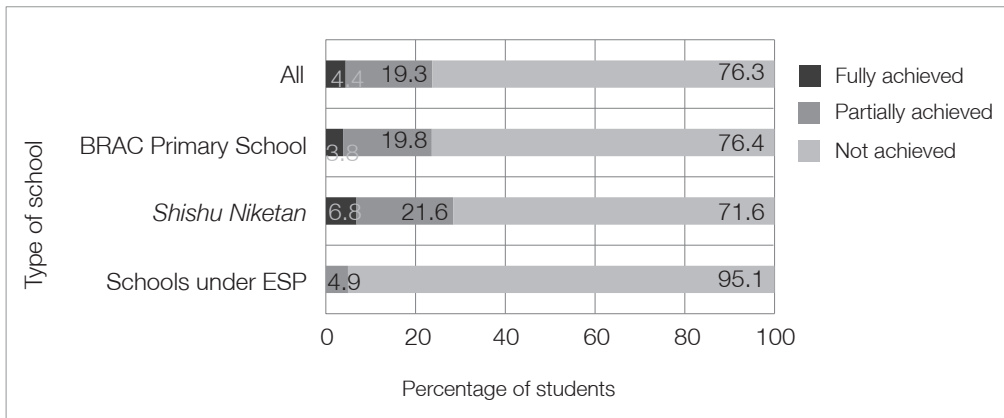
order. Performance of the students in the word problem needing skills in unitary method was unexpectedly very low.

**MATHEMATICS COMPETENCY 5.**

**To have the concept of percentage and use it in problem-solving**

Transformation of a fraction to percentage, finding out a certain percentage of a number, and a simple word problem were given in the test to address this competency. This was the most difficult Mathematics competency to the students of each of the three types of schools. Only 4.4% of all students *fully* achieved this competency, and 19.3% achieved it *partially*, and 76.3% did not achieve it (Figure M5). None of the students of ESP schools, 3.8% of those of BPSs, and 6.8% of those of *Shishu Niketans* *fully* achieved this competency. No gender difference was observed in the achievement of this competency (Annex M5). Over three-quarters of all students failed to achieve this competency. They were 95.1% among the students of ESP schools, 76.4% among those of the BPSs, and 71.6% among those of *Shishu Niketans*.

**Figure M5. Percentage distribution of students achieving the Mathematics competency on ‘percentage’ by level of achievement and school type**



On an average, 9.3% of the students were able to transform a fraction into percentage form, 16.6% were able to find out a certain percentage of a given number, and only 0.4% were able to do the word problem. In addition, 11.1% of the students were *partially* able to transform a fraction into percentage, and 11.4% of the students were *partially* able to find out a certain percentage of a given number. No such case was observed in word problem-solving. Therefore, about 80% of the students provided incorrect answer to the first item, 72% did so in the second item, and 99.6% in the third item.

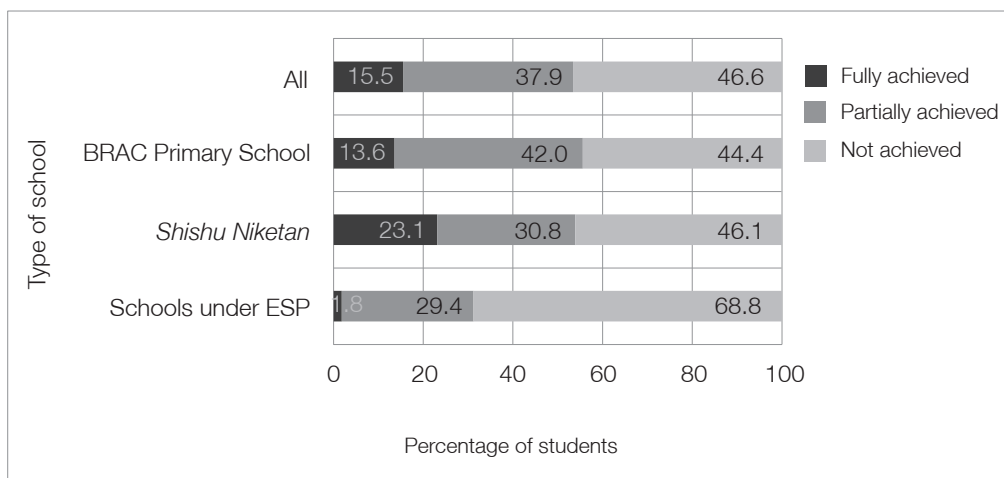
A very high proportion of the students of each school type were unable to provide correct answers to the items under this competency. For instance, 78.8% of the students of BPSs were unable to transform a fraction into a percentage, 71.2% were unable to find out the percentage of a given number, and each of the students provided the wrong answer to the word problem. These figures were 77.6, 69.8 and 98.8%, respectively among the students of *Shishu Niketans*, and 95.6, 88.6 and 100%, respectively among the students of ESP schools.

## MATHEMATICS COMPETENCY 6.

### To know various units of measurement and use them in problem-solving

An addition, a simple word problem, and transformation of one unit of measurement to another were given in the test to address this competency. On an average, 15.5% of the students *fully* achieved this competency, 37.9% achieved *partially*, and 46.6% did not achieve it (Figure M6). School type-wise, 23.1% of the students of *Shishu Niketans*, 13.6% of those of BPSs, and only 1.8% of those of ESP schools *fully* achieved this competency ( $p < 0.001$ ). No gender difference was observed in the achievement of this competency (Annex M6). Overall, 16.3% of the boys and 15% of the girls *fully* achieved this competency. Although overall, less than a half of the students did not achieve this competency it was 68.8% among the students of ESP schools, 46.1% among those of *Shishu Niketans*, and 44.4% among those of BPSs.

