Learning Assessment of SEQAEP Institutions

2012

Grade 9

Prepared by

The Australian Council *for* Educational Research

October 2012

Contents

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Acronyms

ACER	Australian Council for Educational Research
BSS	Bangladesh Scale Score
DSHE	Directorate of Secondary and Higher Education
ESS	English Scale Score
JDC	Junior Dakil Certificate
IRT	Item Response Theory
JSC	Junior School Certificate
LASI	Learning Assessment of SEQAEP Institutions
MEW	Monitoring and Evaluation Wing
MTR	Mid-Term Review
MOE	Ministry of Education
MSS	Mathematics Scale Score
NAEP	National Assessment of Educational Progress
PIRLS	Progress in International Reading Literacy Skills
PISA	Programme for International Student Assessment
MCQ	Multiple Choice Questions
PMT	Proxy Means Test
SMC	School Management Committee
SSQ	Short Structured Questions
SEQAEP	Secondary Education Quality and Access Enhancement Project
TIMSS	Trends in International Mathematics and Science Study

EXECUTIVE SUMMARY

What does the LASI measure?

The Learning Assessment of SEQAEP Institutions 2012 (LASI) provides information on the learning outcomes of students in SEQAEP schools mid-way through the academic year in Grade 9 in Bangla, Mathematics and English. The intention is that this programme is to be considered as a baseline and will, in future, monitor the performance of students in SEQAEP institutions in Grades 6 and 8.

The Secondary Education Quality and Access Enhancement Project (SEQAEP), which started in 2008 in 122 Upazilas throughout Bangladesh, emphasises the improvement of the education quality by introducing a series of academic support interventions and incentive schemes to improve the quality of education. One of the main objectives of the SEQAEP is to systematically measure the quality of learning by national curriculum-based numeracy and literacy testing. The LASI measures knowledge, skills and understandings valued in the curriculum. The tests do not assess recall of the textbooks.

A random (representative) sample of students was selected to participate in the LASI. All SEQAEP schools and all students from within a school were not tested. The sample was designed so that valid results could be reported for SEQAEP schools, examination boards of SEQAEP schools, gender within SEQAEP schools and types of SEQAEP institutions. The SEQAEP sample was drawn from 303 schools covering 7 Divisions, 28 Districts and 29 Upazillas. The Bangla, English and Mathematics test was administered to 8278 grade 9 students. LASI does not report or provide comparisons of individual school or student scores and results.

The LASI also collects information on factors such as gender, geographical location, and socio-economic status factors that are known to have an impact on student learning outcomes and investigates the correlations between these factors and learning outcomes.

What is the main objective of learning assessments?

Learning assessment programmes provide regular, dependable and systematic measures of student learning. They are designed to investigate and monitor the 'health' of an education system and to promote the improvement of student learning by providing information to stakeholders. Learning assessments are particularly important in monitoring the progress of student learning between years in an education system and the effect of school intervention programmes because they allow quantification of the impact of these programmes on student learning.

Learning assessments do not duplicate or replace examinations. The purpose of examinations is to rank order students, usually for scholarships or placement; the purpose of learning assessments is provide evidence that helps government develop policy, and plan and fund education improvement programmes.

How confident can we be in the LASI findings?

The Monitoring and Evaluation Wing (MEW) of the Directorate of Secondary and Higher Education (DSHE) in the Ministry of Education received expert support and advice on all aspects of learning

assessments from the internationally recognised educational research organisation, Australian Council for Educational Research (ACER).

The 2012 results provide credible baseline data for SEQAEP and results from 2013 will be validly compared with 2012. The SEQAEP now has strong baseline data from which to monitor student performance over time.

What are the key findings of the 2012 LASI?

Few variations in achievement are observable by the five different SEQAEP intervention type.

The particular school a student attends attend has a big influence on their academic success. The reasons for such large between-school variation need further research.

Slightly larger variations are observable by examination board/Division. (Each Division, with the exception of Chittagong, has one examination board; Chittagong has two, Chittagong and Comilla.) Barisal Jessore (Khulna) and Comilla perform relatively strongly in all subjects and Sylhet and Rangpur more poorly. Nearly 19 to 27 per cent students from Barisal Division/Examination Board performed at band 5 level in all three subjects. In mathematics, nearly one fifth (21%) of the students from Sylhet Division/Examination Board performed at Band 1 level.

There is little or no significant difference in performance between boys and girls in Bangla and in English, however boys did perform better than girls in Mathematics (see pages 10, 24, 37).

Systematic differences in performance are evident between Madrasah and general schools(private and receiving subsidy) in all three subjects (see pages 11, 24, 37)

The sample for the pilot study must be selected to match the main population to ensure the best match between test difficulty and the target population. The unexplained, large variation between schools will make this a difficult task.

Subject achievement

Achievement standards (bands) serve as a basis of reference to understand the present level and making future decisions about performances of candidates. Bands help to display the skills in a continuum in order of difficulty from the easiest at bottom to the most difficult at the top. Band 1 skills are very basic skills and Band 5 skills are the highest level skills.

BANGLA

Percentages of students across the bands in Bangla performance

All Students: 3% | 24% | 29% | 29% | 15%

■ Band 1 ■ Band 2 ■ Band 3 ■ Band 4 ■ Band 5
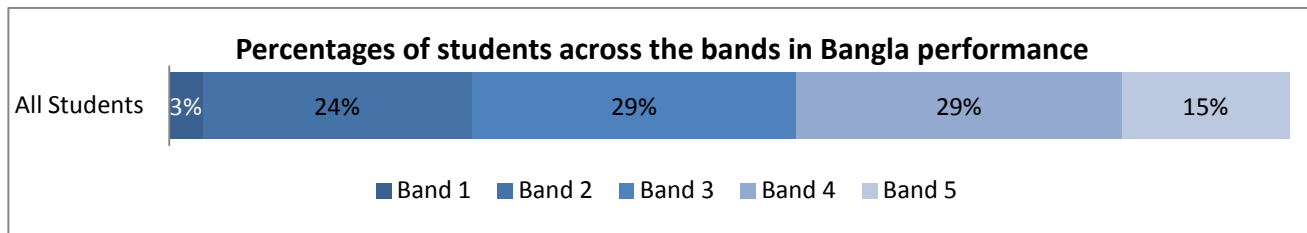
Fifteen per cent of students (15%) demonstrate Band 5 in reading achievement. These students interpret figurative expressions, synthesise and infer implicit information. They are also likely to have acquired all the skills of the lower bands.

Less than one third (29%) of students are in Band 4. These students are more likely to make inferences and retrieve information from complex persuasive texts. They identify types of compounding. They are also likely to have acquired all the skills of the lower bands.

Nearly 29% of students score within band 3. Students achieving at this level identify figurative expressions, interpret narrative and informative texts and identify synonyms of unfamiliar words in context. They are also likely to have the skills described in bands 1 and 2.

Nearly one fourth (24%) students fall in Band 2. These students are likely to understand the sequence of events in a text, retrieve and write specific information, understand the meaning of a phrase and identify synonyms of moderately difficult words in context. They also are likely to have acquired the skills in Band 1.

Very few (3%) students fall in Band 1. These students are likely to identify the purpose of short informative texts and identify types of letters.

ENGLISH

Percentages of students across the bands in English performance

| All Students | 2% | 25% | 28% | 29% | 15% |

■ Band 1   ■ Band 2   ■ Band 3   ■ Band 4   ■ Band 5
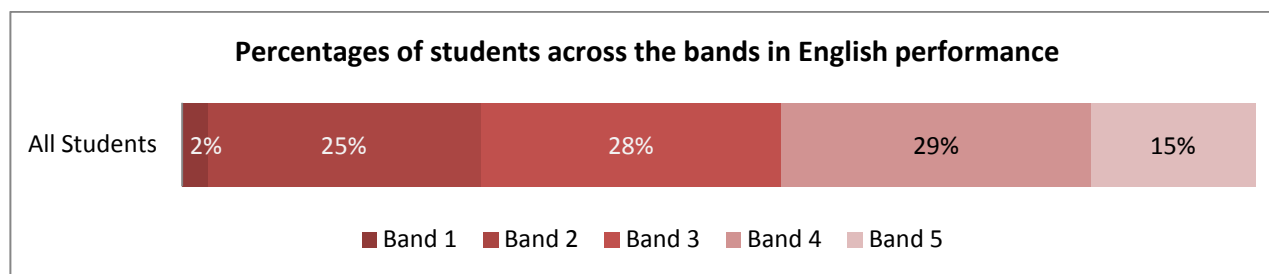
Fifteen per cent of students (15%) demonstrate Band 5 reading achievement. Students at this level of skill are beginning to read more complex English texts inferentially. They are also likely to have acquired all the skills of the lower bands.

Less than one third (29%) of students are in Band 4. These students are likely to demonstrate the capacity to interpret character and make inferences from short narrative texts. They identify the main purpose and structure of more complex non-continuous texts, such as an instruction text. They are also likely to have acquired all the skills of the lower bands.

Nearly 28 per cent of students have scores in Band 3. They are likely to understand the sequence of events and make simple inferences. They can locate information in more complex non-continuous texts such as shop signs, lists of rules, etc. They are also likely to demonstrate the skills of Bands 1 and 2.

Nearly one fourth (26%) of students demonstrate skills of Band 2. They are able to recognise sequence of events in short narrative texts, retrieve information by linking information, match illustrations and explicitly stated information in short narrative texts, show knowledge of the correct use of pronouns and comparatives in context and identify verbs in phrases. They also have the skills described in Band 1.

Very few (2%) of Grade 8 students are in Band 1. Students achieving in this band are likely to locate directly stated, simple information in short narrative texts and simple non-continuous texts, such as a magazine article (biography). They identify correct usage of very common verbs and match images with words or simple sentences.

MATHEMATICS

Percentages of students across the bands in Mathematics performance

| All Students | 7% | 31% | 27% | 25% | 10% |

■ Band 1 ■ Band 2 ■ Band 3 ■ Band 4 ■ Band 5
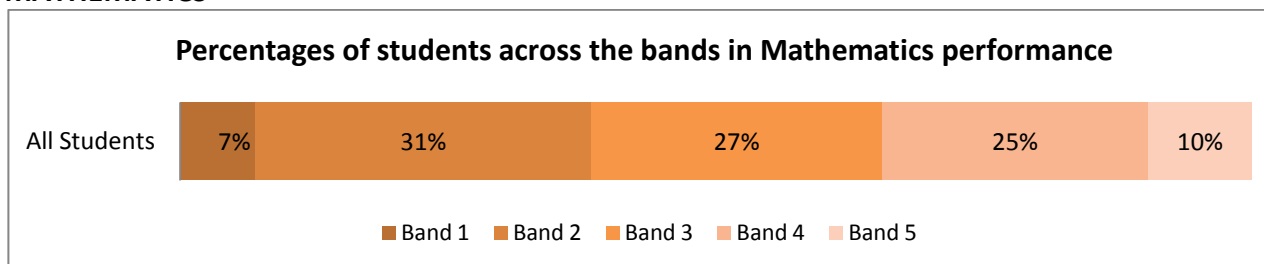
About 10% of students demonstrate Band 5 skills. These students have a well-developed understanding of mathematical content and show higher mathematical skills. They are also likely to use mathematics as a problem solving tool to solve problems unfamiliar to them. They are also likely to have acquired all the skills of the lower bands.

A quarter (25%) of the students scored within Band 4. They are likely to apply strategies and solve familiar word problems using mathematical operations, are aware of correct mathematical processes and have a good understanding of percentages and decimal numbers. They are like to solve problems based on perimeter, properties and areas of 2-D shapes. They are also likely to have acquired all the skills of the lower bands.

Over a quarter (27%) of the students have skills and understanding associated with Band 3. Students at this level are likely to do mathematical operations correctly and solve familiar word problems involving two operations. They have an understanding of place value in decimals and can do mathematical operations of decimals. They have a basic understanding of percentages and can square numbers and round off numbers. They can convert between units of measurement and solve linear equation in one variable and are also familiar with Pythagoras Theorem. They calculate areas of triangles and volume of cuboids, mean of numbers and also use the mean to solve problems. They are also likely to have the skills of Bands 1 and 2.

Nearly one third (31%) of the students are working within Band 2. Students at this level can identify representation of fractions, do mathematical operations of fractions and convert between fractions and decimals. They have knowledge of properties of a quadrilateral and can differentiate between quadrilaterals using properties. They can identify the algebraic representation of a situation given, evaluate an algebraic expression and simplify linear equation in one variable. They are likely to identify the location of a point on the Cartesian coordinate plane. They are also likely to demonstrate skills described in Band 1

A small percentage (7%) of the students scored within Band 1. Students at this band are able to do routine single stage problems. They can handle decimal numbers using algorithmic processes.

Background

The Secondary Education Quality and Access Enhancement Project (SEQAEP), which started in 2008 in 122 upazilas throughout Bangladesh, emphasises the improvement of the education quality by introducing a series of academic support interventions and incentive schemes to improve the quality of education. One of the main objectives of the SEQAEP is to systematically measure the quality of learning by national curriculum-based numeracy and literacy testing on a sample basis. It is intended that the results of these independent assessments will provide policymakers and stakeholders with important information about the impact of interventions and also raise awareness about the quality of education outcomes. Such information will also provide the evidence base for policy development and educational interventions and reform. The long-term vision is to build the appropriate capacity to mainstream the assessment system so that the Directorate of Secondary and Higher Education (DSHE) in the Ministry of Education (MOE) can provide, and respond to, systematic and regular measures of student learning.

At the Mid-Term Review (MTR) of the SEQAEP in July 2011 it was agreed that learning assessments would be implemented in secondary education. SEQAEP, under the leadership of Monitoring and Evaluation Wing (MEW) in the DSHE conducted the first learning assessments in July 2012. A sample of 8278 students in Grade 9 was tested on the curriculum for Grade 8 students for Bangla, Mathematics, and English. Grade 9 was selected since students in Grade 8 had finished only half of the Grade 8 curriculum at the time of test administration. Grade 9 students had completed the Grade 8 curriculum and some part of Grade 9 curriculum.

Data collection Processes

Random Sample

The LASI collected the data from a carefully drawn representative sample of students. The sample was drawn to ensure adequate representation of students in SEQAEP schools so that the average performances of students in those schools can be validly compared and monitored. Other national and international assessment programmes that use a sample methodology are the US National Assessment of Educational Progress (NAEP), The Trends in International Mathematics and Science Study (TIMSS), Programme for International Student Assessment (PISA) and Progress in International Reading Literacy Study (PIRLS). Sample surveys are often preferred over full cohort testing for monitoring programmes because they are less expensive, less intrusive, low stakes for students (and therefore less susceptible to cheating and 'gaming') and, most importantly, capable of providing evidence about a rich and varied set of learning outcomes. Random sample programmes do not report individual student or individual school performance.

Analysis

Raw test scores are only relevant to the actual test administered and cannot be used for future comparisons. So that scores from the 2012 programme and future learning assessments can be compared, Item Response Theory (IRT) analysis of the 2012 LASI data was completed by ACER using ConQuest software. Item response theory (IRT), also known modern test theory, is a paradigm for the design, analysis, and scoring of tests. It is generally regarded as superior to classical test theory

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because it allows for measurement over time and provides substantive information about skill and knowledge development. The Rasch model, a type of IRT was used in the analyses for this testing programme.

Through the IRT analysis, separate measurement scales for the three subjects have been constructed. These scales have been designated the Bangla Scale (BS), The English Scale (ES) and the Mathematics Scale (MS). For all scales, the achievement of the 2012 Grade 9 sample was set to have a standard deviation of 25.

It must be noted that the three subjects have been analysed separately and it is not valid to compare the scores across subjects.

Using this method any future scale score means above or below 300 and any future standard deviations above or below 25 will indicate an increase or a decrease in the mean and standard deviation, relative to the 2012 Grade 9 sample. For monitoring and research purposes over time, tests on each subject area administered in different years will need to be equated using Item Response modelling techniques and all current and future comparisons between grades and sub groups must be made in the scale score metric.

The Rasch model of IRT analysis not only produces measurement scales so that scores over time and between grades can be compared, the analysis provides two other key pieces of information:

- A continuum of skills and understandings, for the subjects, based on the test questions in order of increasing difficulty
- An estimate of students' skill in the subject based on their performance in the test.

On the scales that have been constructed through the analysis, the questions are ranked in order of difficulty and students are ranked in order of their proficiency on the test. This analysis allows description of students' achievement in terms of the skills and understandings demonstrated. The displays are provided on page 13 (Bangla), page 26 (English) and page 40 (Mathematics).

Bands of achievement

Using the Secondary Syllabus documents and text books as a guide, five bands of achievement have been identified for each subject from the assessment data. The bands are broad descriptions of skills summarised from the details of all the questions used to test students in each subject. They provide a more generalised picture of development in each subject and will be useful as a frame of reference for monitoring growth over the grades of schooling.

These bands are used to report broad categories of achievement for each subject. The band descriptions identify specific skills that demonstrate the current learning levels of students' skills that develop as students successfully progress in Bangla, English or Mathematics. The bands are described and shown with the distribution graphs for all subjects in this report.

Statistical Significance

All measures have a degree of uncertainty associated with them. It is important to know the degree of uncertainty about the measures when reporting performance of groups so that only real differences in performance are reported. Difference between the scores of groups of students can occur because of random fluctuation. A test of statistical significance at the 0.05 level has been applied to the 2012 LASI

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data. All reported differences in the performance of groups have been tested for significance and there is a 95 per cent likelihood that the difference did not occur by chance.

How to read the graphs in this report

Each group's results are represented in a vertical column.

95th percentile - 95% of pupils achieve below this score

75th percentile - 75% of pupils achieve below this score

Mean scale score

25th percentile - 25% of pupils achieve below this score

5th percentile - 5% of pupils achieve below this score

Scale Score

350
325
300
275
250
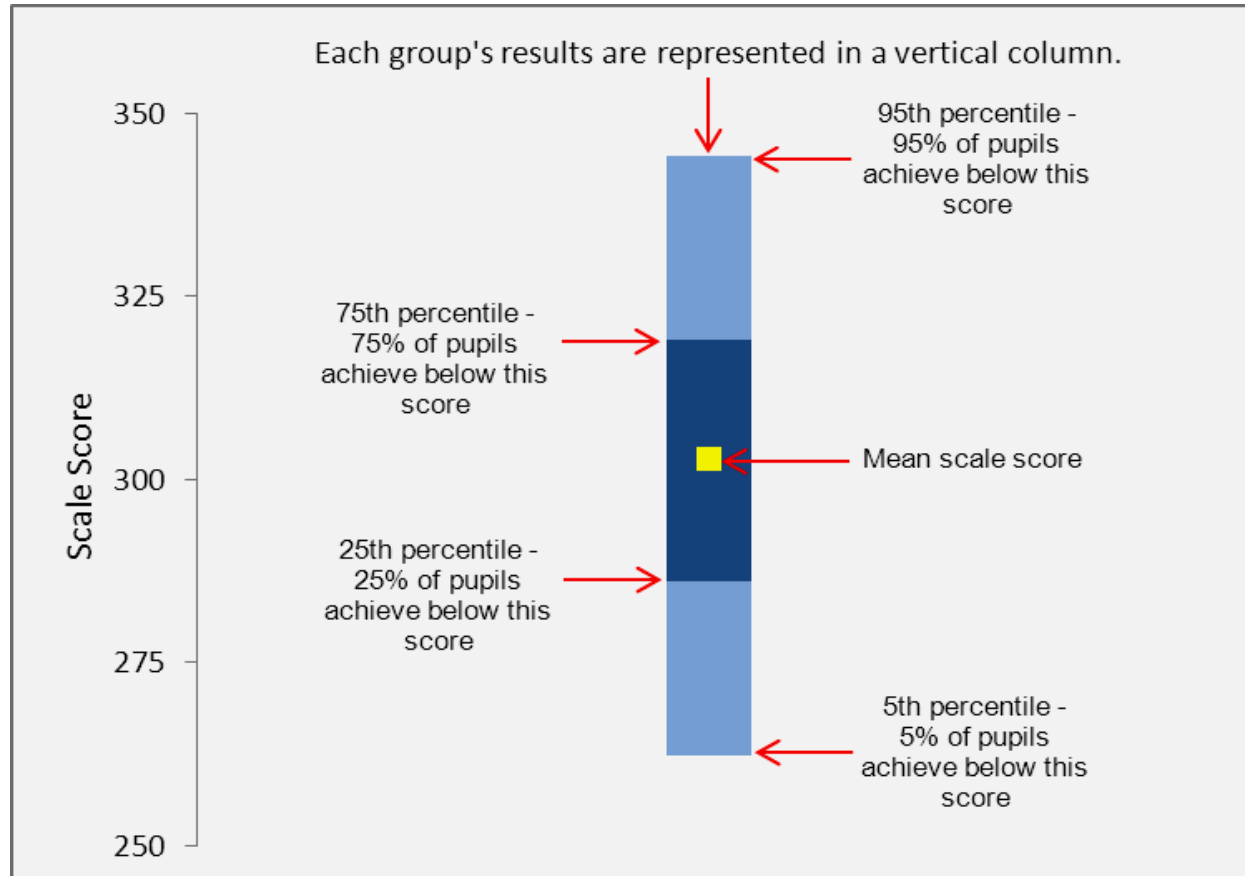
Bangla Performance

Distribution of Bangla Scale Score (BSS) by Intervention

Table 1 and Figure 1 show the Bangla performance distribution of students by interventions provided in schools. Performance of students from 'no intervention' schools is also observed to compare the performance of students with other interventions school.