Figure M6. Percentage distribution of students achieving the Mathematics competency on the ‘units of measurement’ by level of achievement and school type





Overall, a half of the students correctly did the addition, 13.4% correctly solved the word problem, and 9.4% were able to transform one unit of measurement to another. A very small portion of the students was able to provide *partially* correct answers to these items. Therefore, 50.6% of the students were incorrect in doing the addition, 85.9% in word problem, and 89.7% in the transformation of a unit of measurement to another.

School type-wise analysis shows that 45.8% of the students of BPSs were unable to do the addition, 89% of the same were unable to do the word problem, and 93% of the same were unable to transform one unit of measurement to another. These figures were 56.8, 76.2 and 79.9%, respectively for the students of *Shishu Niketans*, and 71, 96.4 and 99.1%, respectively among the students of ESP schools.

## MATHEMATICS COMPETENCY 7.

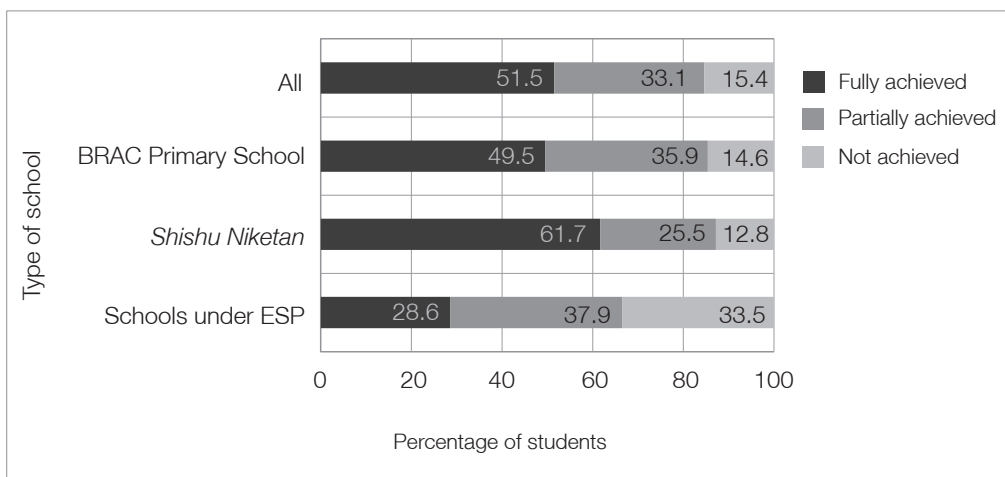
### To know simple geometric shapes and ability to draw them

Drawing of a geometric figure and two short-answer questions were placed in the test to address this competency. Among the Mathematics competencies, this was the second from the top in terms of easiness to the students. More than a half of the students *fully* achieved this competency, a third achieved *partially*, and 15.4% did not achieve it (Figure M7). School type-wise, 61.7% of the students of *Shishu Niketans*, 49.5% of those of BPSs, and 28.6% of those of ESP schools *fully* achieved this competency ( $p < 0.001$ ). A similar trend was observed when data were analysed by gender. Overall, the girls outperformed the boys— 53.4% of the girls and 49.3% of the boys *fully* achieved this competency ( $p < 0.05$ ) (Annex M7). School type-wise, the gender difference was observed only among the students of ESP schools where the girls surpassed the boys. Thirty-two per cent of the girls and 23.8% of the boys of this type of school *fully* achieved this competency ( $p < 0.05$ ). A third of the students of ESP schools, 14.6% of those of BPSs, and 12.8% of those of *Shishu Niketans* failed to achieve this competency.

Overall, three-quarters of the students correctly drew the geometric figure, 57.7% of the same provided correct answer to a question, and only 9.4% did so to another. There was no option to provide a *partially* correct answer to any of these questions. Therefore, the rest of the students provided wrong answers to these questions. School type-wise, among the BPS students, 75.8% correctly drew the geometric figure, 57.1% provided the correct answer to a question, and 4.1% did so to the other. These figures were 78, 64.2 and 24.6%, respectively among the students of *Shishu Niketans*, and 57.5, 35.6 and 3.6%, respectively among the students of ESP schools.

Among the students, 6.6% could provide correct answers to all the three items, 45% two, 33% one, and 15.4% none. The proportion of students failing to provide the correct answer to any of the items was 14.6% in BPSs, 12.8% in the *Shishu Niketans*, and 33.5% in the schools under ESP.

Figure M7. Percentage distribution of students achieving the Mathematics competency on 'geometric shapes' by level of achievement and school type



## MATHEMATICS COMPETENCY 8.

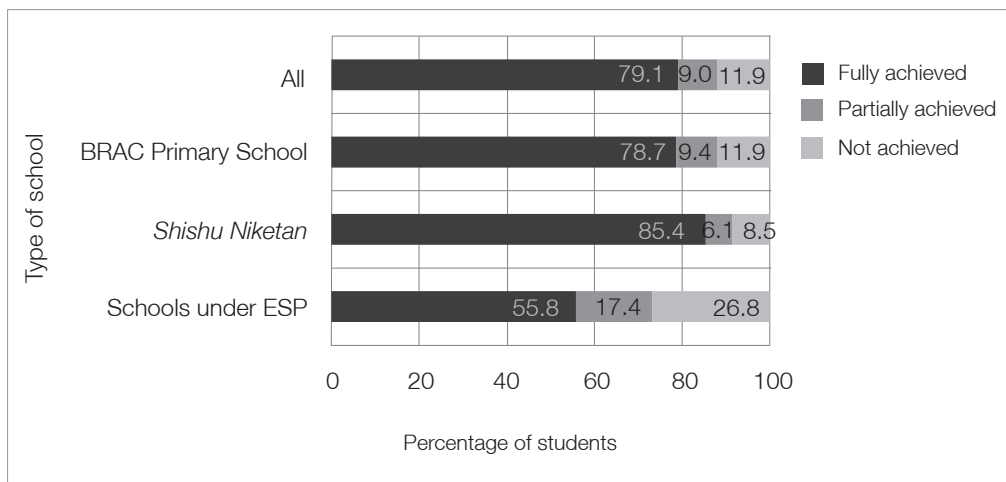
### To understand graphical presentations of data