There is little difference between the average student score in Bangla across the four intervention and no intervention schools. The lowest average score for Bangla is found for the 'Additional class new' intervention group with a mean of 297 BSS and the highest average score for Bangla is found for the 'Additional class with reading habit' and 'No intervention' with a mean of 301 BSS.

While there is little difference in performance of students across the four intervention and no intervention schools, the difference between 95th and 5th percentile indicates that the 'Additional class' intervention school distribution is more homogenous than other intervention schools, that is, there is less difference between students in these schools than other intervention schools, suggesting greater equity of outcomes in these schools. *Refer to page 7 for an explanation of how to read the graphs.*

Table 1 Distribution of Bangla Scale Score (BSS) by Intervention

Intervention	5th %tile	25th %tile	50th %tile	75th %tile	95th %tile	Mean	Difference (95th - 5th)
Additional class	261	284	300	314	337	299	76
Reading habit	257	283	300	317	340	300	83
Additional class with reading habit	257	282	300	320	344	301	87
Additional class new	254	285	297	308	335	297	81
No intervention	258	283	299	319	345	301	87

Figure 1 Distribution of Bangla Scale Score (BSS) by Intervention

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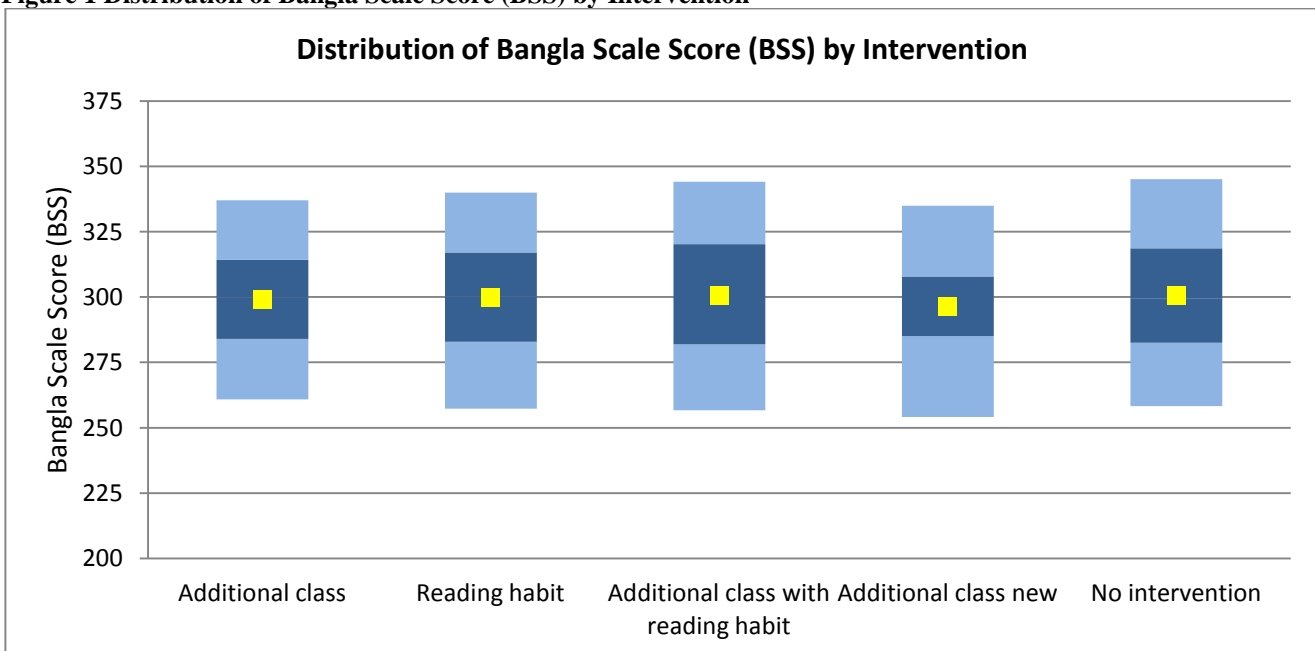
Bangla Mean and Distribution by Division/Examination Board

The average scale score of students in Jessore (Khulana) Examination Board is the highest in Bangla (307 BSS), while the average scale score in Sylhet is the lowest (288 BSS).

Further, in Sylhet and Rangpur Examination Boards, the weakest 5% of students achieve at or below 249 BSS, compared with the weakest 5% of students in Jessore (Khulana) Examination Board who achieve at or below 266 BSS. Similarly, in Sylhet Examination Board 5% students achieve above 331 BSS, whereas in the Jessore (Khulana) Examination Board 5% of students achieve above 347 BSS. These figures show that the achievement of students in Sylhet and Rangpur was consistently weaker than that of other examination boards.

The difference between 95th and 5th percentile indicates that the performance distribution in Rajshahi Examination Board has the lowest range compared to the other examination boards. The weakest students in Rajshahi Examination Board performed better than the weakest students in all other examination boards with the exception of Jessore (Khulana), but the best 5% of students in this examination board did not achieve well.

Table 2 Distribution of Bangla Scale Score (BSS) by Division/Examination board

Education Board	5th %tile	25th % tile	50th %tile	75th %tile	95th %tile	Mean	Difference (95th - 5th)
Barisal	256	285	302	319	344	302	88
Chittagong	255	279	294	307	333	293	78
Comilla	262	286	304	320	335	302	73
Dhaka	263	284	302	319	346	302	84
Jessore	266	291	307	322	347	307	81
Rajshahi	264	285	300	315	336	300	72
Rangpur	249	273	290	307	341	292	92
Sylhet	249	271	287	305	331	288	82

Figure 2 Distribution of Bangla Scale Score (BSS) by Division/Examination board
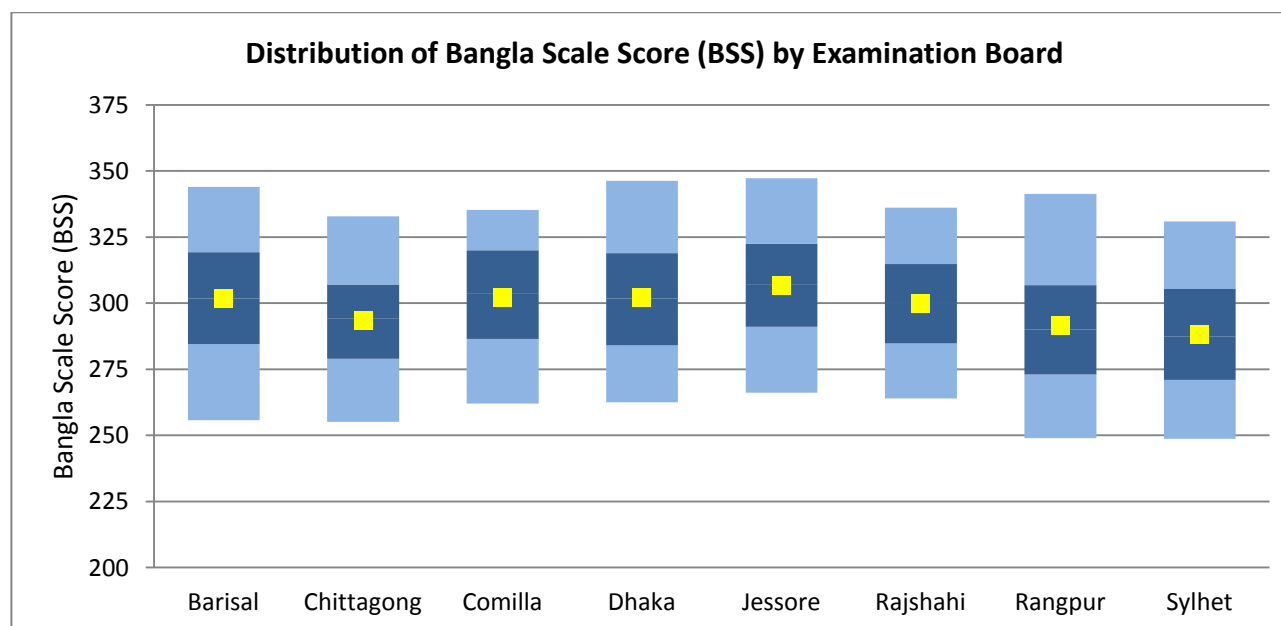
By mean performance, the examination boards fall into three groups: the first is Jessore (Khulana) which has a mean that is significantly higher than that for any other examination boards; the second group consists of Barisal, Comilla, Dhaka and Rajshahi where there is no real difference in mean performance; the third group is Chittagong, Rangpur and Sylhet which have statistically similar means.

Distribution of Bangla Scale Score (BSS) by Gender

The average Bangla Scale Score (BSS) for boys and girls is the same. Both groups' average is 300 BSS.

Further, the key percentile scores as displayed in the table below are similar between boys and girls. Though the performance of boys and girls are similar, the difference between 95th and 5th percentile indicates the highest achieving girls do a little better than the highest achieving boys.

Table 3 Distribution of Bangla Scale Score (BSS) by Gender

Gender	5th %tile	25th %tile	50th %tile	75th %tile	95th %tile	Mean	Difference (95th - 5th)
Girls	257	283	299	317	344	300	87
Boys	258	283	300	316	340	300	82

Figure 3 Distribution of Bangla Scale Score (BSS) by Gender
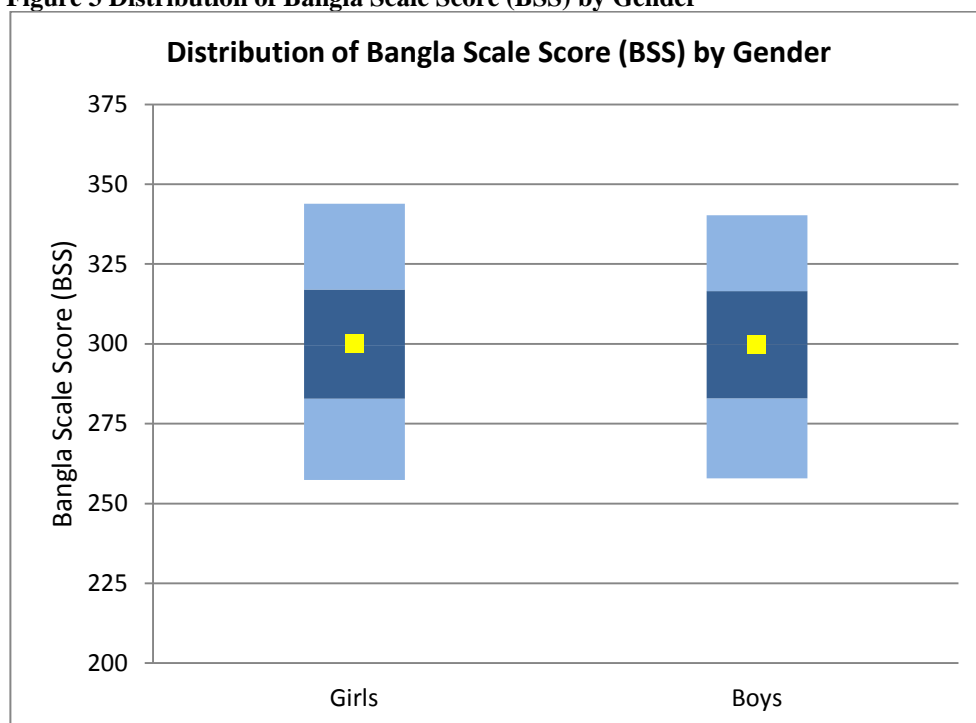
Distribution of Bangla Scale Score (BSS) by School Type

Table 4 and Figure 4 display the Bangla performance distribution of students in General Education schools and Madrasah.

The average Bangla Scale Score (BSS) is 303 for students from General Education schools and 290 for students from Madrasah. The difference is statistically significant.

The table and graph below show that the distribution of in General Education schools and in Madrasah is similar.

Table 4 Distribution Bangla Scale Score (BSS) by School type

School Type	5th %tile	25th %tile	50th %tile	75th %tile	95th %tile	Mean	Difference (95th - 5th)
General Education	262	286	302	319	344	303	82
Madrasah Education	250	274	289	306	333	290	83

Figure 4 Distribution of Bangla Scale Score by School type

Distribution of Bangla Scale Score (BSS) by School Type
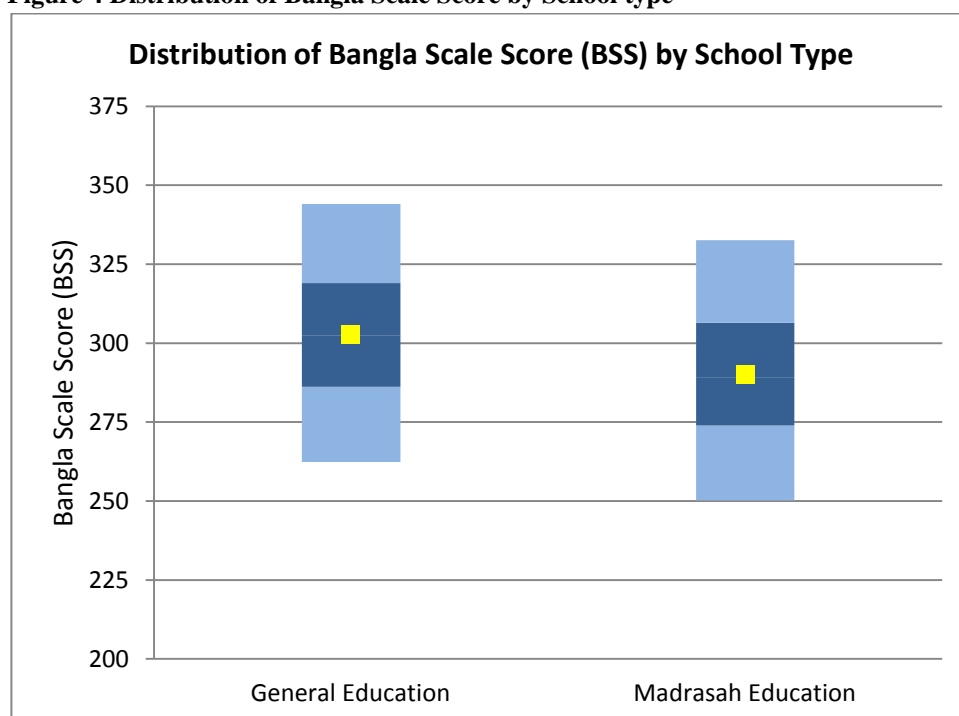
What students know and can do in Bangla Language

The Bangla test assesses comprehension of written Bangla language and its appropriate use in context as well as some mechanics or conventions of language use. Students were required to read six texts that included narrative, biography, letter, persuasive essay, information text and an extract from an essay by Muhammad Shahidullah and answer up to eight questions on each text. Forty questions were included in the final test form and all questions are classified according to the content and the cognitive domain addressed by each question.

Table 5 shows the classification of questions according to content and cognitive skills required to answer the questions.

Table 5 Bangla test content and cognitive skills

Subject	Sub Strands	Total Items	Knowledge	Understanding	Application
Bangla	Comprehension	**31**	7	13	11
	Grammar	**4**	0	0	4
	Vocabulary	**5**	0	4	1
Total Items		**40**	**7 (17%)**	**17 (43%)**	**16 (40%)**

Rasch analysis produces a map of the test questions, in order of difficulty and scales students' achievement against the questions in the test. In Figure 5, the crosses on the left represent the students who sat the test and the sentences on the right describe the skill required to answer the questions of the test.

Bangla Progress Map

Figure 5 Bangla progress map

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Bangladesh Learning Assessment 2012 BANGLA Person Item Map
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Bangla scale score
                                                 |
                                               X|
                                                 |
                                                 |
                                                 |
                                                 |
                                                 |
                                              XX|
                                               X|
                                               X|
                                            XXXX|
                                             XXX|
                                         XXXXXX|Make inference from implicit information in a persuasive text
                                        XXXXXXX|
                                        XXXXXXX Synthesise information to write a conclusion in a biography
                                   XXXXXXXXXX|Interpret figurative language in a narrative text
327                                XXXXXXXXXX|Understand the meaning of an expression in a persuasive text
                         XXXXXXXXXXXXXXXX|
                         XXXXXXXXXXXXXXXX|
                      XXXXXXXXXXXXXXXXXX|
             XXXXXXXXXXXXXXXXXXXXXXXXXXXX|Identify type of compounding
                  XXXXXXXXXXXXXXXXXXXXXXX|Infer author's opinion in a persuasive text
                     XXXXXXXXXXXXXXXXXX|
                   XXXXXXXXXXXXXXXXXXXXX|
               XXXXXXXXXXXXXXXXXXXXXXXXX|
303    XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX|Interpret explicitly stated information in a persuasive text
   XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX|Identify the purpose of a biography
          XXXXXXXXXXXXXXXXXXXXXXXXXXXXXX|Sandhi vichedh (Disjoin compound words/Know word formation)
       XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX|Identify synonyms of unfamiliar words in context
           XXXXXXXXXXXXXXXXXXXXXXXXXXXX|Interpret figurative language used in a persuasive text;
      XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX|Identify synonyms of unfamiliar words in context
284    XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX|Convert Challit bhaasa to Saadu bhaasa
     XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX|Infer and write from stated information in a narrative text
        XXXXXXXXXXXXXXXXXXXXXXXXXXXX|Understand sequence of events in a narrative text
       XXXXXXXXXXXXXXXXXXXXXXXXXXX|Interpret phrase in context; Select explicit information in a biography
              XXXXXXXXXXXXXXXXXX|Understand sequence of events in a biography; Make simple inference
             XXXXXXXXXXXXXXXXXXX|Recognise argument in short text; Identify purpose of a persuasive text
            XXXXXXXXXXXXXXXXXXXX|Make and write inference from information in a letter
               XXXXXXXXXXXXXX|Identify synonym in context
                XXXXXXXXXX|Understand emotion of character in narrative text
251               XXXXXXXXXX|Retrieve and write stated information
                    XXXXXXX|Retrieve explicitly stated information in a narrative text
                       XXXX|Identify type of letter; Select stated information in a narrative text
                       XXXX|Retrieve explicitly stated information in a narrative text
                        XXX|Identify the purpose of a short informative text
                       XXXX|Retrieve explicitly stated information in a narrative text
                         X|
                        XX|
                         X|Understand explicitly stated information in a letter
                         X|Retrieve explicitly stated information from informative text
                         X|Identify the purpose of writing a letter
                           |
                           |

=================================================================================
Each 'X' represents 11.6 cases
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Summary Report 30 November 2012

The skill descriptors shown on the progress map are derived from some, but not all of the Bangla questions. The easiest question required students to *identify the purpose of writing a letter*:

পত্রটিতে লেখক চাইছেন—

ক   গ্রামে যেন কয়েকটি নলকূপ থাকে
খ   গ্রামের পুকুরগুলি যেন পরিষ্কার থাকে
গ   গ্রামে যেন আরো কিছু পাতকূয়া থাকে
ঘ   শুকনো মৌসুমেও যেন খালে জল থাকে

This descriptor is located at the bottom right-hand side of the progress map. Other very easy questions required that students to understand ideas and information directly stated in a short, simple texts. Questions that required simple location of directly stated information were completed correctly by most students and the descriptors therefore appear near the bottom of the progress map:

Understand explicitly stated information in a letter
Retrieve explicitly stated information from informative text

The descriptor at the top of the progress map *Make inference from implicit information in a persuasive text* was the most difficult question on the Bangla tests. Students who answered this question correctly drew a conclusion based on information implied but not explicitly mentioned in the text.