Three questions were asked to the students followed by a graph representing a set of data. This was the easiest Mathematics competency to the students. Overall, 79.1% of the students *fully* achieved this competency, 9% achieved *partially*, and 11.9% did not achieve it (Figure M8). School type-wise, 85.4% of the students of *Shishu Niketans*, 78.7% of those of BPSs, and 55.8% of those of ESP schools *fully* achieved this competency. A similar trend was observed when data were analysed by gender. However, no gender difference was observed at the aggregated level or any of the school type (Annex M8). Over a quarter of the students of ESP schools, 11.9% of those of BPSs, and 8.5% of those of *Shishu Niketans* failed to achieve this competency.

Of the three items, 83.3% of the students provided the correct answer to one, 71.2% to the other, and 78% to the remaining. Here too, no option was there to provide a *partially* correct answer to any of these questions. School type-wise, proportions of students providing correct answers to

these questions were 83, 70.2 and 78%, respectively in BPSs, 88.9, 78.8 and 82.9%, respectively in *Shishu Niketans*, and 62.2, 48.1 and 57.5%, respectively in ESP schools.

Figure M8. Percentage distribution of students achieving the Mathematics competency on ‘graphical presentations of data’ by level of achievement and school type



Over 65% of the students provided correct answers to all the three items, 13.8% did so to the two items, 9% one item, and 11.9% none. The proportion of students failing to provide the correct answer to any of the items was 11.9% in BPSs, 8.5% in the *Shishu Niketans*, and 26.8% in the schools under ESP.

There was a mistake in the test, which made the items addressing this competency too easy and therefore resulted so high performance of the students. Figures were provided in the graph; therefore, the students were able to directly pick the answers of the questions without looking at the context.

## 7.2 OVERALL PERFORMANCE IN MATHEMATICS

Of the eight competencies in Mathematics, the students of the three types of BRAC schools collectively showed the best performance in ‘graphical presentation of data’ followed by ‘geometric shapes’. Over 79% of the students *fully* achieved the first competency, and more than half of them did so in the second competency. Performance in the remaining six

competencies was far less than the above two. Only less than a quarter of the students could cross the criteria of *fully* achieving each of these competencies. The worst performance was observed in the competency on 'percentage'. Less than 5% of the students *fully* achieved this competency. Except for the competency on 'fraction', the students of *Shishu Niketans* showed a significantly higher performance than those of the other two types in the remaining seven competencies in Mathematics. The students of BPSs also showed a similar performance than those under ESP schools in these competencies. Therefore, the performance of the ESP school students was the worst in seven Mathematics competencies under test. The students of ESP schools did significantly better than those of the other two types of school in the competency on 'fraction'. The students of BPSs and *Shishu Niketans* performed equally in this competency.

At the aggregated level, a statistically significant gender difference was observed in three competencies. The boys were ahead of the girls in two competencies (on 'average' and 'HCF and LCM'), and the girls outperformed the boys in one competency (on 'geometric figures'). School type-wise, no gender difference was observed among the students of *Shishu Niketans* in any of the competencies. The boys of BPSs outperformed their counterparts girls in the competency on 'HCF and LCM', and the girls of the ESP schools were ahead of their counterparts boys in the competency on 'geometric shapes'.

Only 0.7% of the students *fully* achieved all the eight competencies in Mathematics and 10.4% achieved none. None of the students of ESP schools, 0.1% of those of BPSs, and 2.2% of those of *Shishu Niketans* *fully* achieved all the eight competencies. On the other hand, 29.5% of the students of ESP schools, 10.2% of those of BPSs, and 6.2% of those of *Shishu Niketans* did not achieve any of the competencies (Table M1). Overall, 50.8% of the students achieved 1-2 competencies, 27.4% achieved 3-4 competencies, and 11.4% achieved 5-8 competencies. School type-wise, 8.5% of the students of BPSs, 20.5% of those of *Shishu Niketans*, and 1.5% of those of ESP schools *fully* achieved five or more number of competencies in Mathematics (Table M1).

**Table M1. Percentage distribution of students by number of Mathematics competencies they fully achieved and school type**

Number of competencies	School type			All
	BRAC Primary School	<i>Shishu Niketan</i>	ESP School	
Nil	10.2	6.2	29.5	10.4
1 – 2	55.3	39.5	54.8	50.8
3 – 4	26.0	33.8	14.2	27.4
5 – 8	8.5	20.5	1.5	11.4
Total	100.0	100.0	100.0	100.0

Out of eight, the students, on an average, achieved 2.34 competencies in Mathematics (Table M2). The boys achieved 2.39 competencies and the girls 2.30 competencies with no statistically significant difference between them. School type-wise, the mean was 2.96 for *Shishu Niketans*, 2.17 for BPSs and 1.31 for ESP schools ( $p < 0.001$ ). Separate analysis for boys and girls also shows a statistically significant difference by school type. However, no gender difference was observed in any school type.

**Table M2. Mean and percentage of number of Mathematics competencies fully achieved by the students by school type and gender**

School type	Mean			Percentage		
	Boys	Girls	Both	Boys	Girls	Both
BRAC Primary School	2.23	2.12	2.17	27.9	26.5	27.1
<i>Shishu Niketan</i>	2.93	2.99	2.96	36.6	37.4	37.0
ESP School	1.29	1.32	1.31	16.1	16.5	16.4
All	2.39	2.30	2.34	29.9	28.9	29.3

In other words, the students collectively achieved 29.3% of the Mathematics competencies under test (Table M2). Gender wise, the boys achieved 29.9% of the competencies, and the girls achieved 28.9%. School type-wise, the students of *Shishu Niketans* achieved 37% of the competencies; BPS students achieved 27.1% and the students under ESP schools achieved 16.4%.