কবিসম্রাট সম্পর্কে লেখক কী বলেছেন ?

ক   তিনি   পল্লিসাহিত্যে পছন্দ করতেন না
খ   তিনি প্রচুর পল্লিসাহিত্যে রচনা করেছেন
গ   পল্লিসাহিত্যের উন্নয়নের জন্য তিনি প্রচুর পরিশ্রম করেছেন
ঘ   প্রত্যাশার তুলনায় তিনি পল্লি বিষয়ে অনেক কম লিখেছেন

The easier questions tended to come from the easier texts located at the beginning of the test, although any questions that required a level of inference or interpretation tended to be the more difficult questions in the set relating to a text.

Facilities for all Bangla questions

The percentage of students who answered each question correctly is given in the following table.

Table 6 Per cent Correct Answers: Bangla

BSS	Band	Strand	Skill	ID	Item Descriptor	Per cent correct
291	3	Grammar	Application	q39	Convert Challit bhaasa to Saadu bhaasa	56.3
295	3	Grammar	Application	q23	Show knowledge of word formation (Sandhi vichedh)	54.7
299	3	Grammar	Application	q30	Show knowledge of word formation (Sandhi vichedh)	51.4
326	3	Grammar	Application	q16	Identify the type of compounding	33.1
219	1	RC	Understanding	q08	Identify the purpose of writing a letter	91.3
226	1	RC	Understanding	q26	Retrieve explicitly stated information from a informative text	89.5
227	1	RC	Understanding	q09	Understand explicitly stated information in a letter	89.5
241	1	RC	Application	q27	Identify the purpose of a short informative text	84.8
242	1	RC	Knowledge	q04	Retrieve explicitly stated information in a simple narrative text	84.5
246	1	RC	Understanding	q15	Retrieve explicitly stated information in a narrative text	82.7
248	1	RC	Knowledge	q11	Identify the type of letter	81.8
249	1	RC	Understanding	q03	Understand stated information in a simple narrative text	81.8
251	1	RC	Knowledge	q14	Retrieve explicitly stated information in a narrative text	81.2
255	2	RC	Application	q07	Retrieve and write stated information in a simple narrative text	75.4
259	2	RC	Knowledge	q10	Locate details in a letter	77.1
260	2	RC	Knowledge	q02	Understand the emotion of a character in a simple narrative text	76.6
262	2	RC	Application	q01	Understand the significance of words used in a simple narrative text	75.2
266	2	RC	Application	q13	Infer and write using stated information in a letter	71.8
270	2	RC	Application	q35	Interpret explicitly stated information in a complex persuasive text	70.1
271	2	RC	Application	q28	Understand the method of constructing an argument in a short informative text	70
272	2	RC	Application	q20	Understand sequence of events in a biography	69.4
274	2	RC	Knowledge	q32	Retrieve and write explicitly stated information in a short informative text	63.9
275	2	RC	Understanding	q25	Infer by linking stated information in a short informative text	67.8
276	2	RC	Understanding	q19	Retrieve explicitly stated information in a biography	67.1
277	2	RC	Understanding	q29	Understand the intended meaning of a phrase in context	66.8
282	2	RC	Understanding	q05	Understand sequence of events in a simple narrative text	63.3
289	3	RC	Understanding	q18	Infer and write from stated information in a narrative text	54.7
295	3	RC	Understanding	q37	Interpret figurative language used in a complex persuasive text	53.2
304	3	RC	Understanding	q21	Identify the purpose of a biography	47.7
308	4	RC	Knowledge	q36	Retrieves stated information from a complex persuasive text	44.7
322	4	RC	Application	q33	Infer the author's opinion in a complex persuasive text	35.1
340	5	RC	Application	q40	Understand the meaning of an expression in a complex persuasive text	21.8
343	5	RC	Application	q17	Interpret figurative language in a narrative text	23
343	5	RC	Application	q24	Synthesise information to arrive at and write a conclusion in a biography	21.3
355	5	RC	Understanding	q34	Infer based on implicit information in a complex persuasive text	17.4
259	2	Vocabulary	Understanding	q22	Identify synonym of words in context	76.6
263	2	Vocabulary	Application	q31	Identify synonym of words in context	74.6
269	2	Vocabulary	Understanding	q06	Understand the meaning of a moderately difficult word in context	70.7
295	3	Vocabulary	Understanding	q38	Identify synonyms of unfamiliar words in context	54.2
295	3	Vocabulary	Understanding	q12	Identify synonyms of unfamiliar words in context	54.5

Analysis of questions by content and cognitive skills

The analysis by content and cognitive domains reveals that Bangla test questions had a range of difficulty; some knowledge questions were as difficult as, or more difficult than, application questions, and questions from the content areas also show a range of difficulty. On-balance, grammar questions seem to be harder than vocabulary questions while comprehension questions have a wide range of difficulty. Lower scoring students are unlikely to have answered the grammar and vocabulary questions correctly.

Figure 6 which shows this information has two displays: the left-hand display shows the distribution of student achievement in Bangla (far left band), the question locations (or difficulties) for the Bangla test separated by cognitive skills, as well as the reporting bands. The display on the right shows the distribution of student achievement in Bangla (far left band) and the question location (or difficulties) for the Bangla test separated by curriculum content.

Note: Where question difficulties are the same within a content or cognitive skill, the question locations appear as overlayed dots.

Figure 6 Bangla questions by content and cognitive skills & student distribution
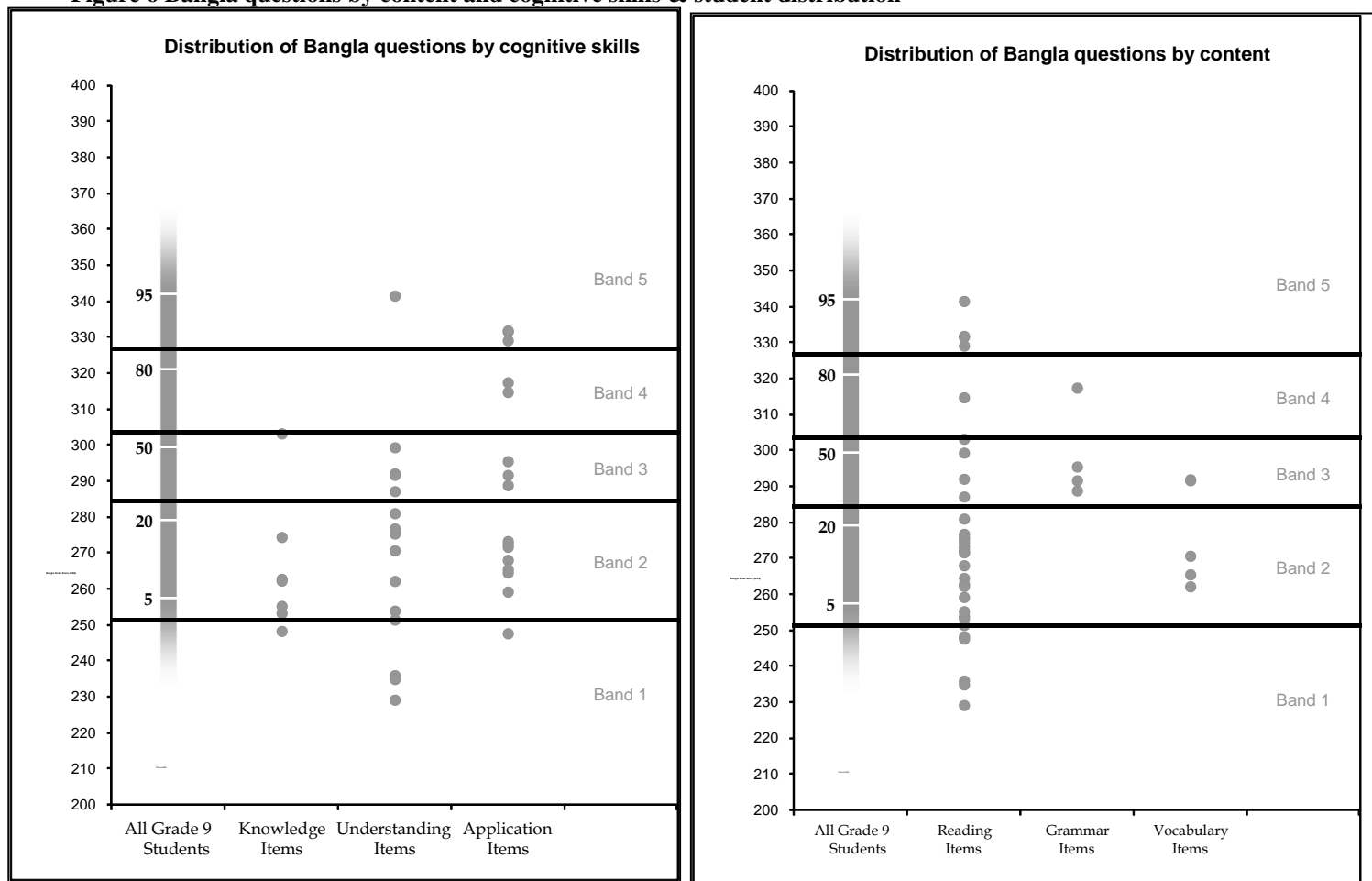
Bangla Band Descriptors

From the details of all the questions used, broad descriptions of skills have been developed. They provide a more generalised picture of development in Bangla and are useful as a frame of reference for monitoring growth over the grades of schooling and over the life of the interventions. The bands align broadly with the Secondary Curriculum and are presented descriptively, in tables and graphically. This scale and these bands will be used to describe performance of both grades 6 and 8 in 2013.

Figure 7 Bangla band descriptors

BANGLA BAND DESCRIPTORS (BANGLADESH SECONDARY 2012)

(with cut scores on Bangla scale)

BSS

Students working in Band 5
- Interpret figurative expressions in narrative texts and complex persuasive texts
- Synthesise information to arrive at and write a conclusion in informative texts
- Infer from implicit information in complex persuasive texts

327

Students working in Band 4
- Infer the author's opinion in complex persuasive texts
- Retrieves stated information from complex persuasive texts
- Identify the type of compounding

303

Students working in Band 3
- Interpret figurative language used in complex persuasive texts
- Infer and write from stated information in narrative texts
- Identify the purpose of informative texts
- Identify synonyms of unfamiliar words in context
- Show knowledge of word formation (Sandhi Vichedh)
- Convert Challit bhasa to Saadu bhasa

284

Students working in Band 2
- Infer by linking stated information in short narrative texts and informative texts
- Understand the sequence of events in short narrative texts and informative texts
- Retrieve and write specific information in short narrative texts and short informative texts
- Understand the intended meaning of a phrase and identify synonyms of moderately difficult words in context

251

Students working in Band 1
- Identify the purpose of short informative texts and simple letters
- Retrieve directly stated, simple information in simple narrative texts
- Identify types of letters

Table 7 Percentages of students across the bands in Bangla performance for all Students

Overall	Band 1 %	Band 2 %	Band 3 %	Band 4 %	Band 5 %
All Students	3	24	29	29	15

Figure 8 Percentages of students across the bands in Bangla performance for all Students

Percentages of students across the bands in Bangla performance

| All Students | 3% | 24% | 29% | 29% | 15% |

■ Band 1   ■ Band 2   ■ Band 3   ■ Band 4   ■ Band 5
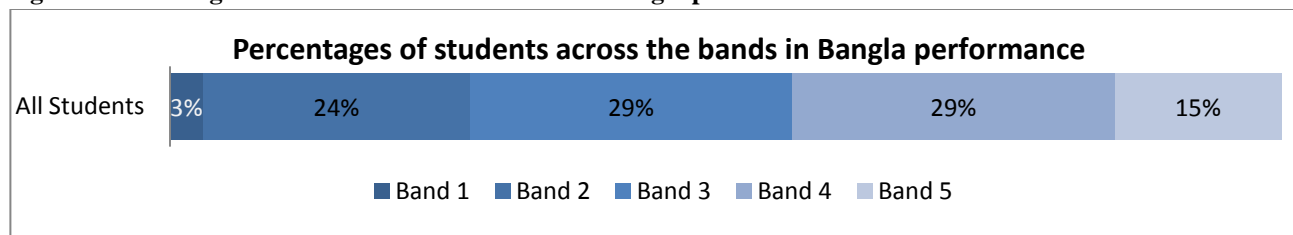
The average, 300 BSS, falls in Band 3. Nearly 29% of students score within this band and are likely to have the following skills:

- Interpret figurative language used in complex persuasive texts
- Infer and write from stated information in narrative texts
- Identify the purpose of informative texts
- Identify synonyms of unfamiliar words in context
- Show knowledge of word formation (Sandhi Vichedh)
- Convert Challit bhasa to Saadu bhasa

Fifteen per cent of students (15%) demonstrate Band 5 reading achievement, which is an advanced level for grade 8. These students demonstrate the capacity to read inferentially. They are likely to:

- Interpret figurative expressions in narrative texts and complex persuasive texts
- Synthesise information to arrive at and write a conclusion in informative texts
- Infer from implicit information in complex persuasive texts

Less than one third (29%) of students are in Band 4. These students are likely to:

- Infer the author's opinion in complex persuasive texts
- Retrieves stated information from complex persuasive texts
- Identify the type of compounding

Nearly one fourth (24%) of students fall in Band 2, i.e., well below the expected level of Grade 8 students. They are likely to:

- Infer by linking stated information in short narrative texts and informative texts
- Understand the sequence of events in short narrative texts and informative texts
- Retrieve and write specific information in short narrative texts and short informative texts
- Understand the intended meaning of a phrase and identify synonyms of moderately difficult words in context

Very few (3%) Grade 8 students fall in Band 1, well below the level expected of Grade 8 students. Students working in this band are able to:

- Identify the purpose of short informative texts and simple letters

- Retrieve directly stated, simple information in simple narrative texts
- Identify types of letters

Similar learning assessment surveys conducted in other countries show that it is usual for students in all grades to span a range of different stages in their learning and development. (Masters, 2005)

Percentages of students across the bands in Bangla by Intervention

Nearly 19 per cent of students are achieving Band 5 in 'Additional class with reading habit' intervention schools. However, in 'Additional class new' intervention schools approximately 9 per cent of students are at that level. There are 41 per cent of students in Band 3 in 'Additional class new' intervention schools which shows many students in these schools are close to the average Bangla Scale Score (BSS).

Table 8 Percentages of students across the bands in Bangla by Intervention

Intervention	Band 1%	Band 2%	Band 3%	Band 4%	Band 5%
No intervention	3	25	28	28	16
Additional class new	4	21	41	25	9
Additional class with reading habit	3	25	26	27	19
Reading habit	3	24	28	30	15
Additional class	2	23	31	32	11

Figure 9 Percentages of students across the bands in Bangla by Intervention
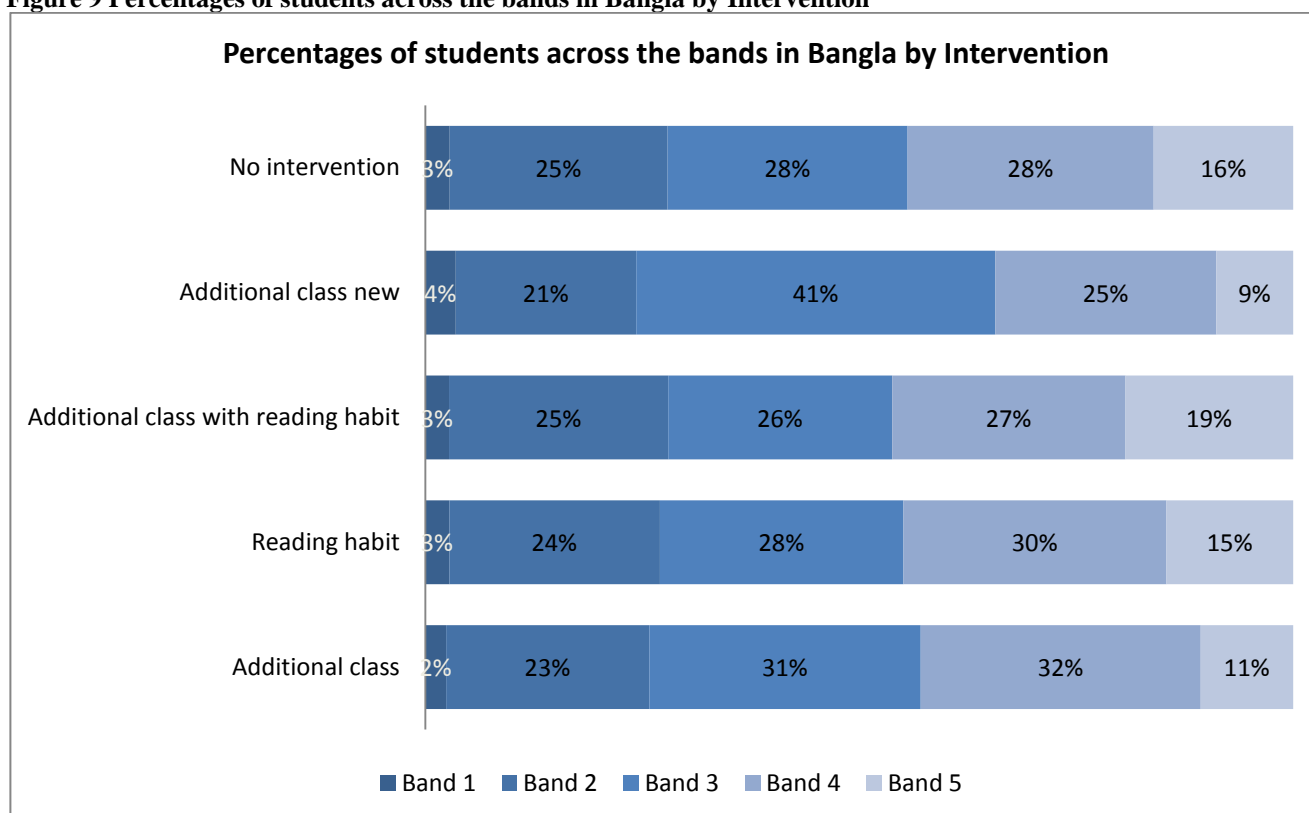
Percentages of students across the bands in Bangla by Division/Examination Board

About 19 to 20 per cent of students are achieving Band 5 in Jessore (Khulana) and Barisal Examination Boards however in Sylhet and Chittagong Examination Boards only 7 per cent students are at that level. In Jessore (Khulana) and Rajshahi only 1 per cent of students are at Band 1 but 5 to 6 per cent of students in Sylhet and Rangpur are at this level. Further, 40 per cent of students from Sylhet examination board are at Band 2 which is below the expected standard of Grade 8.

Table 9 Percentages of students across the bands in Bangla by Division/Examination board

Examination Board	Band 1%	Band 2%	Band 3%	Band 4%	Band 5%
Barisal	3	22	29	27	19
Chittagong	4	29	36	25	7
Comilla	2	21	26	34	16
Dhaka	2	23	27	31	16
Jessore	1	16	27	36	20
Rajshahi	1	23	32	32	11
Rangpur	6	34	30	19	11
Sylhet	5	40	28	20	7

Figure 10 Percentages of students across the bands in Bangla by Division/Examination board
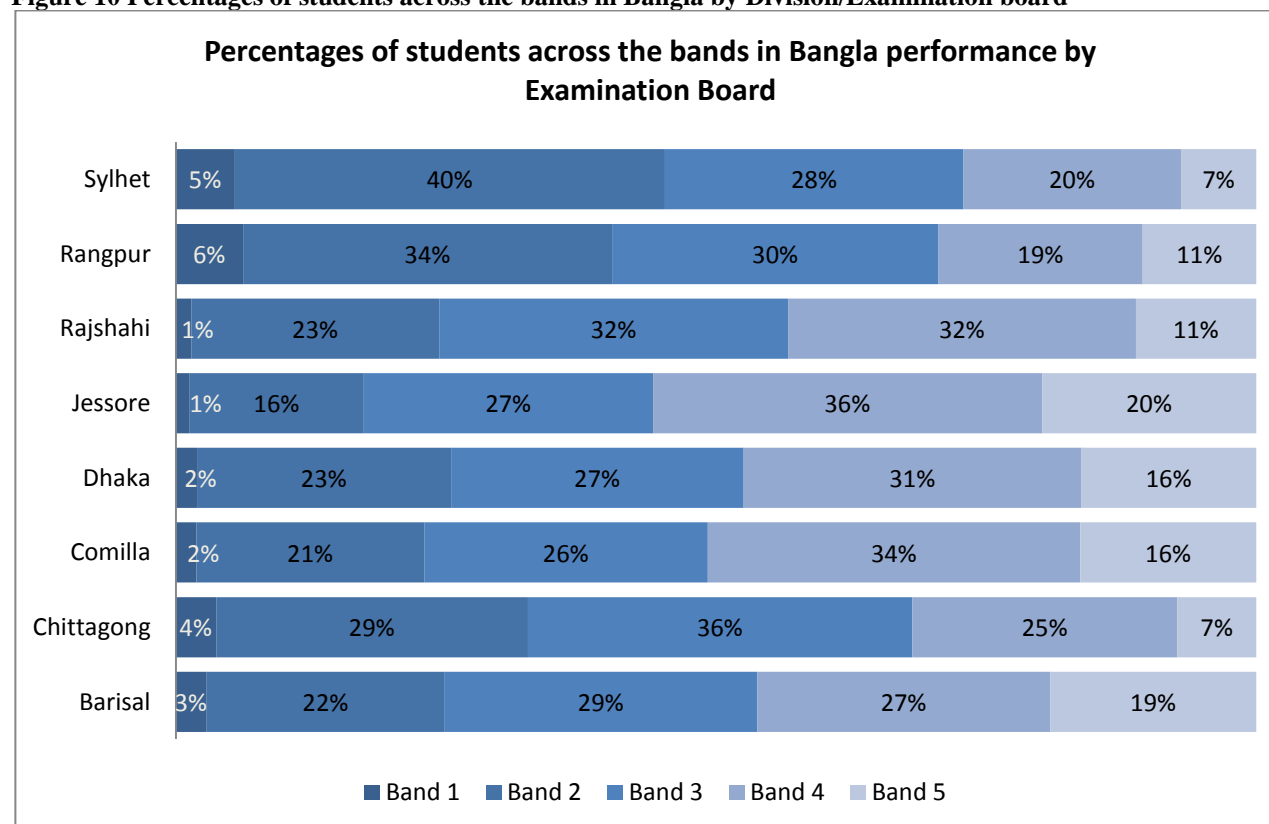
Percentages of students across the bands in Bangla performance by Gender

The percentage of boys and girls spread across 5 bands is very similar. About 14 per cent of boys and girls are achieving Band 5 and 2 to 3 per cent boys and girls are at Band 1.

Table 10 Percentages of students across the bands in Bangla by Gender

Gender	Band 1%	Band 2%	Band 3%	Band 4%	Band 5%
Girls	3	24	29	28	15
Boys	2	25	28	30	14

Figure 11 Percentages of students across the bands in Bangla by Gender
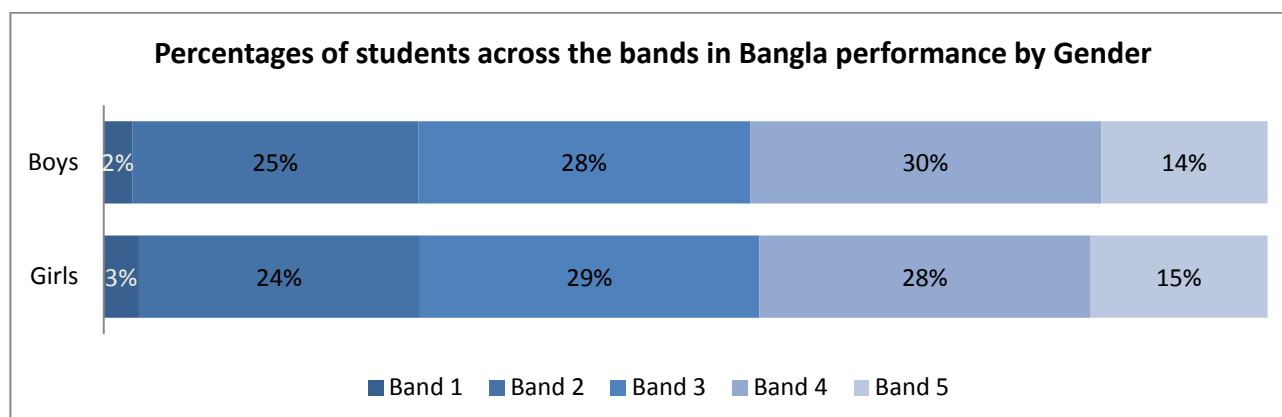
Percentages of students across the bands in Bangla by School type

Nearly 17 per cent of students achieve Band 5 in General Education schools however in Madrasah approximately 8 per cent of students are at that level. Similarly in General Education schools only 2 per cent of students are at Band 1 but in Madrasah there are 5 per cent of students are at that level.

In Madrasah, 37 per cent of students are at Band 2 compared to 21 per cent in General Education schools. However, there are 32 per cent of students in Band 4 in General Education schools compared to 20 per cent of students from Madrasah.

Table 11 Percentages of students across the bands in Bangla by School type

School Type	Band 1 %	Band 2 %	Band 3 %	Band 4 %	Band 5 %
General Education	2	21	29	32	17
Madrasah Education	5	37	29	20	8

Figure 12 Percentages of students across the bands in Bangla by School type

21
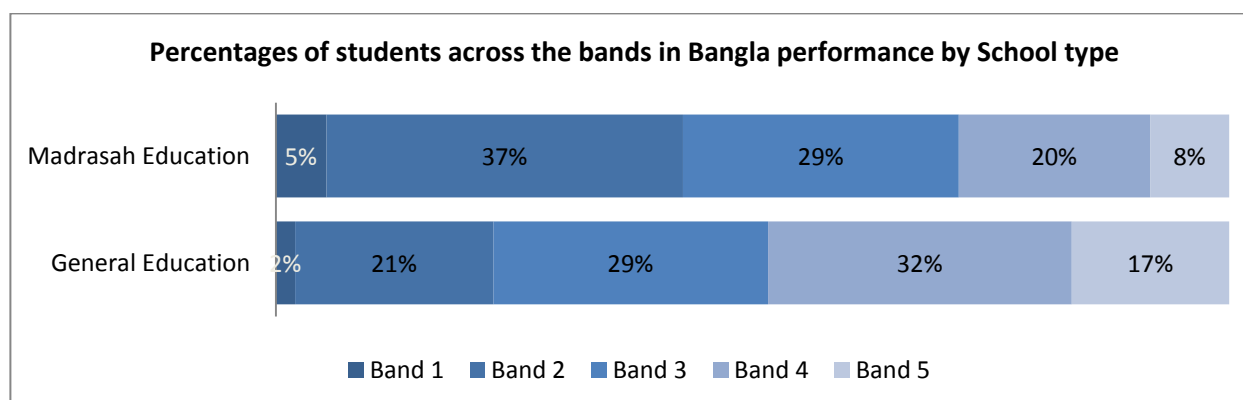
English Performance

Distribution of English Scale Score (ESS) by Intervention

Performance of students from 'no intervention' schools is also observed, to compare the performance of students with other intervention schools; table 12.

There was little difference between average student score across the four intervention types and no intervention schools. The lowest average English score was found for the 'Additional class with reading habit' intervention group with a mean of 297 ESS and the highest average English score was found for the 'Reading habit' with a mean of 302 ESS.

The distributions across the four interventions and no intervention schools are more or less similar.

Table 12 Distribution of English Scale Score (ESS) by Intervention

Intervention type	5th %tile	25th %tile	50th %tile	75th %tile	95th %tile	Mean	Difference (95th - 5th)
Additional class	262	281	299	313	334	298	72
Reading habit	260	283	302	321	344	302	84
Additional class with reading habit	256	277	295	318	339	297	84
Additional class new	264	287	299	315	341	301	77
No intervention	259	281	299	319	342	300	83

Figure 13 Distribution of English Scale Score (ESS) by Intervention
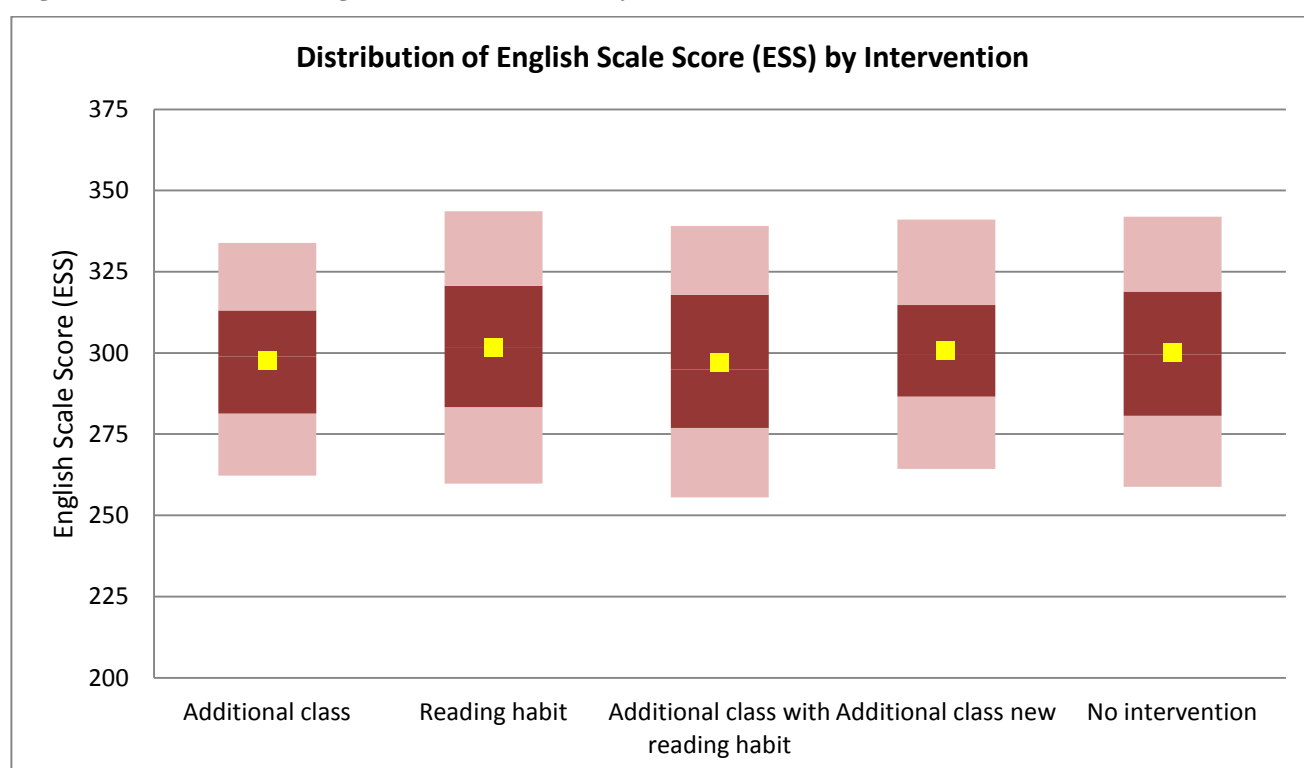
The average achievement in English of 'Reading habit' intervention schools is similar to 'additional new class' and 'no intervention' and slightly better than 'Additional class' and 'Additional class with reading habit' intervention schools.

Distribution of English Scale Score (ESS) by Division/Examination Board

Barisal has the highest English average scale score (308 ESS) while Sylhet has the lowest (286 ESS). Though there are differences in overall performance of students across the eight examination boards, distribution indicates that the range of performance in all the examination boards is fairly uniform.

Table 13 Distribution of English Scale Score (ESS) by Division/Examination board

Examination Board	5th %tile	25th %tile	50th %tile	75th %tile	95th %tile	Mean	Difference (95th - 5th)
Barisal	268	289	310	328	344	308	76
Chittagong	258	284	300	316	341	300	83
Comilla	265	288	306	320	348	305	84
Dhaka	263	283	302	320	341	302	78
Jessore	264	286	304	321	344	304	81
Rajshahi	260	280	296	312	334	296	74
Rangpur	254	273	288	307	339	291	84
Sylhet	251	265	286	305	322	286	71

Figure 14 Distribution of English Scale Score (ESS) by Division/Examination board
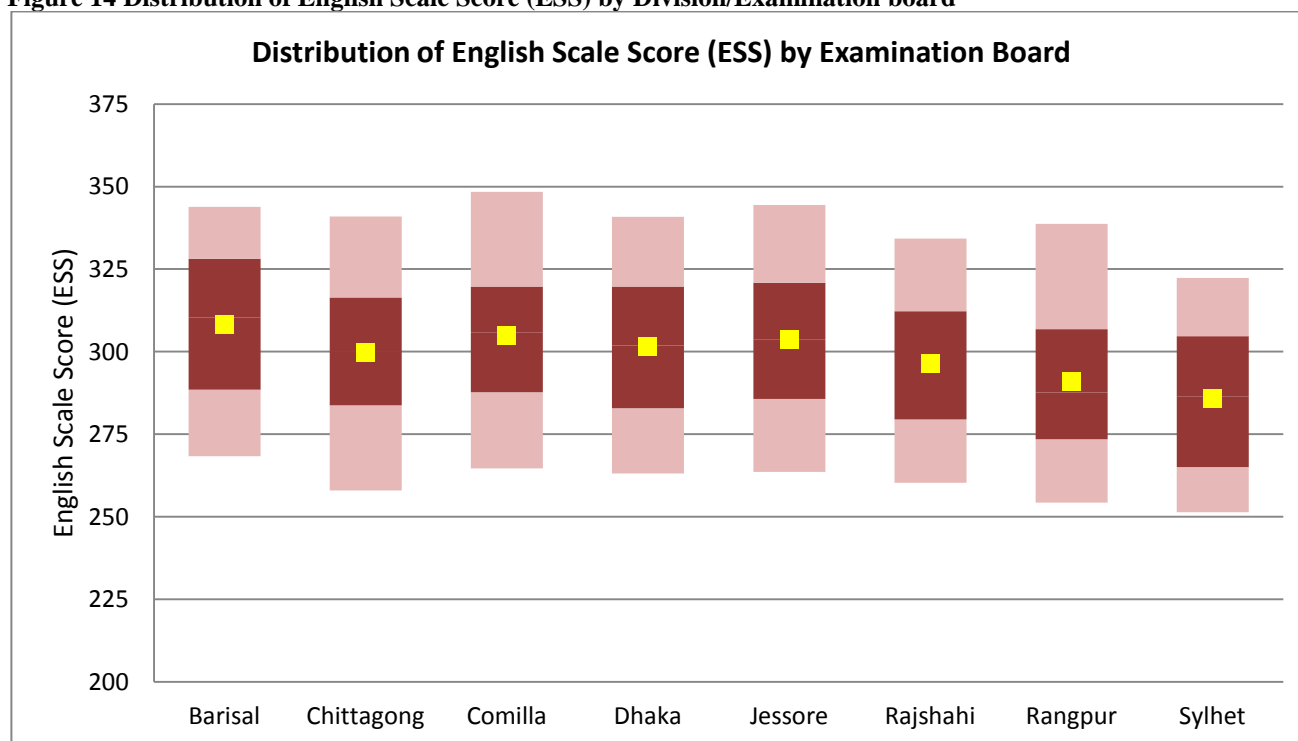
Barisal has a mean that is significantly higher than any other examination board; a second group consists of Comilla, Dhaka, Chittagaong and Jessore where there is no real difference in mean performance; Rajshahi, Rangpur and Sylhet then follow in that order.

Distribution of English Scale Score (ESS) by Gender
The average English Scale Score (ESS) for boys and girls is the same. Both groups' average is 300.

The distribution of scores for boys and girls is also very similar.

Table 14 Distribution of English Scale Score (ESS) by Gender

Gender	5th %tile	25th %tile	50th %tile	75th %tile	95th %tile	Mean	Difference (95th - 5th)
Girls	259	280	299	318	341	300	82
Boys	260	282	300	318	341	300	81

Figure 15 Distribution of English Scale Score (ESS) by Gender
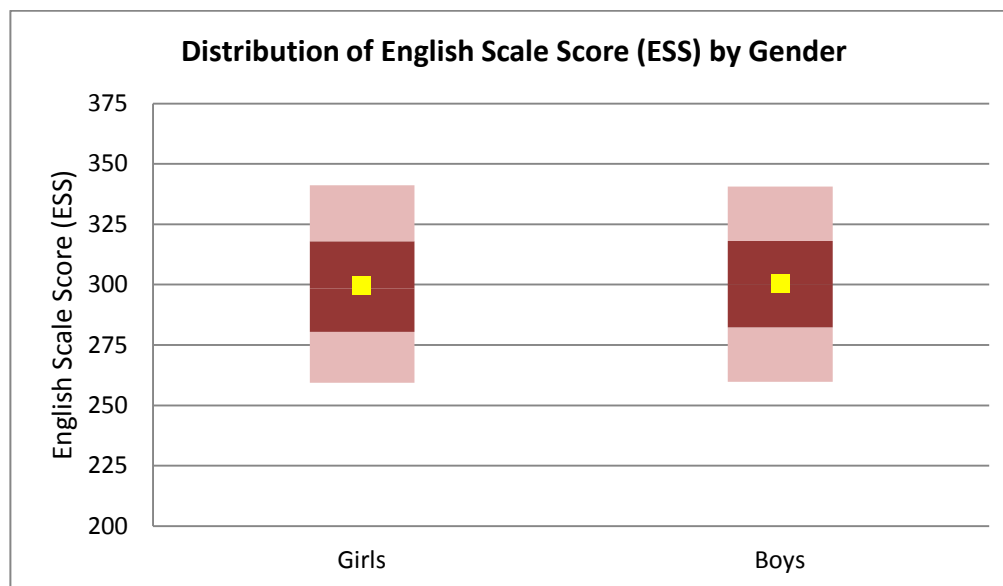
Distribution of English Scale Score (ESS) by School Type

Table 15 and Figure 16 display the English performance distribution of students in General Education schools and Madrasah.