In addition, the students, on an average, *partially* achieved 2.2 competencies in Mathematics with no difference by gender (Annex M10). The mean of *partially* achieved Mathematics competencies was 2.3 for the students of

BPSs, 2.1 for those of *Shishu Niketans*, and 1.7 for those of ESP schools. If the *partially* achieved competencies are also considered with that of *fully* achieved competencies, the overall achievement in Mathematics would increase over 27 percentage points. It would vary from 21-28.8 percentage points for various groups of students. Similar to Bangla and English, the best performance in Mathematics was observed among the girls of *Shishu Niketans* and the worst performance among the boys of ESP schools.

### 7.3 CHALLENGES FOR IMPROVEMENT

Not knowing the steps of solving the mathematical word problems was the major challenge that the students were facing while the test was administered to them. Though a good proportion of the students attempted to solve the given problems, another proportion did not take an initiative to solve the sums and therefore, kept the answer space empty. A small section of the students knew the steps of solving the sums, but did wrong in the arithmetic parts of those. Another small proportion of the students failed to achieve the full score because they missed writing the units (wherever applicable) while providing the answers, although, they did the arithmetic parts correctly. Likely to the other sections of the test, the students of the *Shishu Niketans* were facing the above challenges much less than those of the ESP schools, and the students of BPSs were in between.

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## CHAPTER EIGHT

# CONCLUDING REMARKS

This is the first study with the newly developed test instrument called Assessment of Primary Competencies in Languages and Mathematics (APC-L&M). A total of 24 competencies on three subjects of primary education (here called areas of assessment) were addressed in this instrument. Of them, nine in Bangla, seven in English, and eight in Mathematics.

The new test is not comparable to the previous instrument– the Competency-based Achievement Test or CAT. APC-L&M is rigorous and harder than CAT. The following are the main points to highlight in this regard.

- Firstly, instead of the principal list of competencies, which was the case for CAT– this test considered grade-wise, subject-specific competencies to assess and measure. Therefore, the number of competencies addressed in the two instruments varied substantially.
- Secondly, and the most importantly, relatively difficult question items were placed in APC-L&M while addressing the competencies. The number of items was three to six against each of the competencies in APC-L&M, which was two in most cases of CAT. These made the new instrument logical and risk-free for the students and the assessors, but harder as well than the previous one. Test-time, covering three assessment areas, is three hours in present case, which was two hours ten minutes for CAT covering all six subjects of primary education.
- Thirdly, instead of a dichotomy (correct or incorrect), the students writings were assessed in three to nine categories or stages (as appropriate). This made it possible to assess the students elaborately and pinpoint some of the areas that the students are facing the challenge.



The other positive side of APC-L&M include categorisation of the assessed students into three layers based on their performance in each competency. These are *fully-achieved*, *partially-achieved*, and *not-achieved*. This is helpful for the education providers as well as the teachers and the students. A small initiative can help the *partially-achieved* students to cross the threshold of *fully* achieving criteria. Note that the competencies were dichotomously assessed (achieved or not-achieved) in CAT. APC-L&M is generalisable to the fifth graders of Bangladesh possessing the national curriculum irrespective of school type.

APC-L&M was developed during 2016-17. It was first administered in 2017 to the students of three types of BRAC schools. The school types include BRAC Primary School or BPS, *Shishu Niketan*, and schools under the Education Support Programme or ESP school. A large sample of 2,400 students of grade V, equally distributed by school type was considered to administer the test. All of them were the candidates of Primary Education Completion Examination in 2017.

Details of the students' performance segregated by competency, school type and gender as well as aggregated pooled are provided in the previous chapters (5 to 7). Findings of this first initiative with APC-L&M can be summarised as follows:

- Of the three areas of assessment, the students did best in Bangla and worst in Mathematics. Their performance in English was slightly ahead of Mathematics.
- The students of *Shishu Niketans* were ahead of others, followed by those of BPSs and ESP schools, respectively.
- Equal performance of boys and girls was observed in 15 competencies. The girls outperformed the boys in five competencies, and an opposite scenario was observed in two.

Challenges of the students in gaining better performance in the competencies are also provided for each of the areas of assessment (chapters 5-7). Taking findings from the chapters, Table C1 provides achievement of the students in terms of percentage of the mean number of competencies achieved by school type and areas of assessment. On an average, the students of three types of BRAC schools collectively achieved 57.7% of the Bangla competencies, 34% of the English competencies, and 29.3% of the Mathematics competencies. If the *partially* achieved competencies are considered, the figures may increase to 77.6, 58.7 and 56.8%, respectively. This is the area (partial achievement) where there is a scope for intervention.

**Table C1. Percentage of mean number of competencies achieved by the students by school type and areas of assessment**

School type	Areas of assessment		
	Bangla	English	Mathematics
BRAC Primary School	56.3	30.7	27.1
<i>Shishu Niketan</i>	65.9	46.1	37.0
ESP school	35.1	14.9	16.4
All	57.7	34.0	29.3

This table was reconstructed from the Tables B2, E2 and M2

A comparison of performance using this test and the CAT is possible because CAT was also administered to the same sample of BPSs. Results of CAT is available in Nath (2018). The BPS students, on an average, achieved 67.7% of Bangla, 61.3% of English, and 65% of Mathematics competencies in CAT; whereas, they achieved 56.3% of Bangla, 30.7% of English, and 27.1% of Mathematics competencies in APC-L&M. From this, the readers can understand the relative difficulty of the two test instruments.