The average English Scale Score (ESS) was 303 for students from General Education schools and 289 for students from Madrasah. The difference is statistically significant.

While the performance of students from General Education schools was higher overall than Madrasah, the distribution in General Education schools and in Madrasah was similar. In General Education schools the lowest 5 per cent of students achieved at or below 263 ESS, while the lowest 5 per cent of students in Madrasah achieved at or below 254 ESS. In General Education schools the top 5 per cent of students achieved above 342 ESS, while the top 5 per cent of students in Madrasah achieved above 333 ESS.

Table 15 Distribution of English Scale Score (ESS) by School type

School Type	5th %tile	25th %tile	50th %tile	75th %tile	95th %tile	Mean	Difference (95th - 5th)
General Education	263	285	303	321	342	303	80
Madrasah Education	254	272	286	306	333	289	79

Figure 16 Distribution of English Scale Score (ESS) by School type

Table 16 shows the classification of questions according to content and cognitive skills required to answer the questions.
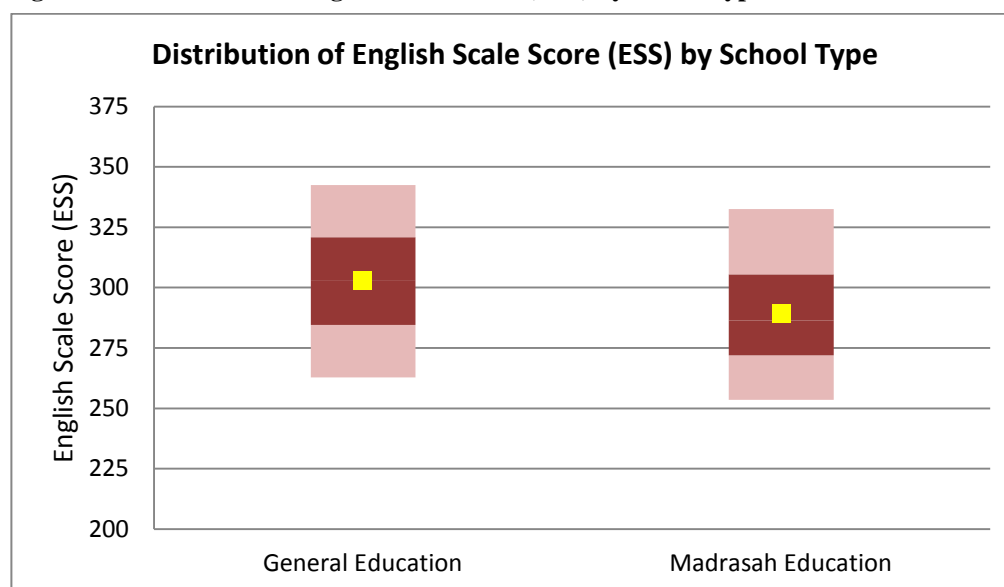
What students know and can do in English Language

The English test assesses comprehension of written English language and its appropriate use in context. The test consisted of 37 questions, most of which referred to one of seven short texts. The texts included narrative, biography, letter, instructions, information and procedure texts. The test assesses comprehension of language and its appropriate use in context and some mechanics or conventions of language use. Comprehension of language in context is assessed through the use of reading texts and comprehension questions based on them. Appropriate use of language in context is tested through the use of vocabulary and context based questions on grammar.

Table 16 shows the classification of questions according to content and cognitive skills required to answer the questions.

Table 16 English questions by content and cognitive skill

Subject	Sub Strands	Total Items	Knowledge	Understanding	Application
English	Comprehension	**25**	10	15	0
	Grammar	**8**	2	0	6
	Vocabulary	**4**	2	2	0
Total Items		37	14 (38%)	17 (46%)	6 (16%)

Rasch analysis produces a map of the test questions in order of difficulty, and scales students' achievement against the questions in the test. In Figure 17, the crosses on the left represent the students who sat the test and the sentences on the right describe the skill required to answer the questions of the test.

English Progress Map

Figure 17 English progress map

```
======================================================================================
======
Bangladesh Learning Assessment 2012 ENGLISH Person Item Map
======================================================================================
======
ESS                                             |
                                                |
                                             XX|
                                              X|
                                              X|
                                            XXX|Infer from detail in an instruction text
                                            XXX|
                                         XXXXXX|
                                       XXXXXXXX|
                                        XXXXXXX|
                                     XXXXXXXXXX|
                                     XXXXXXXXXX|
                                 XXXXXXXXXXXXXX|
                                XXXXXXXXXXXXXXX|
327                          XXXXXXXXXXXXXXXXXX|
                      XXXXXXXXXXXXXXXXXXXXXXXX|
                      XXXXXXXXXXXXXXXXXXXXXXXX|
                  XXXXXXXXXXXXXXXXXXXXXXXXXXXX|Identify the main purpose of a list of rules
                  XXXXXXXXXXXXXXXXXXXXXXXXXXX|Interpret character in a short narrative text
               XXXXXXXXXXXXXXXXXXXXXXXXXXXXXX|Make simple inference from a short narrative text
304        XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX|Identify structure in an instruction text
      XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX|Identify correct form of conditional
            XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX|Identify the recipient of an email
         XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX|Interpret word in context; Know simple past tense of irregular verb
               XXXXXXXXXXXXXXXXXXXXXXXXXXXX|Locate specific information in a short sign
         XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX|Make a simple inference; Locate detail in a list of rules
283XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX|Identify correct use of infinitive
      XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX|Identify correct use of comparative; Identify verb in a phrase
            XXXXXXXXXXXXXXXXXXXXXXXXXXXXXX|Recognise sequence of events; Interpret vocabulary
          XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX|Interpret less familiar label; Make a simple inference
                    XXXXXXXXXXXXXXXXXXXXX|Locate directly stated information in a recount
                 XXXXXXXXXXXXXXXXXXXXXXX Locate specific information in a short biography
             XXXXXXXXXXXXXXXXXXXXXXXXX|Match visual to stated information in a short narrative
                  XXXXXXXXXXXXXXXXXX|Locate information in a short email
                        XXXXXXXXXXX|Retrieve information in a short letter
                 XXXXXXXXXXXX|Recognise recipient of a postcard
254                      XXXXXXXX|Locate directly stated information in a short narrative
                                    XXXX|
                                     XXX|
                                      XX|Identify correct usage of verb 'to be'
                                      XX|
                                       X|
                                       X|
                                       X|Locate simple information in a short biography
                                        |Match symbol with word
                                        |
                                        |
                                        |
                                        |
                                        |
                                        |
                                        |
                                        | Match picture with a very simple sentence
======================================================================================
======
Each 'X' represents 11.2 cases
======================================================================================
======
```

The descriptors shown on the right side of the progress map are derived from some, but not all of the English questions. The easiest task on the test required students to match a picture with a very simple sentence.

I live in water. What am I?

A   B   C   D

This question was completed correctly by most (96%) students and the descriptor therefore appears at the bottom of the progress map.

The descriptor at the top of the progress map *Infer from detail in an instruction text* refers to the most difficult task on the English test. Students who were successful on this task (9.7%) were able to *comprehend relevant implicit information to draw a conclusion and write the answer.*

How big should a collage be?

_____

Facilities for all English questions

The percentage of students who answered each question correctly is given in the following table.

Table 17 Per cent correct answers: English

ESS	Band	Strand	Skill	ID	Item Descriptor	Percent correct
243	1	Grammar	Application	q24	Identify correct usage of verb 'to be'	86.8
281	2	Grammar	Application	q11	Identify correct pronoun in context	64.6
282	2	Grammar	Knowledge	q35	Identify the verb in a phrase	64
283	2	Grammar	Application	q04	Identify correct use of the comparative	63.8
287	3	Grammar	Application	q21	Identify correct use of infinitive	60.7
298	3	Grammar	Application	q34	Identify appropriate usage of 'could' as a form of request	51.9
299	3	Grammar	Knowledge	q03	Know the simple past tense form of an irregular verb	50.6
304	4	Grammar	Application	q16	Identify correct form of conditional	47.6
229	1	RC	Knowledge	q09	Locate simple information in a short biography	91.8
257	2	RC	Knowledge	q27	Locate directly stated information in a short narrative text	81
258	2	RC	Knowledge	q13	Recognise recipient of a postcard	80.5
261	2	RC	Understanding	q14	Retrieve information by backward referencing in a short letter	78.6
263	2	RC	Knowledge	q22	Retrieve information by forward referencing reference in a short email	77.2
268	2	RC	Understanding	q29	Match visual to explicitly stated information in a short narrative text	73.5
274	2	RC	Understanding	q23	Locate directly stated information in a recount	70.4
276	2	RC	Knowledge	q12	Locate and write directly stated information in a short biography	64.2
276	2	RC	Understanding	q10	Locate specific information in a short biography	68.9
278	2	RC	Knowledge	q02	Interpret less familiar label	64.9
281	2	RC	Understanding	q28	Recognise sequence of events in a short narrative text	65.5
283	3	RC	Knowledge	q18	Locate detail in a list of rules	63.7
285	3	RC	Understanding	q20	Locate detail in a list of rules	62.4
289	3	RC	Understanding	q08	Locate specific information in a short environmental print text	56.4
290	3	RC	Understanding	q19	Locate detail in a list of rules	58.1
291	3	RC	Understanding	q05	Make a simple inference from a short environmental print text	57.6
295	3	RC	Knowledge	q06	Locate specific information in a short environmental print text	55.2
297	3	RC	Understanding	q15	Locate specific information in a short letter	53.5
304	3	RC	Knowledge	q26	Identify the recipient of an email	43.6
304	3	RC	Understanding	q36	Understand sequence of events in an instruction text	47.5
305	4	RC	Knowledge	q32	Identify structure in an instruction text	46.6
311	4	RC	Understanding	q31	Make simple inference from a short narrative text	39.6
316	4	RC	Understanding	q30	Interpret character in a short narrative text	37.6
319	4	RC	Understanding	q17	Identify the main purpose of a list of rules	35.8
362	5	RC	Understanding	q37	Infer from detail in an instruction text	9.7
190	1	Vocabulary	Knowledge	q01	Match picture with a very simple sentence	95.9
223	1	Vocabulary	Knowledge	q07	Match symbol with word	93.2
281	2	Vocabulary	Understanding	q25	Interpret vocabulary in context	65.4
297	3	Vocabulary	Understanding	q33	Interpret word in context	53.1

Analysis of questions by content and cognitive skills

The analysis by content and cognitive domains reveals that English test questions had a range of difficulty; some knowledge questions were as difficult as, or more difficult than application or understanding questions, and questions from the content areas also showing a range of difficulty. Comprehension questions, which are most numerous in the test, have a wide range of difficulty. Because questions have a range of difficulties, even the weakest students were able to answer at least some of all questions-types.

Figure 18, which shows this information, has two displays: the left-hand display shows the distribution of student achievement in English (far left band), the question locations (or difficulties) for the English test separated by cognitive skills, as well as the reporting bands. The display on the right shows the distribution of student achievement in English (far left band) and the question location (or difficulties) for the English test separated by curriculum content.

Note: Where question difficulties are the same within a content or cognitive skill, the question locations appear as overlayed dots.

Figure 18 English questions by content and cognitive skills & student distribution
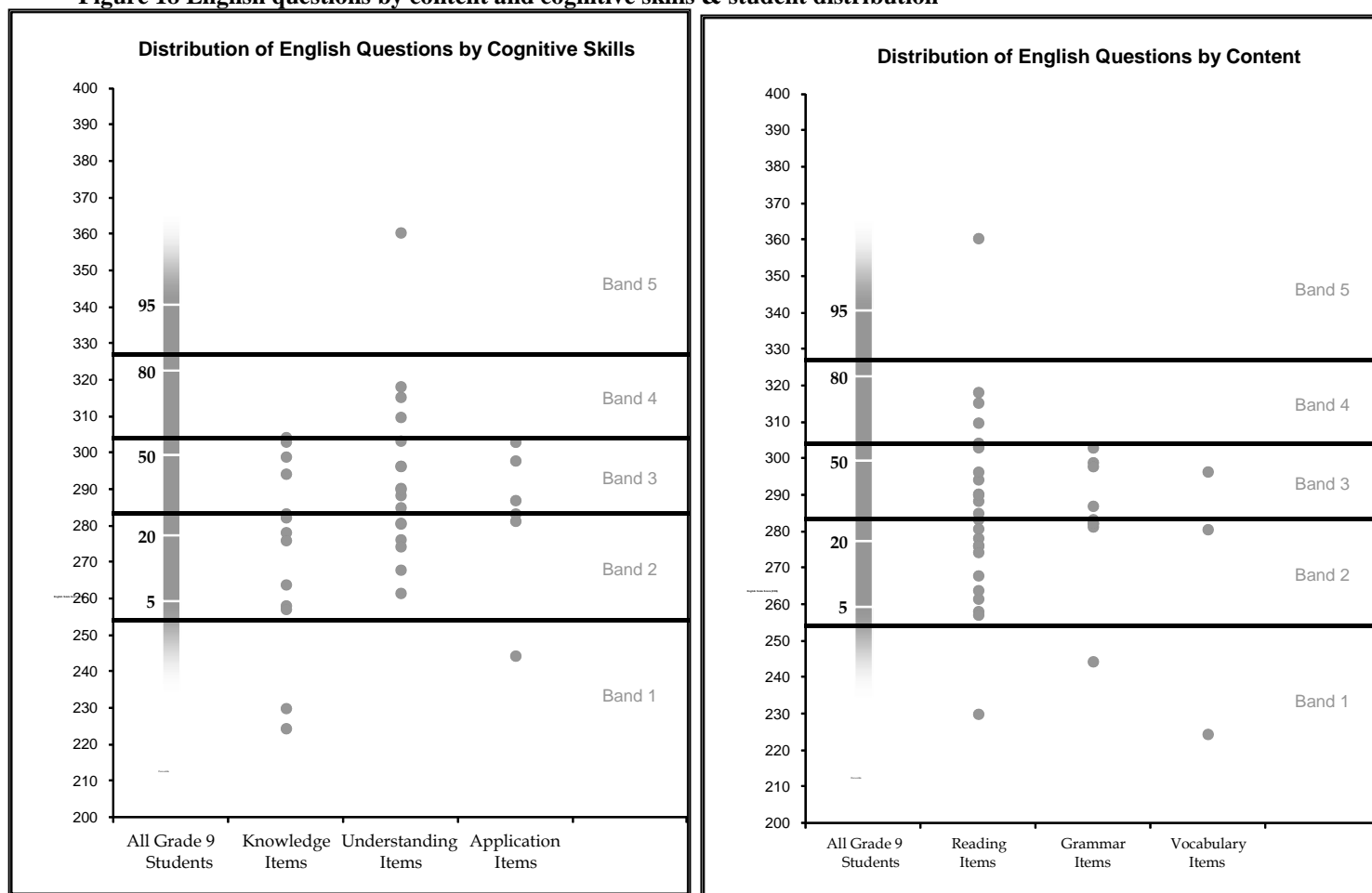
English Band Descriptors

The results have been mapped to bands that align broadly with the Secondary Curriculum and are presented descriptively, in tables and graphically. From the details of all the questions used to test students broad descriptions of skills have been developed. They provide a more generalised picture of development in English and are useful as a frame of reference for monitoring growth over the years of the intervention and, from 2013, over the grades of schooling. It is noted that the band descriptions for Bands 4 and 5 currently lack detail. Information from 2013 cycle of testing will provide greater details for the higher level bands.

Figure 19 Band descriptors for English

ENGLISH BAND DESCRIPTORS (BANGLADESH SECONDARY 2012)
(with cut scores on English scale)

ESS

Students working in Band 5

- Infer from detail in more complex texts

327

Students working in Band 4

- Interpret character and make inferences from short narrative texts
- Identify the main purpose of more complex non-continuous texts such as a list of r
- Identify structure in more complex non-continuous texts such as an instruction tex

304

Students working in Band 3

- Understand sequence of events and make simple inferences from more complex n continuous texts and short environmental print texts
- Locate information from more complex non-continuous texts and short environme texts
- Interpret more complex vocabulary in context
- Recognise the simple past tense form of some irregular verbs
- Identify correct use of the conditional and the infinitive
- Identify appropriate form of request

283

Students working in Band 2

- Recognise sequence of events in short narrative texts
- Retrieve information by linking different parts of short continuous texts
- Match visuals to explicitly stated information in short narrative texts
- Locate explicit information in short narrative texts and simple non-continuous texts simple vocabulary in context
- Show knowledge of the correct use of pronouns and comparatives in context
- Identify verbs in phrases
- Interpret less familiar labels

254

Students working in Band 1

- Locate directly stated, simple information in short narrative texts and simple non-c texts
- Identify correct usage of most common verbs
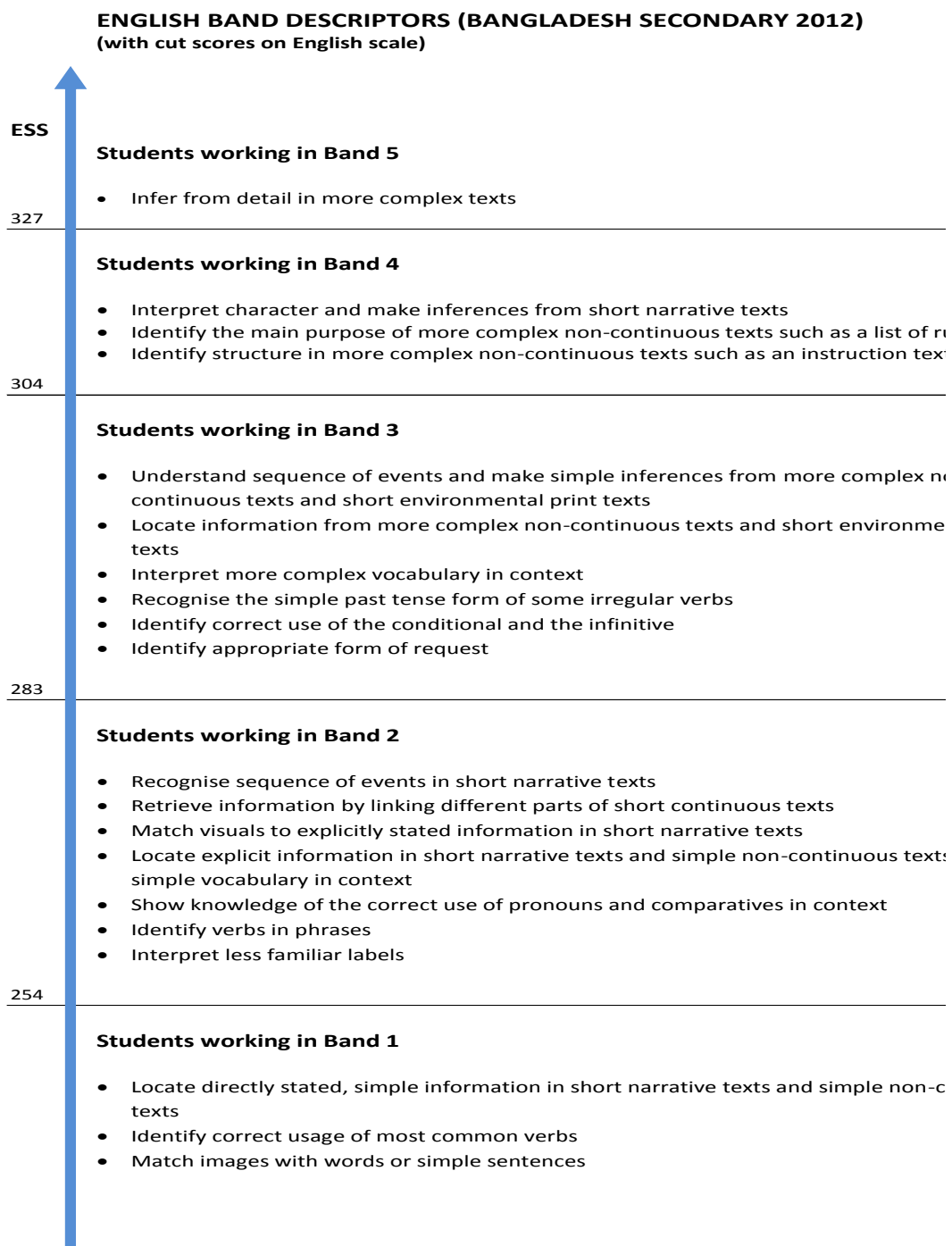- Match images with words or simple sentences