The teachers of the schools under study were asked to equally distribute the sampled students in four categories based on their performance as observed in the classrooms while teaching throughout the years. These categories were *high quality*, *higher-middle quality*, *lower-middle quality*, and *low quality*. A strong relationship was observed between students' performance in each of the three assessment areas under APC-L&M and teachers' assessment of their students (Table C2). In each case, the mean number of competencies achieved by the students significantly increased with increase in the level of students as identified by their teachers ( $p < 0.001$ ).

**Table C2. Mean number of competencies achieved ('fully' and 'fully or partially') in various subjects by category of students as rated by teachers**

Category of students in terms of quality	<i>Fully achieved</i>			<i>Fully or partially achieved</i>		
	Bangla	English	Mathematics	Bangla	English	Mathematics
High	6.42	3.27	3.18	7.84	4.83	5.45
Higher-middle	5.51	2.62	2.43	7.33	4.29	4.58
Lower-middle	4.83	1.99	1.95	6.73	3.84	4.13
Low	3.95	1.64	1.78	6.01	3.46	3.98
Level of significance	$p < 0.001$	$p < 0.001$	$p < 0.001$	$p < 0.001$	$p < 0.001$	$p < 0.001$

Results of this assessment can be a great help for BRAC Education Programme. The findings can be used for improvement of the quality of the programme. Purpose of comparing three types of schools is not to show the superiority of one over another. Rather, this study shows what type of learning achievement is possible to gain for what type of investment. Certainly, the investment substantially varies from one type of BRAC school to another– parental as well as from BRAC. Chapter 4 and Annexes A3 & A4 of this report clearly show that the students of *Shishu Niketans* were socioeconomically ahead of the others, followed by those of BPSs and the ESP schools, respectively. Students' performance is however aligned with this.

To have the best result of this assessment, the BEP management should consider the findings in its operation. Findings should be shared with the staff at all levels of BEP including the teachers and the teacher trainers. This is important for taking everyone on board so that they can contribute to the process of improvement. The research team can help in explaining the findings in further detail and reanalysis of data as needed in the improvement process. Yearly administration of APC-L&M can provide results of such initiatives on a continuous basis.

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## ANNEXES

### Annex A1. Age distribution of students by school type

Age	School type			All
	BRAC primary school	<i>Shishu Niketan</i>	ESP school	
<10 years	11.9	12.0	10.4	11.8
10-11 years	65.5	59.2	59.4	63.3
≥ 12 years	22.6	28.8	30.2	24.9
Total	100.0	100.0	100.0	100.0
Range	8-15	8-15	8-15	8-15
Mean	10.7	10.9	10.9	10.8
Median	11.0	11.0	11.0	11.0

### Annex A2. Percentage of students by some education related indicators and school type

Education related indicators	School type				Level of significance			
	BRAC primary school	<i>Shishu Niketan</i>	ESP school	All	BPS vs. SN	BPS vs. ESP	SN vs. ESP	All
Received pre-primary education	39.6	39.6	31.0	39.0	ns	p<0.001	p<0.001	p<0.001
Availed private tutoring at grade V	26.0	43.5	41.2	32.0	p<0.001	p<0.001	ns	p<0.001
Had family support in study at grade V	66.5	62.4	59.0	64.8	ns	p<0.01	ns	p<0.01
Availed both the support	19.2	26.9	22.1	21.6	p<0.001	ns	p<0.05	p<0.01
Used guidebooks at grade V	50.5	94.0	81.1	64.9	p<0.001	p<0.001	p<0.001	p<0.001

Note: ns = not significant at p = 0.05

**Annex A3. Percentage of students by parental education and school type**

Parental education	School type			All	Level of significance
	BRAC primary school	<i>Shishu Niketan</i>	ESP school		
Ever been to school					
None of the parents	21.1	11.7	29.3	19.1	p<0.001
Any of the parents	33.0	27.7	34.2	31.6	p<0.001
Both the parents	45.9	60.6	36.5	49.3	p<0.001
Total	100.0	100.0	100.0	100.0	
Both completed grade V	21.5	44.4	16.5	27.6	p<0.001

**Annex A4. Percentage of students by some socioeconomic indicators and school type**

Socioeconomic indicators	School type				Level of significance			
	BRAC primary school	<i>Shishu Niketan</i>	ESP school	All	BPS vs. SN	BPS vs. ESP	SN vs. ESP	Overall
Having electricity at home	88.0	91.4	84.9	88.8	p<0.05	ns	p<0.001	p<0.001
NGO samity member	57.1	57.6	37.2	53.7	ns	p<0.001	p<0.001	p<0.001
HH food security status								
Always in deficit	7.5	7.5	8.6	7.6	-	-	-	-
Sometimes in deficit	32.8	25.0	39.5	31.0	-	-	-	-
Breakeven	39.4	31.4	33.2	36.7	-	-	-	-
Surplus	20.4	36.1	18.6	24.7	-	-	-	-
Father use cellular phone	78.2	86.5	70.8	80.1	p<0.001	p<0.01	p<0.001	p<0.001
Mother use cellular phone	45.0	53.1	37.2	46.8	p<0.01	p<0.01	p<0.001	p<0.001
Non-Muslim households	11.0	0.6	29.4	9.3	p<0.001	p<0.001	p<0.001	p<0.001
Small ethnic groups	7.1	0.0	26.1	6.4	p<0.001	p<0.001	p<0.001	p<0.001

Note: ns = not significant at p = 0.05

**Annex B1. Percentage of students *fully* achieving the Bangla competency on ‘understanding handwritten text (prose)’ by school type and gender**

Gender	School type			All	Level of significance
	BRAC primary school	<i>Shishu Niketan</i>	ESP school		
Boys	88.5	91.4	67.1	87.9	p<0.001
Girls	89.6	93.2	73.1	89.5	p<0.001
Both	89.1	92.3	70.7	88.8	p<0.001
Level of significance	ns	ns	ns	ns	

Note: ns = not significant at p = 0.05

**Annex B2. Percentage of students *fully* achieving the Bangla competency on ‘understanding the essence of poems’ by school type and gender**

Gender	School type			All	Level of significance
	BRAC primary school	<i>Shishu Niketan</i>	ESP school		
Boys	41.6	62.5	26.5	47.1	p<0.001
Girls	41.5	62.0	29.2	46.1	p<0.001
Both	41.5	62.3	28.1	46.5	p<0.001
Level of significance	ns	ns	ns	ns	

Note: ns = not significant at p = 0.05

**Annex B3. Percentage of students *fully* achieving the Bangla competency on ‘writing the essence of prose’ by school type and gender**

Gender	School type			All	Level of significance
	BRAC primary school	<i>Shishu Niketan</i>	ESP school		
Boys	57.8	62.3	37.8	57.9	p<0.001
Girls	68.7	75.3	49.8	69.2	p<0.001
Both	64.3	69.2	44.9	64.5	p<0.001
Level of significance	p<0.01	p<0.001	p<0.01	p<0.001	



**Annex B4. Percentage of students *fully* achieving the Bangla competency on ‘writing the essence of poems’ by school type and gender**

Gender	School type			All	Level of significance
	BRAC primary school	<i>Shishu Niketan</i>	ESP school		
Boys	36.9	41.5	15.2	37.0	p<0.001
Girls	42.3	49.9	15.5	42.4	p<0.001
Both	40.1	46.0	15.4	40.1	p<0.001
Level of significance	ns	p<0.05	ns	p<0.01	

Note: ns = not significant at p = 0.05

**Annex B5. Percentage of students *fully* achieving the Bangla competency on ‘writing own experience correctly, clearly and neatly’ by school type and gender**

Gender	School type			All	Level of significance
	BRAC primary school	<i>Shishu Niketan</i>	ESP school		
Boys	51.5	65.0	33.8	54.6	p<0.001
Girls	57.3	64.3	36.2	57.7	p<0.001
Both	55.0	64.6	35.2	56.4	p<0.001
Level of significance	ns	ns	ns	ns	

Note: ns = not significant at p = 0.05

**Annex B6. Percentage of students *fully* achieving the Bangla competency on ‘correct use of punctuation marks in writing’ by school type and gender**

Gender	School type			All	Level of significance
	BRAC primary school	<i>Shishu Niketan</i>	ESP school		
Boys	26.2	37.4	8.8	28.6	p<0.001
Girls	26.5	42.5	10.6	29.6	p<0.001
Both	26.4	40.1	9.9	29.2	p<0.001
Level of significance	ns	ns	ns	ns	

Note: ns = not significant at p = 0.05

**Annex B7. Percentage of students *fully* achieving the Bangla competency on ‘correct use of conjunctive letters in writing’ by school type and gender**

Gender	School type			All	Level of significance
	BRAC primary school	<i>Shishu Niketan</i>	ESP school		
Boys	70.3	84.7	43.9	73.2	p<0.001
Girls	77.5	89.0	45.4	78.4	p<0.001
Both	74.6	87.0	44.8	76.2	p<0.001
Level of significance	p<0.05	ns	ns	p<0.01	

Note: ns = not significant at p = 0.05

**Annex B8. Percentage of students *fully* achieving the Bangla competency on ‘expressing own observation in writing’ by school type and gender**

Gender	School type			All	Level of significance
	BRAC primary school	<i>Shishu Niketan</i>	ESP school		
Boys	67.8	77.9	39.9	69.2	p<0.001
Girls	72.5	85.8	46.8	74.3	p<0.001
Both	70.6	82.1	44.0	72.2	p<0.001
Level of significance	ns	p<0.01	ns	p<0.01	

Note: ns = not significant at p = 0.05

**Annex B9. Percentage of students *fully* achieving the Bangla competency on ‘writing an application’ by school type and gender**

Gender	School type			All	Level of significance
	BRAC primary school	<i>Shishu Niketan</i>	ESP school		
Boys	42.2	48.5	23.5	43.0	p<0.001
Girls	47.0	49.4	22.2	46.0	p<0.001
Both	45.2	49.0	22.8	44.7	p<0.001
Level of significance	ns	ns	ns	ns	

Note: ns = not significant at p = 0.05

**Annex B10. Results of statistical test showing difference in students' performance in Bangla competencies by school type**

Competencies	Level of significance		
	BRAC Primary School vs. Shishu Niketan	BRAC Primary School vs. ESP school	<i>Shishu Niketan</i> vs. ESP school
1. To be able to understand handwritten texts (prose)	p<0.05	p<0.001	p<0.001
2. To be able to understand the essence of poems	p<0.001	p<0.001	p<0.001
3. To be able to express in writing the essence of prose	p<0.05	p<0.001	p<0.001
4. To be able to express in writing the essence of poems	p<0.05	p<0.001	p<0.001
5. To be able to write own experience correctly, clearly and neatly	p<0.001	p<0.001	p<0.001
6. To be able to write correctly and clearly using punctuation	p<0.001	p<0.001	p<0.001
7. To be able to write correctly and clearly using conjunctive letters	p<0.001	p<0.001	p<0.001
8. To be able to express own observation in clear and correct writing	p<0.001	p<0.001	p<0.001
9. To be able to write an application	ns	p<0.001	p<0.001

Note: ns = not significant at p = 0.05

**Annex B11. Mean and percentage of number of Bangla competencies *partially* achieved by the students by school type and gender**