30

Table 18 Percentages of students across bands in English for all Students

Overall	Band 1 %	Band 2 %	Band 3 %	Band 4 %	Band 5 %
All Students	2	26	28	29	15

Figure 20 Percentages of students across bands in English for all Students

Percentages of students across the bands in English performance

All Students: 2% | 25% | 28% | 29% | 15%

■ Band 1 ■ Band 2 ■ Band 3 ■ Band 4 ■ Band 5
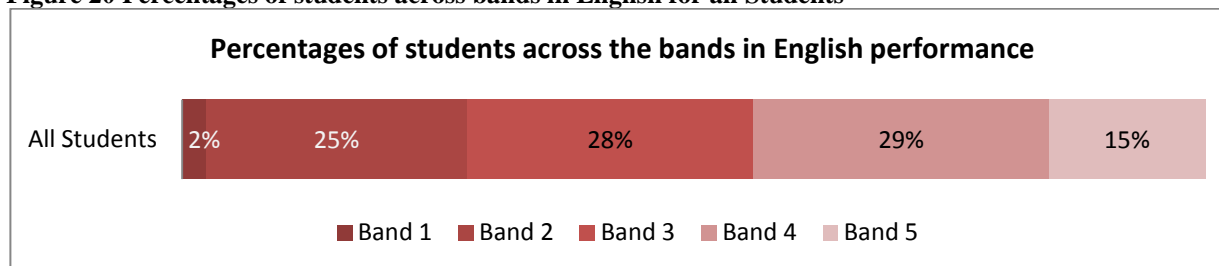
The average, 300 ESS, falls in Band 3 and 28 per cent of students have scores in this band. They are likely to have the following skills:

- Understand sequence of events and make simple inferences from more complex non-continuous texts such as shop signs, lists of rules, etc. (short environmental print text)
- Locate information from more complex non-continuous texts such as shop signs, lists of rules, etc. (short environmental print text)
- Interpret more complex vocabulary in context
- Know the simple past tense form of an irregular verb
- Identify correct use of the conditional and the infinitive
- Identify appropriate usage of 'could' as a form of request

Fifteen per cent of students (15%) demonstrate Band 5 reading achievement, which is an advanced level for grade 8. Students with this level of skill are beginning to read English inferentially and are likely to:

- Infer from detail in more complex texts

Less than one third (29%) of students are in Band 4. These students are likely to demonstrate the capacity to:

- Interpret character and make inferences from short narrative texts
- Identify the main purpose of more complex non-continuous texts
- Identify structure in more complex non-continuous texts such as an instruction text

Nearly one fourth (26%) of the students' scores occur in Band 2, below the level expected of Grade 8 students. They are likely to:

- Recognise sequence of events in short narrative texts
- Retrieve information by linking information from different parts of short continuous texts like letters and emails
- Match visuals to explicitly stated information in short narrative texts
- Locate and write specific information in short narrative texts and simple non-continuous texts such as a magazine entry (biography)
- Interpret simple vocabulary in context

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- Show knowledge of the correct use of pronouns and comparatives in context
- Identify verbs in phrases
- Interpret less familiar labels

Very few (2%) of Grade 8 students are in Band 1, well below the level expected of Grade 8 students. Students achieving in this band are likely to:

- Locate directly stated, simple information in short narrative texts and simple non-continuous texts such as a magazine article(biography)
- Identify correct usage of very common verbs
- Match images with words or simple sentences

Percentages of students across the bands in English performance by Intervention

Nearly 18 per cent of students are achieving Band 5 in 'Reading habit' intervention schools however in Additional class intervention schools 8 per cent of students are at that level. There are 80 per cent of students at Band 3 or above in 'Additional class new' intervention schools.

Table 19 Percentages of students across the bands in English by Intervention

Intervention	Band 1%	Band 2%	Band 3%	Band 4%	Band 5%
No intervention	3	27	26	29	16
Additional class new	1	19	37	31	12
Additional class with reading habit	4	30	27	22	17
Reading habit	2	23	28	29	18
Additional class	1	27	31	33	8

Figure 21 Percentages of students across the bands in English by Intervention

Percentages of students across the bands in English performance by Intervention
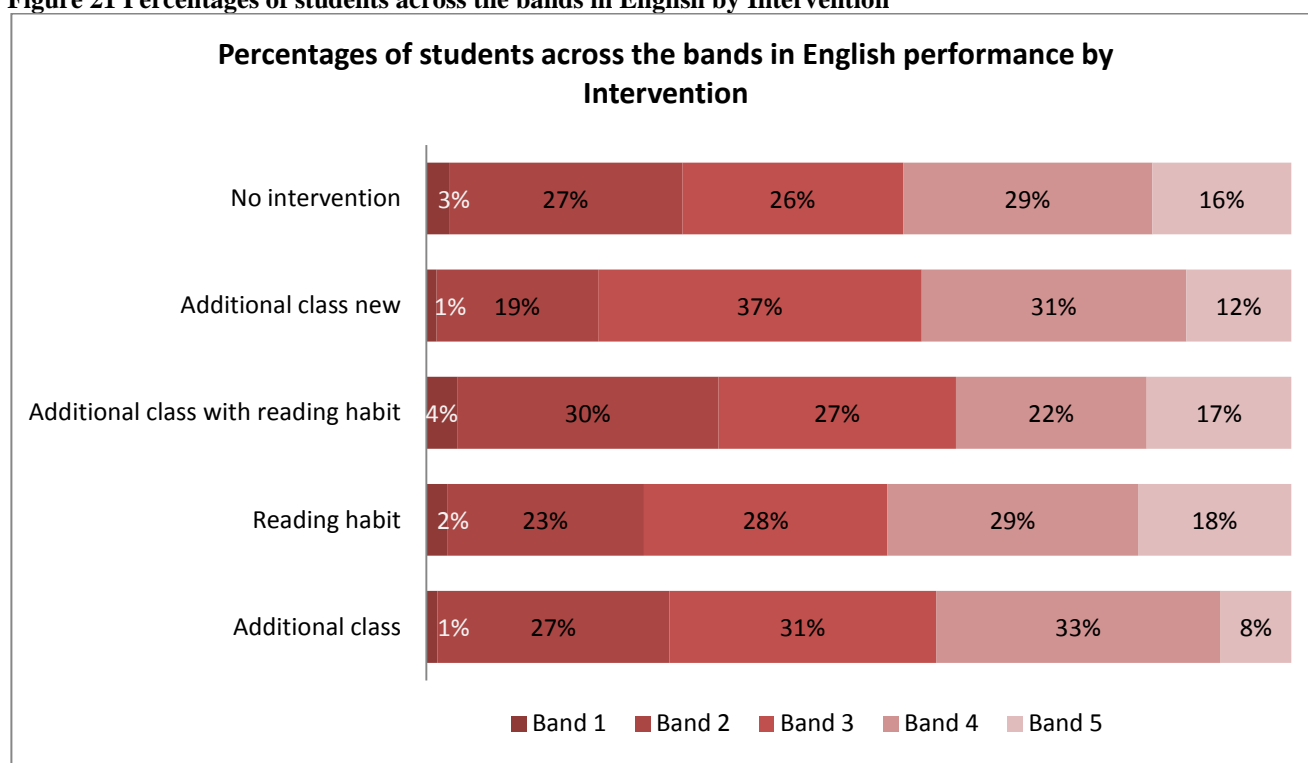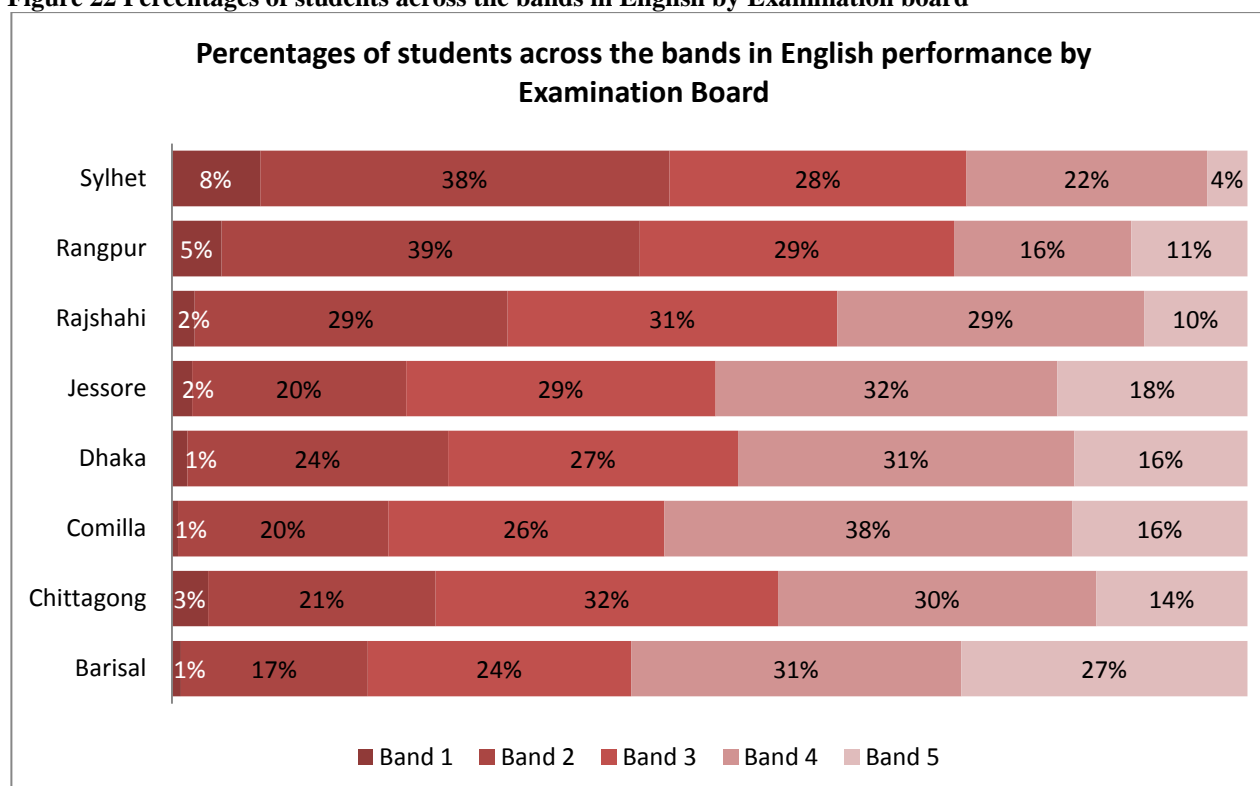
Percentages of students across the bands in English performance by Division/Examination Board

About 27 per cent of students are achieving Band 5 in Barisal Examination Board; however in Sylhet Examination Board only 4 per cent are at that level. In Barisal and Dhaka Examination Boards only 1 per cent of students are in Band 1 but 8 per cent of students in Sylhet are at that level. Further, around 45 per cent of students from Rangpur and Sylhet Examination Boards are achieving in Band 2 or below, which is below expectations for grade 8 level.

Table 20 Percentages of students across the bands in English by Division/Examination board

Examination Board	Band 1%	Band 2%	Band 3%	Band 4%	Band 5%
Barisal	1	17	24	31	27
Chittagong	3	21	32	30	14
Comilla	1	20	26	38	16
Dhaka	1	24	27	31	16
Jessore	2	20	29	32	18
Rajshahi	2	29	31	29	10
Rangpur	5	39	29	16	11
Sylhet	8	38	28	22	4

Figure 22 Percentages of students across the bands in English by Examination board

Percentages of students across the bands in English performance by Examination Board
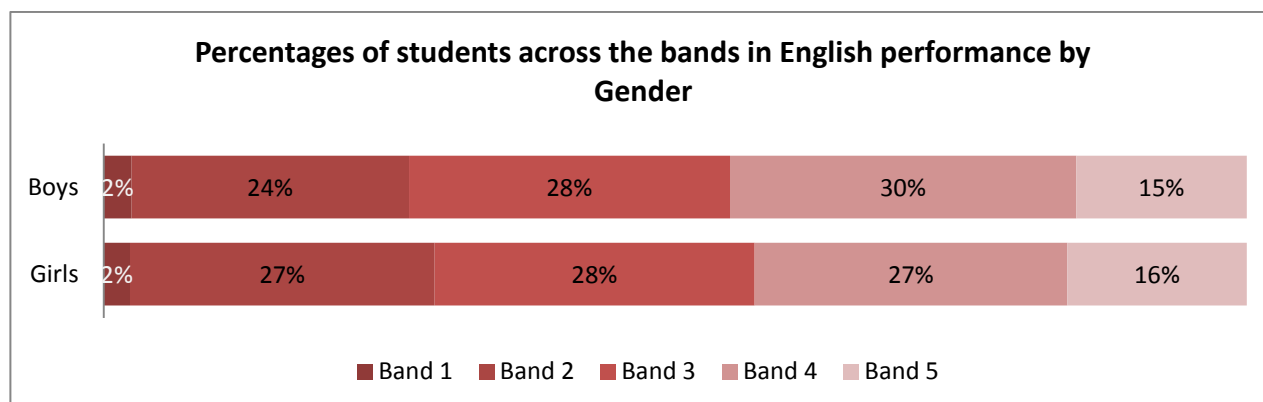
Percentages of students across the bands in English performance by Gender

The percentage of boys and girls across the 5 bands is very similar. Approximately 16 per cent of boys and girls are achieving Band 5 and 2 per cent of boys and girls are at Band 1. This shows that there is gender equity in English performance.

Table 21 Percentages of students across the bands in English by Gender

Gender	Band 1%	Band 2%	Band 3%	Band 4%	Band 5%
Girls	2	27	28	27	16
Boys	2	24	28	30	15

Figure 23 Percentages of students across the bands in English by Gender

Percentages of students across the bands in English performance by School type

About 18 per cent of students are achieving Band 5 in General Education schools however in Madrasah, only 7 per cent of students are at that level. Similarly in General Education schools only 2 per cent of students are at Band 1 but in Madrasah there are 5 per cent of students are at that level.

In Madrasah 39 per cent of students are at Band 2 as compared to 22 per cent in case of General Education schools. Close to a third (31%) of students from General Education schools are in Band 3, compared to 20 per cent of students from Madrasah.

Table 22 Percentages of students across the bands in English by School type

School Type	Band 1%	Band 2%	Band 3%	Band 4%	Band 5%
General Education	2	22	28	31	18
Madrasah Education	5	39	28	20	7

Figure 24 Percentages of students across the bands in English by School type
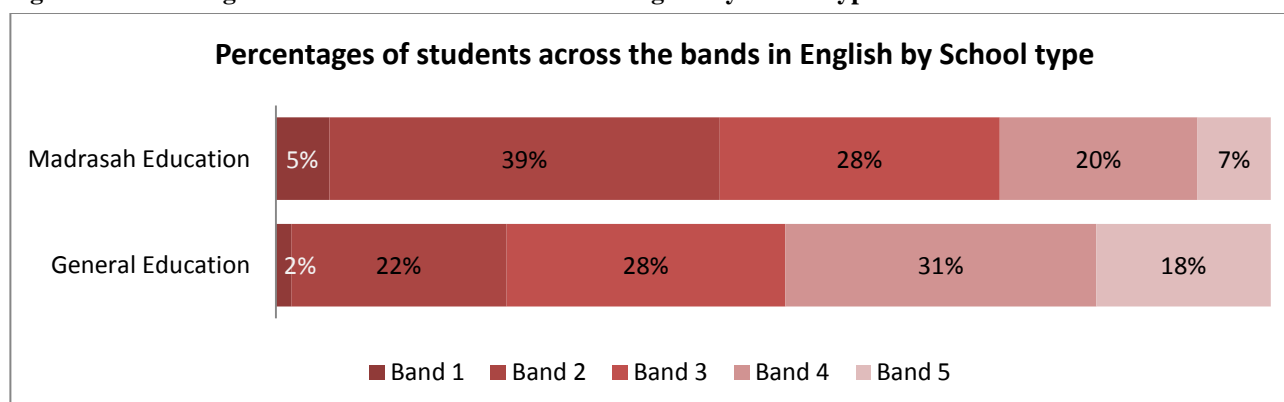
34

Mathematics Performance

Distribution of Mathematics Scale Score (MSS) by Intervention

Table 23 and Figure 25 show the Mathematics performance distribution of students by interventions provided in schools. Performance of students from 'no intervention' schools is also observed to compare the performance of students with other interventions school.

There was small difference between average Mathematics student ability across the intervention types. The lowest average Mathematics ability was found for the 'Additional class' and 'Additional class with reading habit' interventions group with a mean of 297 MSS and the highest average Mathematics ability was found for the 'Additional class new' and 'Reading habit' with a mean of 302 MSS.

While there is small difference in mean performance of students across the four intervention type schools and 'no intervention' schools, a comparison of the distributions shows that the 'Additional class new' intervention school distribution is a slightly narrower range of performance than in other intervention schools.

Table 23 Distribution of Mathematics Scale Score (MSS) by Intervention

Intervention type	5th %tile	25th %tile	50th %tile	75th %tile	95th %tile	Mean	Difference (95th - 5th)
Additional class	261	281	295	312	337	297	75
Reading habit	263	283	300	321	346	302	83
Additional class with reading habit	260	277	292	318	346	297	86
Additional class new	267	288	302	317	335	302	68
No intervention	263	279	297	317	346	300	82

Figure 25 Distribution of Mathematics Scale Score (MSS) by Intervention
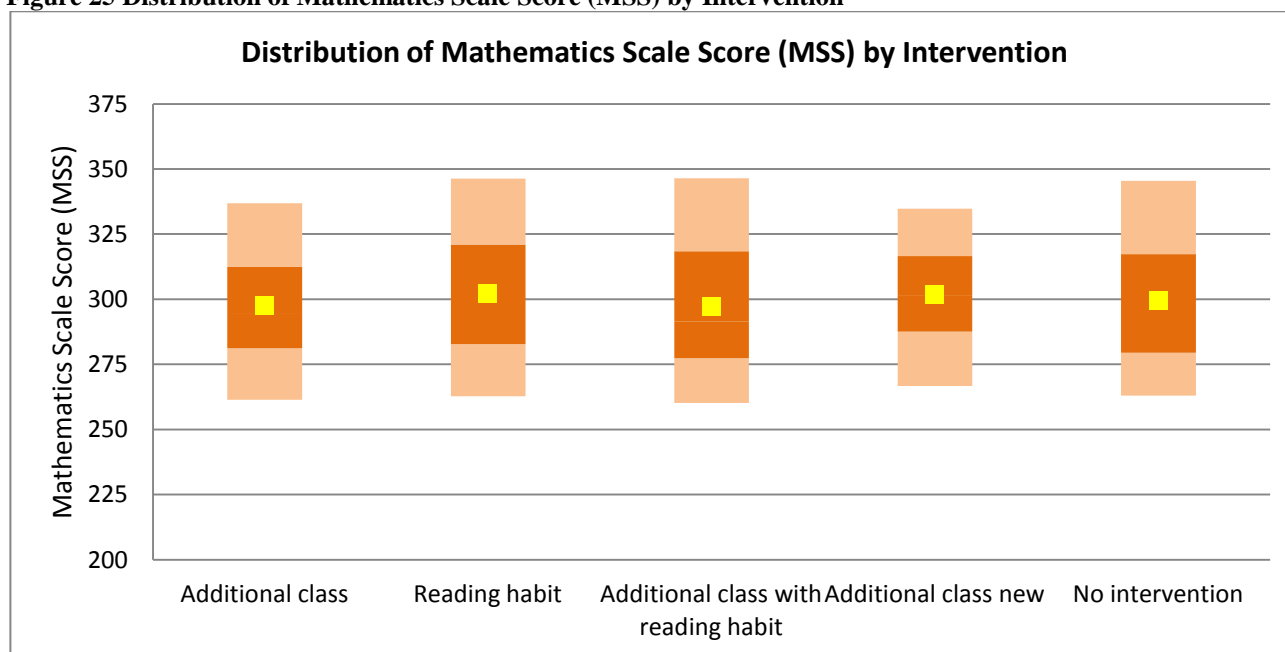
Distribution of Mathematics Scale Score (MSS) by Division/Examination Board

By mean performance, the examination boards fall into three groups: Barisal has the highest mean in mathematics (315 MSS). Dhaka,Jessore (Khulana) and Comilla, which have similar means, form the second group while Chittagong and Rajshahi form the third. Rangpur has a mean performance significantly different from other examination boards, as does Sylhet. The average scale score in Sylhet is the lowest (285 MSS).