School type	Mean			Percentage		
	Boys	Girls	Both	Boys	Girls	Both
BRAC Primary School	2.00	1.75	1.85	22.2	19.4	20.6
<i>Shishu Niketan</i>	1.72	1.57	1.63	19.1	17.4	18.1
ESP School	2.00	1.91	1.94	22.2	21.2	21.6
All	1.92	1.71	1.79	21.3	19.0	19.9

**Annex E1. Percentage of students *fully* achieving the English competency on ‘understanding stories through reading’ by school type and gender**

Gender	School type			All	Level of significance
	BRAC primary school	<i>Shishu Niketan</i>	ESP school		
Boys	27.5	45.3	11.6	32.0	p<0.001
Girls	34.0	46.4	10.0	35.6	p<0.001
Both	31.4	45.8	10.6	34.1	p<0.001
Level of significance	ns	ns	ns	ns	

Note: ns = not significant at p = 0.05

**Annex E2. Percentage of students *fully* achieving the English competency on ‘make sentences using given words and following instructions’ by school type and gender**

Gender	School type			All	Level of significance
	BRAC primary school	<i>Shishu Niketan</i>	ESP school		
Boys	28.1	54.5	8.2	35.1	p<0.001
Girls	28.8	55.2	7.8	34.3	p<0.001
Both	28.5	54.9	8.0	34.6	p<0.001
Level of significance	ns	ns	ns	ns	

Note: ns = not significant at p = 0.05

**Annex E3. Percentage of students *fully* achieving the English competency on ‘use of capital letters and punctuation marks in writing’ by school type and gender**

Gender	School type			All	Level of significance
	BRAC primary school	<i>Shishu Niketan</i>	ESP school		
Boys	20.6	41.2	7.9	26.3	p<0.001
Girls	20.4	46.2	7.6	26.3	p<0.001
Both	20.5	43.9	7.8	26.3	p<0.001
Level of significance	ns	ns	ns	ns	

Note: ns = not significant at p = 0.05

**Annex E4. Percentage of students *fully* achieving the English competency on ‘recognise sentences of various characteristics’ by school type and gender**

Gender	School type			All	Level of significance
	BRAC primary school	<i>Shishu Niketan</i>	ESP school		
Boys	27.8	46.1	16.8	32.8	p<0.001
Girls	26.5	48.2	17.4	31.5	p<0.001
Both	27.0	47.3	17.1	32.1	p<0.001
Level of significance	ns	ns	ns	ns	

Note: ns = not significant at p = 0.05

**Annex E5. Percentage of students *fully* achieving the English competency on ‘fill-up simple forms’ by school type and gender**

Gender	School type			All	Level of significance
	BRAC primary school	<i>Shishu Niketan</i>	ESP school		
Boys	77.8	82.8	51.2	77.6	p<0.001
Girls	82.1	86.5	53.2	81.3	p<0.001
Both	80.4	84.8	52.4	79.7	p<0.001
Level of significance	ns	ns	ns	p<0.05	

Note: ns = not significant at p = 0.05

**Annex E6. Percentage of students *fully* achieving the English competency on ‘writing a simple letter to communicate with near and dear one’ by school type and gender**

Gender	School type			All	Level of significance
	BRAC primary school	<i>Shishu Niketan</i>	ESP school		
Boys	23.1	39.9	6.7	27.4	p<0.001
Girls	29.6	47.1	9.5	32.8	p<0.001
Both	27.0	43.7	8.4	30.5	p<0.001
Level of significance	p<0.05	p<0.05	ns	p<0.01	

Note: ns = not significant at p = 0.05

**Annex E7. Percentage of students *fully* achieving the English competency on ‘writing a short piece of composition’ by school type and gender**

Gender	School type			All	Level of significance
	BRAC primary school	<i>Shishu Niketan</i>	ESP school		
Boys	0.3	1.6	0.0	0.7	p<0.05
Girls	0.4	3.7	0.0	1.3	p<0.001
Both	0.4	2.8	0.0	1.0	p<0.001
Level of significance	ns	ns	ns	ns	

Note: ns = not significant at p = 0.05

**Annex E8. Results of statistical test showing difference in students’ performance in English competencies by school type**

Competencies	Level of significance		
	BRAC Primary School vs <i>Shishu Niketan</i>	BRAC Primary School vs ESP school	<i>Shishu Niketan</i> vs ESP school
1. To be able to understand stories through reading silently	p<0.001	p<0.001	p<0.001
2. To be able to make sentences using words and following instructions	p<0.001	p<0.001	p<0.001
3. To be able to use capital letters and punctuation in writing	p<0.001	p<0.001	p<0.001
4. To be able to recognise sentences bearing statements, commands, greeting, questions and answers	p<0.001	p<0.001	p<0.001
5. To be able to fill up simple forms about oneself	p<0.05	p<0.001	p<0.001
6. To be able to write a simple letter to communicate with near and dear one	p<0.001	p<0.001	p<0.001
7. To be able to write a short piece of composition by answering a set of questions	p<0.001	ns	p<0.001

Note: ns = not significant at p = 0.05

**Annex E9. Mean and percentage of number of English competencies *partially* achieved by the students by school type and gender**

School type	Mean			Percentage		
	Boys	Girls	Both	Boys	Girls	Both
BRAC Primary School	1.86	1.76	1.80	26.6	25.1	25.7
<i>Shishu Niketan</i>	1.57	1.61	1.59	22.4	23.0	22.7
ESP School	1.58	1.58	1.58	22.6	22.6	22.6
All	1.75	1.71	1.73	25.0	24.4	24.7

**Annex M1. Percentage of students *fully* achieving the Mathematics competency on ‘basic rules of arithmetic’ by school type and gender**

Gender	School type			All	Level of significance
	BRAC primary school	<i>Shishu Niketan</i>	ESP school		
Boys	22.5	38.5	8.5	26.6	p<0.001
Girls	19.8	37.3	5.1	23.4	p<0.001
Both	20.9	37.9	6.5	24.8	p<0.001
Level of significance	ns	ns	ns	ns	

Note: ns = not significant at p = 0.05

**Annex M2. Percentage of students *fully* achieving the Mathematics competency on ‘average’ by school type and gender**

Gender	School type			All	Level of significance
	BRAC primary school	<i>Shishu Niketan</i>	ESP school		
Boys	22.2	33.4	5.8	24.7	p<0.001
Girls	17.1	29.1	5.1	19.4	p<0.001
Both	19.1	31.1	5.4	21.6	p<0.001
Level of significance	ns	ns	ns	p<0.01	

Note: ns = not significant at p = 0.05

**Annex M3. Percentage of students *fully* achieving the Mathematics competency on ‘HCF and LCM’ by school type and gender**

Gender	School type			All	Level of significance
	BRAC primary school	<i>Shishu Niketan</i>	ESP school		
Boys	22.5	32.3	6.7	24.6	p<0.001
Girls	14.8	34.5	3.8	19.2	p<0.001
Both	17.9	33.5	5.0	21.5	p<0.001
Level of significance	p<0.01	ns	ns	p<0.01	

Note: ns = not significant at p = 0.05

**Annex M4. Percentage of students *fully* achieving the Mathematics competency on ‘fraction’ by school type and gender**

Gender	School type			All	Level of significance
	BRAC primary school	<i>Shishu Niketan</i>	ESP school		
Boys	14.4	15.9	29.0	15.8	p<0.001
Girls	12.7	17.5	26.3	14.9	p<0.001
Both	13.4	16.8	27.4	15.3	p<0.001
Level of significance	ns	ns	ns	ns	

Note: ns = not significant at p = 0.05

**Annex M5. Percentage of students *fully* achieving the Mathematics competency on ‘percentage’ by school type and gender**

Gender	School type			All	Level of significance
	BRAC primary school	<i>Shishu Niketan</i>	ESP school		
Boys	2.8	6.7	0.0	3.9	p<0.001
Girls	4.4	6.8	0.0	4.7	p<0.001
Both	3.8	6.8	0.0	4.4	p<0.001
Level of significance	ns	ns	na	ns	

Note: ns = not significant at p = 0.05; na = not applicable



**Annex M6. Percentage of students *fully* achieving the Mathematics competency on the ‘units of measurement’ by school type and gender**

Gender	School type			All	Level of significance
	BRAC primary school	<i>Shishu Niketan</i>	ESP school		
Boys	14.7	22.6	1.2	16.3	p<0.001
Girls	12.9	23.5	2.1	15.0	p<0.001
Both	13.6	23.1	1.8	15.5	p<0.001
Level of significance	ns	ns	ns	ns	

Note: ns = not significant at p = 0.05

**Annex M7. Percentage of students *fully* achieving the Mathematics competency on ‘geometric shapes’ by school type and gender**

Gender	School type			All	Level of significance
	BRAC primary school	<i>Shishu Niketan</i>	ESP school		
Boys	46.9	59.0	23.8	49.3	p<0.001
Girls	51.3	64.1	32.0	53.4	p<0.001
Both	49.5	61.7	28.6	51.5	p<0.001
Level of significance	ns	ns	p<0.05	p<0.05	

Note: ns = not significant at p = 0.05

**Annex M8. Percentage of students *fully* achieving the Mathematics competency on ‘graphical presentations of data’ by school type and gender**

Gender	School type			All	Level of significance
	BRAC primary school	<i>Shishu Niketan</i>	ESP school		
Boys	77.5	84.1	53.7	78.0	p<0.001
Girls	79.6	86.5	57.4	79.9	p<0.001
Both	78.7	85.4	55.8	79.1	p<0.001
Level of significance	ns	ns	ns	ns	

Note: ns = not significant at p = 0.05

**Annex M9. Results of statistical test showing difference in students' performance in Mathematics competencies by school type**

Competencies	Level of significance		
	BRAC Primary School vs. <i>Shishu Niketan</i>	BRAC Primary School vs. ESP school	<i>Shishu Niketan</i> vs. ESP school
1. To have skills in basic rules of arithmetic and use them in problem-solving	p<0.001	p<0.001	p<0.001
2. To have the concept of average and use it in problem-solving	p<0.001	p<0.001	p<0.001
3. To have the concept of HCF and LCM and apply them in problem-solving	p<0.001	p<0.001	p<0.001
4. To have the concept of fraction and use it in problem solving	ns	p<0.001	p<0.001
5. To have the concept of percentage and use it in problem-solving	p<0.01	p<0.001	p<0.001
6. To know various units of measurement and use them in problem-solving	p<0.001	p<0.001	p<0.001
7. To know simple geometric shapes and ability to draw them	p<0.001	p<0.001	p<0.001
8. To understand graphical presentations of data	p<0.01	p<0.001	p<0.001

Note: ns = not significant at p = 0.05

**Annex M10. Mean and percentage of number of Mathematics competencies *partially* achieved by the students by school type and gender**

School type	Mean			Percentage		
	Boys	Girls	Both	Boys	Girls	Both
BRAC Primary School	2.30	2.32	2.30	28.8	29.0	28.8
<i>Shishu Niketan</i>	2.10	2.08	2.09	26.3	26.0	26.1
ESP School	1.74	1.65	1.68	21.8	20.6	21.0
All	2.20	2.20	2.20	27.5	27.5	27.5

# About

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## BRAC Research and Evaluation Division

The Research and Evaluation Division (RED) was established in 1975 as an independent unit within BRAC to provide research support to strengthen BRAC's multi-faceted development programmes. Although RED concentrates on BRAC programmes, its analytical work goes beyond and includes research on various development issues of national and global importance that contributes to evidence-based policy dialogue and discourse. For more information, please visit [www.brac.net/research](http://www.brac.net/research).

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