The distribution is narrower in Chittagong Examination Board and Barisal has the widest range in distribution. This means that Barisal has the biggest difference between lowest scoring students and the highest scoring students.

Table 24 Distribution of Mathematics Scale Score (MSS) by Division/Examination board

Examination Board	5th %tile	25th %tile	50th %tile	75th %tile	95th %tile	Mean	Difference (95th - 5th)
Barisal	268	294	320	335	355	315	87
Chittagong	264	279	293	308	332	295	68
Comilla	268	284	296	317	341	300	73
Dhaka	264	283	301	320	346	302	82
Jessore	264	283	300	319	345	302	81
Rajshahi	261	280	295	311	336	296	74
Rangpur	260	277	289	306	331	292	71
Sylhet	252	270	281	300	327	285	75

Figure 26 Distribution of Mathematics Scale Score (MSS) by Division/Examination board

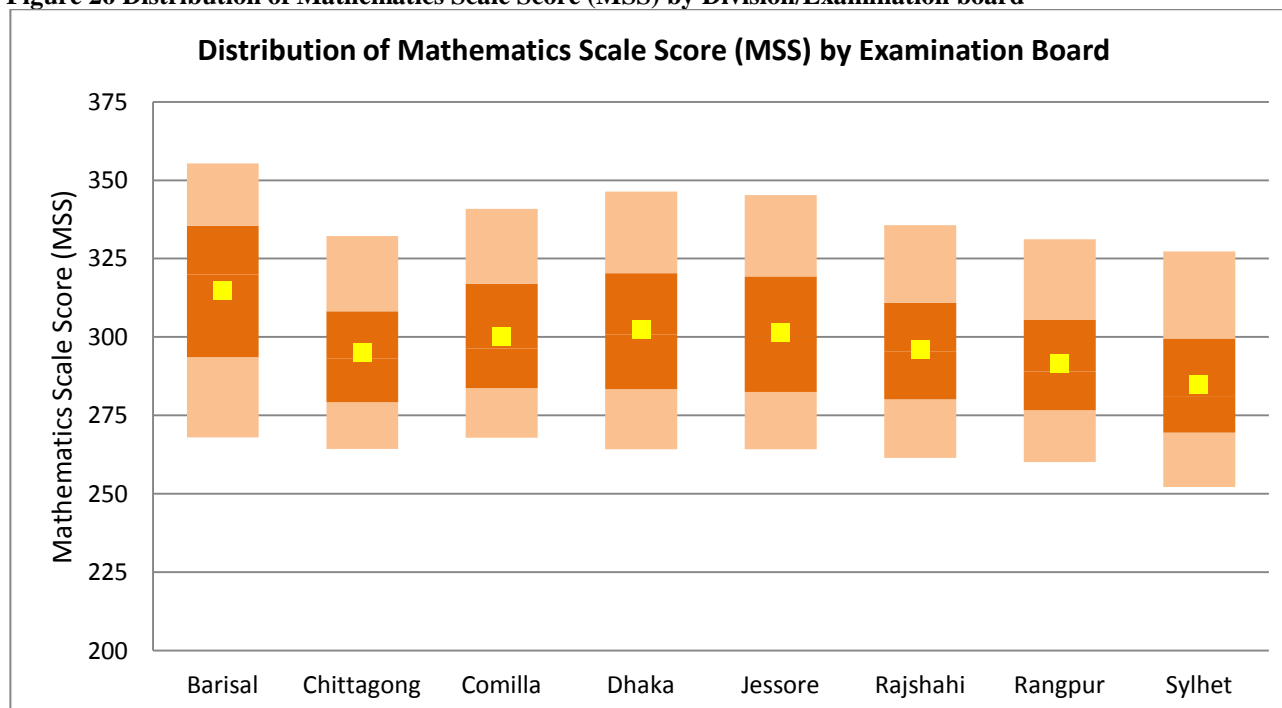Distribution of Mathematics Scale Score (MSS) by Examination Board

Distribution of Mathematics Scale Score (MSS) by Gender

The average Mathematics Scale Scores (MSS) for boys is 303 and for girls 297 MSS. The difference is statistically significant in favour of boys. This difference is considered moderate.

The range of performance was greater for girls than for boys, showing a greater disparity in performance between girls than between boys.

Table 25 Distribution of Mathematics Scale Score (MSS) by Gender

Gender	5th %tile	25th %tile	50th %tile	75th %tile	95th %tile	Mean	Difference (95th - 5th)
Girls	260	277	294	315	344	297	84
Boys	266	284	301	320	344	303	78

Figure 27 Distribution of Mathematics Scale Score (MSS) by Gender
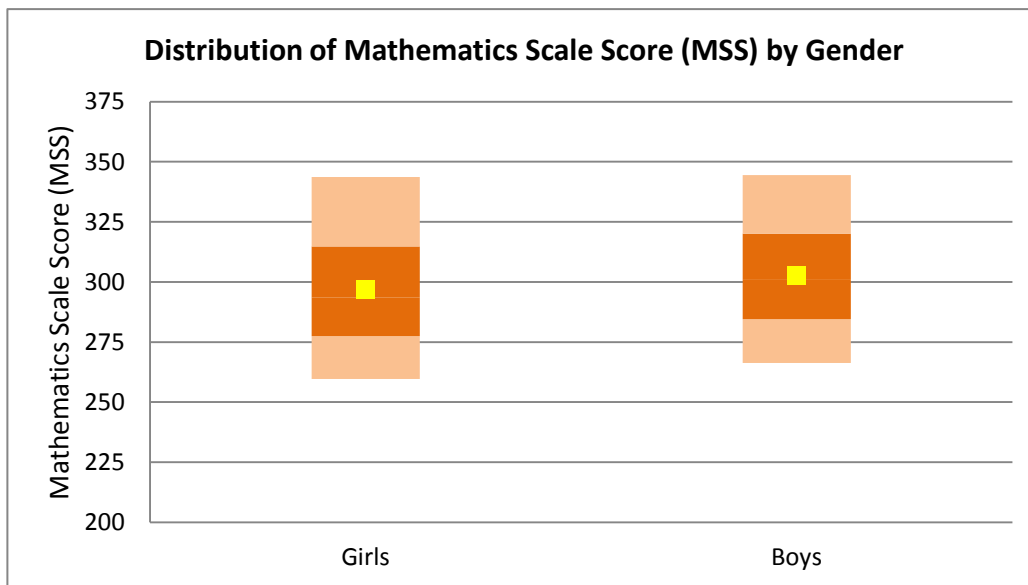
Distribution of Mathematics Scale Score (MSS) by School Type

Table 26 and Figure 28 display the Mathematics performance distribution of students in General Education schools and Madrasah.

The average Mathematics Scale Score (MSS) is 302 for students from General Education schools and 292 for students from Madrasah. This is considered a moderate to large difference between the two groups.

While the performance of students from General Education schools is higher than Madrasah, the distribution is similar.

Table 26 Distribution of Mathematics Scale Score (MSS) by School type

School Type	5th %tile	25th %tile	50th %tile	75th %tile	95th %tile	Mean	Difference (95th - 5th)
General Education	265	284	300	320	345	302	80
Madrasah Education	258	274	288	308	339	292	81

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Figure 28 Distribution of Mathematics Scale Score (MSS) by School type

Distribution of Mathematics Scale Score (MSS) by School Type
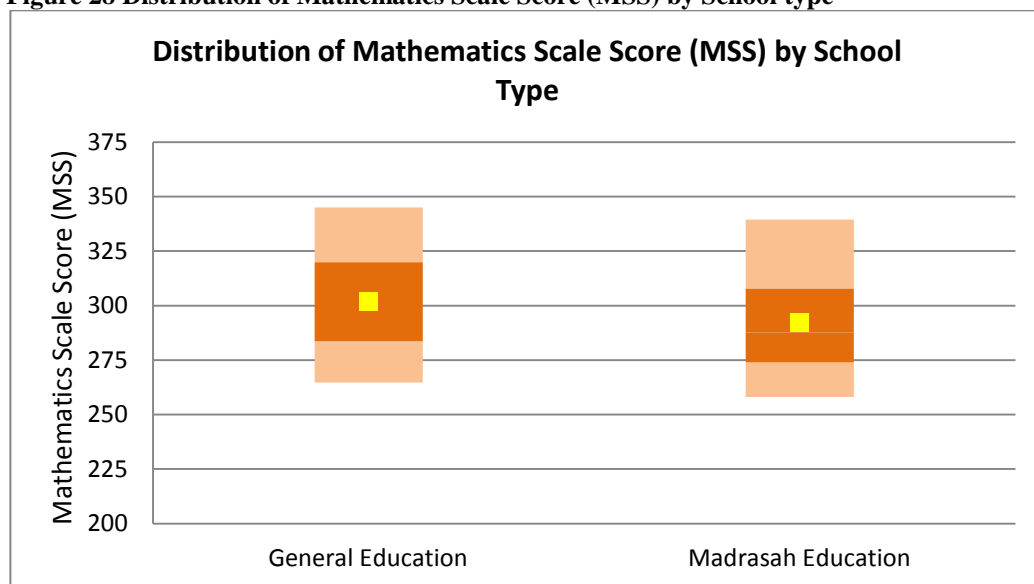
What students know and can do in Mathematics

The Mathematics tests have questions that vary in difficulty from ones that test basic skills (solving simple single-step problems, identifying fractions, simple shapes etc) to questions that require reasonably advanced skills (solve questions on graphs, use algebra to solve problems in geometry).

The coverage of content areas is as follows:

NUMBERS (whole numbers, percentages, ratio and proportion, fractions and decimals including recurring decimals)

- Use of the four fundamental operations on whole numbers, fractions and decimals, simplifying expressions, applications of operations, percentages and the unitary method

MEASUREMENT

- Use of measurement in daily life, conversion between units of measure
- Use of perimeter, area, volume and capacity to solve problems

SHAPE AND SPACE

- Identification of shapes, knowledge of properties of triangles, Pythagoras theorem, applying properties to solve problems

DATA

- Knowledge of central tendency (mean, median and mode), spread (range), reading and interpreting graphs

ALGEBRA

- Evaluation of an algebraic expression, modelling of a linear equation for a given situation, factorise and simplify algebraic expressions, solve linear equations in one variable, locate points on a coordinate plane.

Thirty six questions were included in the final test form and all questions are classified according to the content and the cognitive domain addressed by each question.

Table 27 shows the classification of questions according to content and cognitive skills required to answer the questions.

Table 27 Mathematics questions classified by content and cognitive skills

Subject	Sub Strands	Total Items	Knowledge	Understanding	Application
Mathematics	Algebra	**6**	1	5	0
	Data	**4**	1	2	1
	Geometry	**6**	1	3	2
	Measurement	**7**	1	4	2
	Number	**13**	3	5	5
Total Items		**36**	**7 (19%)**	**19 (53%)**	**10 (28%)**

Rasch analysis produces a map of the test questions in order of difficulty, and scales students' achievement against the questions in the test. In Figure 29, the crosses on the left represent thestudents who sat the test and the sentences on the right describe the skill required to answer the questions of the test.

Mathematics Progress Map

The progress map of mathematics is empirically based, that is, it is based on student performance on the test. The purpose of the progress map is to describe growth in student achievement. The skill descriptions shown on the progress map are derived from some, but not all of the mathematics questions.

Figure 29 Mathematics progress map

```
===================================================================================================
Bangladesh Learning Assessment 2012 MATHEMATICS Person Item Map
===================================================================================================
  MSS                                                      |
                                                         X|
                                                        XX|
                                                         X|
                                                         X|
                                                      XXXX|
                                                       XXX|
                                                  XXXXXXX|
                                                 XXXXXXXXX|
                                                  XXXXXXXX | Solve problems on ratio and proportion in some basic areas of real life situations
                                               XXXXXXXXXXX |
                                               XXXXXXXXXXX |
 335                                    XXXXXXXXXXXXXXXXXXX | Solve problems related to angle sum property of triangle
                                 XXXXXXXXXXXXXXXXXXX |
                               XXXXXXXXXXXXXXXXXXXXX |
                           XXXXXXXXXXXXXXXXXXXXXXXXX |
                             XXXXXXXXXXXXXXXXXXXXXXX | Identify process to calculate the perimeter of a rectangle
                          XXXXXXXXXXXXXXXXXXXXXXXXXX | Identify a true statement on areas of triangles with equal bases between parallel lines
                         XXXXXXXXXXXXXXXXXXXXXXXXXXX | Identify the relation between a percentage and a ratio
                       XXXXXXXXXXXXXXXXXXXXXXXXXXXXX | Identify a true statement given some geometrical conditions
 309                  XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX | Convert a recurring decimal to fraction. Calculates area of triangle
                    XXXXXXXXXXXXXXXXXXXXXXXXXXXXXX |
                  XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX | Convert metres to centimetres; identify square number closest to 20; apply percentage
                XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX | Identify Pythagoras Theorem;calculate mean; factorize algebraic expressions
                 XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX | Calculate the volume of a cuboid
 290            XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX | Find ratio; solve linear equation, identify true statement about a quadrilateral
              XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX | Identify a fraction; add two fractions; match quadrilateral with given dimensions
           XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX | Identify a coordinate point
             XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX | Calculate averages; convert fractions to decimals; evaluate algebraic expression
             XXXXXXXXXXXXXXXXXXXXXXXXXXXXXX |
               XXXXXXXXXXXXXXXXXXXXXXXXX | Calculate area of rectangles; identify simplification of equation of form ax + b = cx + d
 266               XXXXXXXXXXXXXXXXXXXX |
                XXXXXXXXXXXXXXXXXXXXXXXXX | Calculate amount of expenditure in transactions
                   XXXXXXXXXXXXXXXXX |
                     XXXXXXXXXXX | Multiply two decimal numbers
                    XXXXXXXXXXX |
                       XXXXXX |
                        XXX|
                         XX|
                         XX|
                         XX|
                          X|
                          X|
===================================================================================================
Each 'X' represents 11.6 cases
===================================================================================================
```

The easiest questions require the students to use whole numbers to solve one-stage problems and multiply decimal numbers.

$$৩.১ \times ৭.২১ = কত?$$

রহমান ১৬ টাকা কে.জি. দরে ৪০০ কে.জি. চাল কেনে।

রহমানকে কতটাকা খরচ করতে হয়?

সমাধান কর।

|	
ক	২১.৩৫১
খ	২১.৬৩
গ	২২.৩৫১
ঘ	২৮.৮৪

These questions were answered correctly by many students and so the descriptors appear at the bottom of the progress map.

The descriptor for the hardest question is located at the top right side of the progress map.

৩৩ জন শিক্ষার্থীর প্রত্যেকে একবার করে হলুদ, নীল, লাল এবং সবুজ —এই চারটি রঙের মধ্যে একটি করে নির্বাচন করল।

নিচের লেখচিত্রে শিক্ষার্থীরা কেমনভাবে রঙ নির্বাচন করেছে —তা দেখানো হয়েছে, কিন্তু সেখানে অক্ষ-এর মান উল্লেখ করা হয় নি।

| হলুদ | নীল | লাল | সবুজ |
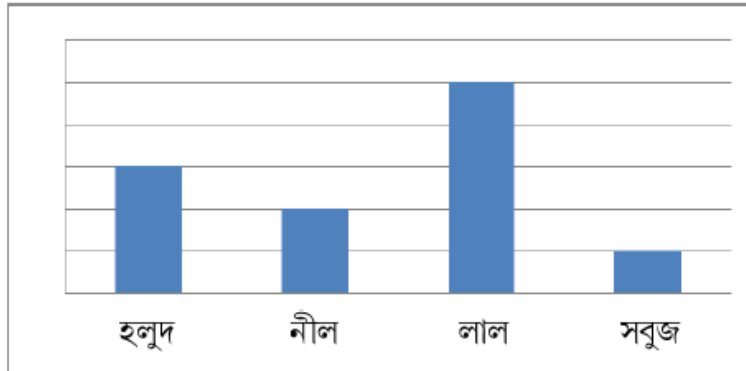
কত জন শিক্ষার্থী লাল নির্বাচন করেছে?

সমাধান কর।

To answer such questions correctly, students *solve problems involving graphs in unfamiliar contexts*. Only 8 per cent of students correctly answered such questions.

Facilities for all Mathematics questions

The percentage of students who answered each question correctly is provided in the following table:

Table 28 Per cent correct answers: Mathematics

| MSS	Band	Strand	Skill	ID	Descriptor	Percent correct
275	2	Algebra	Understanding	q30	Identify simplification of an equation of the form ax + b = cx + d	71.1
279	2	Algebra	Understanding	q21	Identify the algebraic equation corresponding to a given situation	67.4
282	2	Algebra	Understanding	q18	Evaluate the value of a algebraic expression by substitution	60.6
283	2	Algebra	Knowledge	q15	Identify which quadrant a coordinate point lies	64.9
291	3	Algebra	Understanding	q23	Recognise the solution of a linear equation where the solution is a negative integer	59.6
297	3	Algebra	Understanding	q22	Factorize of algebraic expressions	54.5
291	3	Data	Understanding	q28	Identify which average will change with new data	54.9
297	3	Data	Knowledge	q11	Calculate the mean of given numbers	54.3
300	3	Data	Understanding	q29	Solve problems using the mean	50.5
348	5	Data	Application	q36	Solve problems on ratio and proportion in some basic areas of real life situations.	8.8
289	2	Geometry	Understanding	q10	Identify which shape matches the dimensions of a quadrilateral	59.5
292	3	Geometry	Understanding	q33	Identify a true statement about a quadrilateral with one diagonal being perpendicular bisector of the other	55.1
300	3	Geometry	Knowledge	q07	Identify the correct relationship between sides in a right triangle	51.9
312	4	Geometry	Understanding	q34	Identify a true statement given some geometrical conditions	39.9
318	4	Geometry	Application	q32	Identify a true statement on areas of triangles with equal bases and between two parallel lines.	35.2
336	5	Geometry	Application	q35	Solve problems related to angle sum property of triangle	16.2
274	2	Measurement	Understanding	q25	Calculate area of rectangles with changed dimensions	71
280	2	Measurement	Application	q08	Calculate a basic average speed	60.1
294	3	Measurement	Application	q26	Calculate the volume of a cuboid	46.3
297	3	Measurement	Knowledge	q14	Convert units between volume and capacity	53.7
302	3	Measurement	Understanding	q04	Convert metres into centimetres	50.2
307	3	Measurement	Understanding	q27	Calculate the area of a triangle with given dimensions	40.3
322	4	Measurement	Understanding	q05	Identify process to calculate the perimeter of a rectangle	34
259	1	Number	Knowledge	q01	Multiply two decimal numbers	81.5
265	1	Number	Application	q17	Calculate the amount of expenditure in transactions	73.6
281	2	Number	Application	q09	Calculate a basic average rate	60
281	2	Number	Application	q13	Convert fractions to decimals	67
288	2	Number	Knowledge	q03	Add two unlike fractions	62.4
288	2	Number	Knowledge	q16	Identify a fraction of a kilogram equal to a given amount of grams	60.7
291	3	Number	Knowledge	q02	Subtract decimal numbers	59.6
292	3	Number	Application	q24	Find ratio between different quantities in a collection	58
300	3	Number	Understanding	q06	Identify a squared number closest to 20	52.1
301	3	Number	Application	q19	Apply percentages to solve daily life situations.	50.8
309	4	Number	Understanding	q31	Identify formula to calculate profit / loss percentage	42.9
310	4	Number	Knowledge	q20	Convert a recurring decimal to a simplified fraction	42.6
317	4	Number	Understanding	q12	Identify the relation between a percentage and a ratio	38.4

Analysis of questions by content and cognitive skills

The analysis by content and cognitive skills reveals that Mathematics test questions had a range of difficulty; some knowledge questions were as difficult as, or more difficult than application or understanding questions, and questions from the content areas also showing a range of difficulty. On-balance, geometry and data questions seem to be harder than algebra measurement and number questions. Number questions have a wide range of difficulty, providing some of the easiest as well as the more difficult questions on the test. Algebra questions have a relatively narrow range of difficulty and are not among the harder questions on the text. This may be a reflection that a set of easy algebra questions were chosen for the test or it may mean that Bangla curriculum has a strong focus on algebra and that students have developed greater proficiency in algebra.

Figure 30, which shows this information, has two displays: the left-hand display shows the distribution of student achievement in Mathematics (far left band), the question locations (or difficulties) for the Mathematics test separated by cognitive skills, as well as the reporting bands. The display on the right shows the distribution of student achievement in Mathematics (far left band) and the question location (or difficulties) for the Mathematics test separated by curriculum content.

Note: Where question difficulties are the same within a content or cognitive skill, the question locations appear as overlayed dots.

Figure 30 Mathematics questions by content and cognitive skills & student distribution
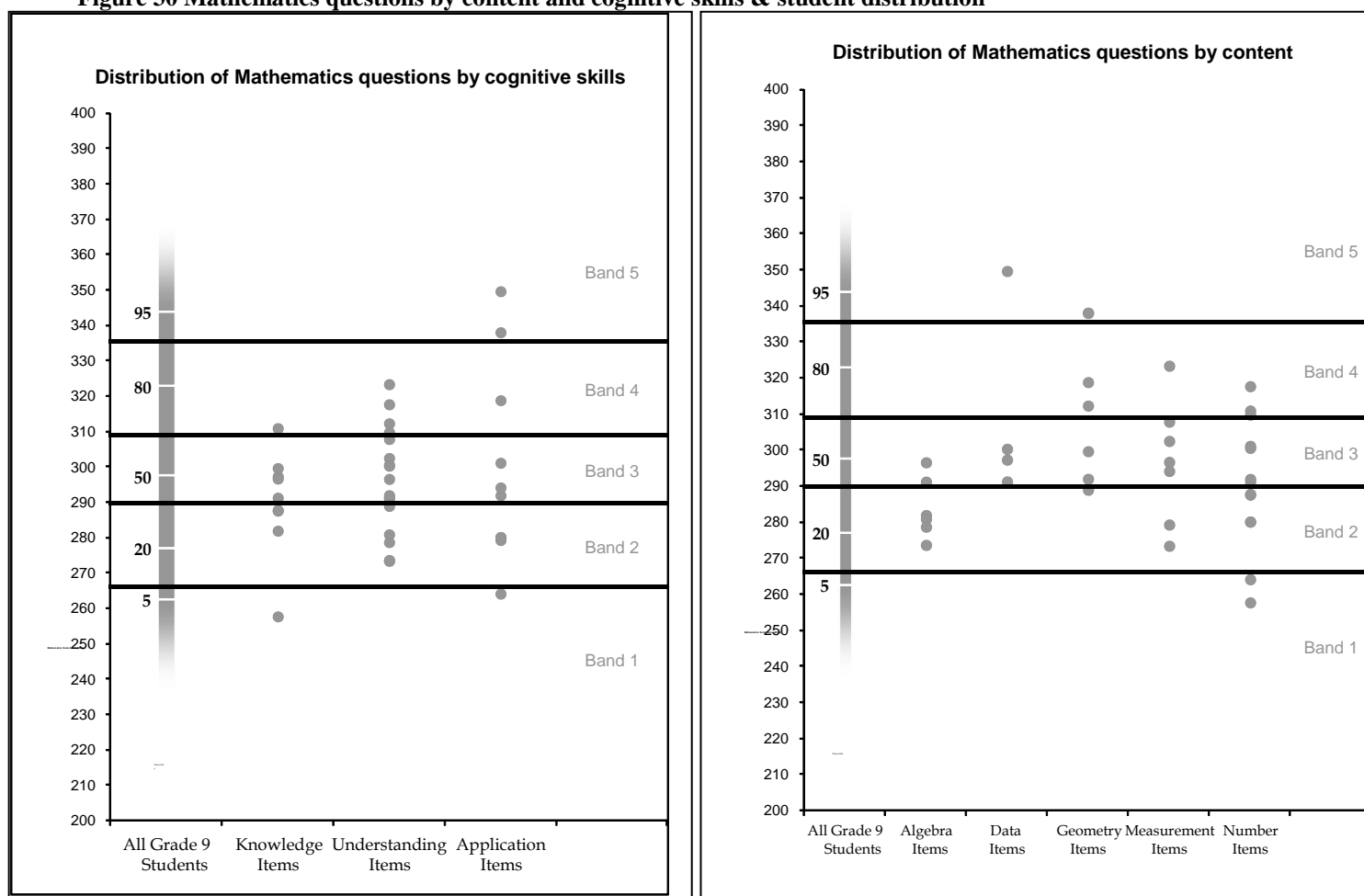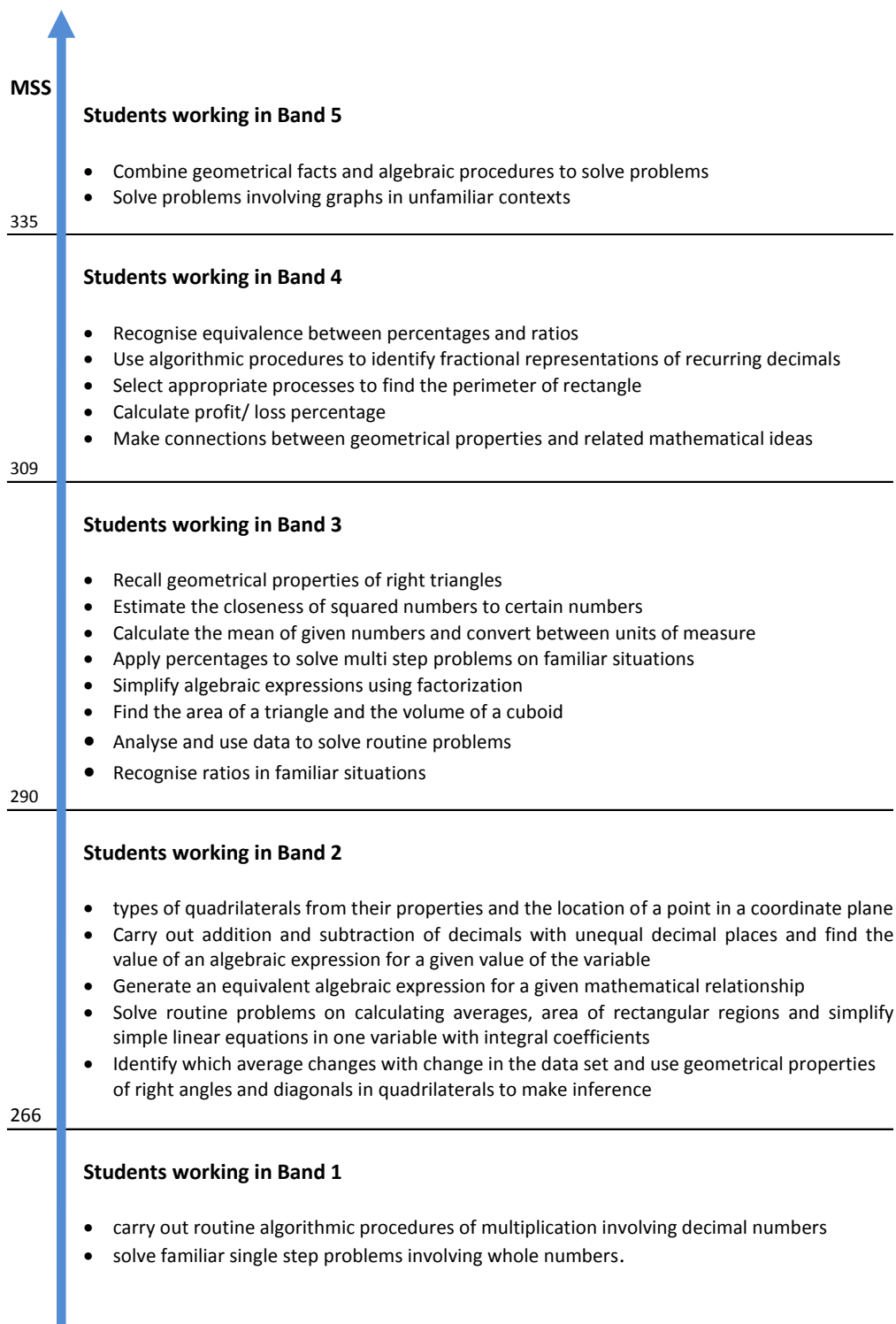
Mathematics Band Descriptors

The mathematics results have been mapped to bands that align broadly with curriculum objectives and are presented descriptively, in tables and graphically. They provide a more generalised picture of development in mathematics and are useful as a frame of reference for monitoring growth.

Figure 31 Mathematics band descriptors

MATHEMATICS BAND DESCRIPTORS (BANGLADESH SECONDARY 2012)
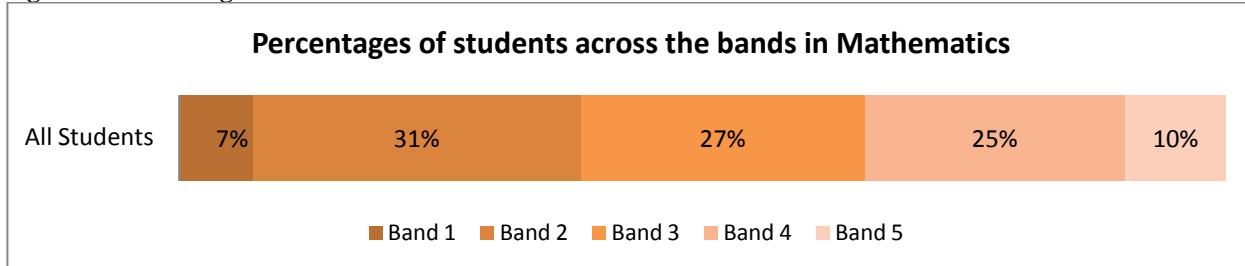**(with cut scores on Mathematics scale)**

MSS

Students working in Band 5

- Combine geometrical facts and algebraic procedures to solve problems
- Solve problems involving graphs in unfamiliar contexts

335

Students working in Band 4

- Recognise equivalence between percentages and ratios
- Use algorithmic procedures to identify fractional representations of recurring decimals
- Select appropriate processes to find the perimeter of rectangle
- Calculate profit/ loss percentage
- Make connections between geometrical properties and related mathematical ideas

309

Students working in Band 3

- Recall geometrical properties of right triangles
- Estimate the closeness of squared numbers to certain numbers
- Calculate the mean of given numbers and convert between units of measure
- Apply percentages to solve multi step problems on familiar situations
- Simplify algebraic expressions using factorization
- Find the area of a triangle and the volume of a cuboid
- Analyse and use data to solve routine problems
- Recognise ratios in familiar situations

290

Students working in Band 2

- types of quadrilaterals from their properties and the location of a point in a coordinate plane
- Carry out addition and subtraction of decimals with unequal decimal places and find the value of an algebraic expression for a given value of the variable
- Generate an equivalent algebraic expression for a given mathematical relationship
- Solve routine problems on calculating averages, area of rectangular regions and simplify simple linear equations in one variable with integral coefficients
- Identify which average changes with change in the data set and use geometrical properties of right angles and diagonals in quadrilaterals to make inference

266

Students working in Band 1

- carry out routine algorithmic procedures of multiplication involving decimal numbers
- solve familiar single step problems involving whole numbers.

Percentages across the bands in Mathematics for all Students

Table 29 Percentages of students across the bands in Mathematics for all Students

Overall	Band 1%	Band 2%	Band 3%	Band 4%	Band 5%
All Students	7	31	27	25	10

Figure 32 Percentages of students across the bands in Mathematics for all Students

The average scale score for mathematics is 300 MSS which is in Band 3.

A small percentage (10%) of students demonstrated Band 5 skills.

These students demonstrate a well-developed understanding of mathematical content and the capacity to show higher mathematical skills. They are also likely to use mathematics as a problem solving tool to solve problems unfamiliar to them.

A quarter (25%) of the students scored within Band 4.

They can apply strategies and solve familiar word problems using mathematical operations, are aware of correct mathematical processes and have a good understanding of percentages and decimal numbers. They have a good understanding of perimeter and areas of 2-D shapes and also have a good knowledge and understanding of properties of known 2D shapes.

Over a quarter (27%) of the students have skills and understanding associated with Band 3

Students at this level are likely to demonstrate mathematical operations correctly and solve familiar word problems involving two operations. They have an understanding of place value in decimals and can do mathematical operations of decimals. They have a basic understanding of percentages and can square numbers and round off numbers. They can convert between units of measurement and solve linear equation in one variable and are also familiar with Pythagoras Theorem. They can calculate areas of triangles and volume of cuboids, mean of numbers and also use the mean to solve problems.

Nearly one third (31%) of the students are working within Band 2.

Students at this level can identify representation of fractions, do mathematical operations of fractions and convert between fractions and decimals. They have knowledge of properties of a quadrilateral and can differentiate between quadrilaterals using properties. They can identify the algebraic representation of a situation given, evaluate an algebraic expression and simplify linear equation in one variable. They can also identify the location of a point on the Cartesian coordinate plane.

A small percentage (7%) of the students is working within Band 1.

Students in this band are likely to carry out routine single stage problems. They can handle decimal numbers using algorithmic processes.

Percentages of students across the bands in Mathematics by Intervention

Nearly 12 per cent of students are achieving Band 5 in 'Additional class with reading habit' intervention schools. However in 'Additional class new' intervention schools 4 per cent of students are at that level. Nearly half of the students (47%) are at Bands 1 and 2 or in 'Additional class with reading habit' intervention schools and in 'Additional class new' intervention schools, 70 per cent of students are achieving Band 3 and higher.

Table 30 Percentages of students across the bands in Mathematics by Intervention

Intervention	Band 1%	Band 2%	Band 3%	Band 4%	Band 5%
No intervention	7	32	25	25	10
Additional class new	4	25	32	34	4
Additional class with reading habit	10	37	23	18	12
Reading habit	6	29	27	27	11
Additional class	6	33	31	23	6

Figure 33 Percentages of students across the bands in Mathematics by Intervention

Percentages of students across the bands in Mathematics by Intervention
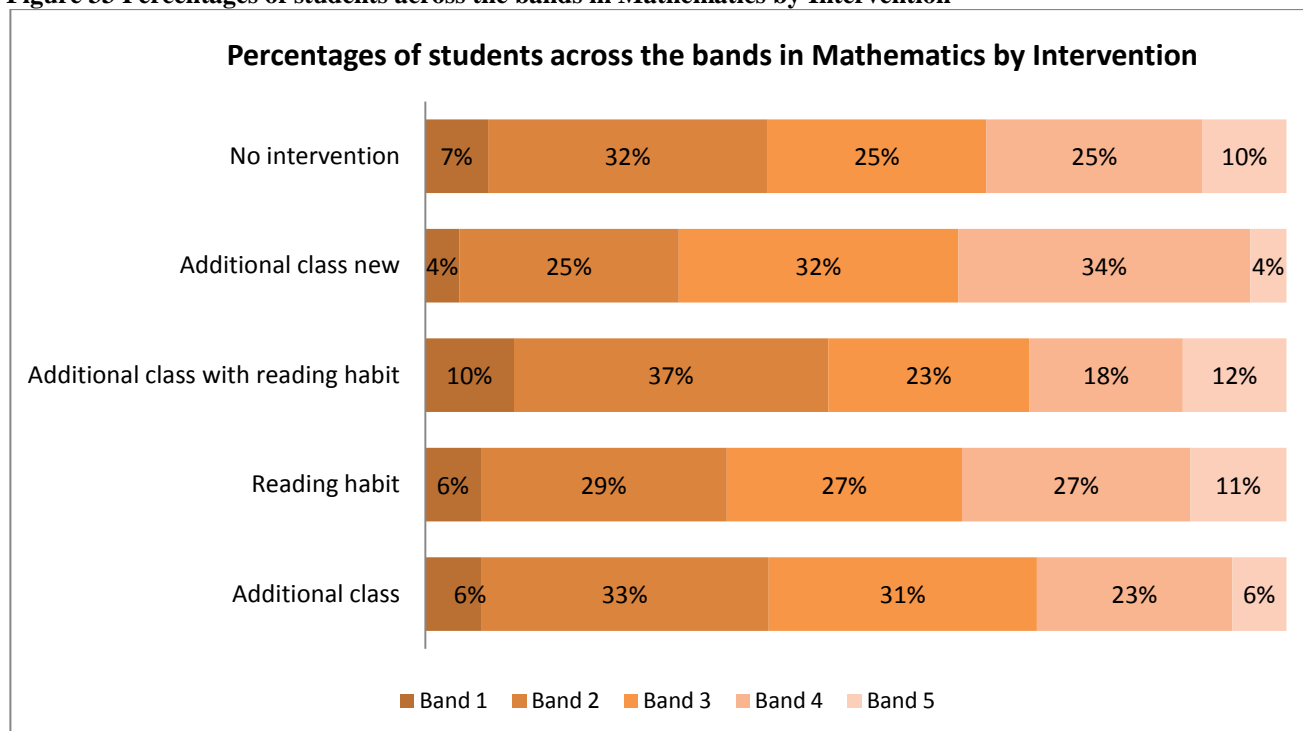
## Percentages of students across the bands in Mathematics performance by Division/Examination Board

About 25 per cent of students are achieving Band 5 in Barisal Examination Boards however in Sylhet Examination Board there is only 2 per cent and Rangpur Examination Board 3 per cent of students are at that level. In Barisal Examination Boards only 4 per cent of students are at Band 1 but 21 per cent of students in Sylhet are at that level. Further, nearly 43 to 44 per cent of students from Rangpur and Sylhet Examination Boards are in Band 2, which is below the expected standard for Grade 8.

Table 31 Percentages of students across the bands in Mathematics by Division/Examination board

Examination Board	Band 1%	Band 2%	Band 3%	Band 4%	Band 5%
Barisal	4	18	18	35	25
Chittagong	6	38	33	21	3
Comilla	4	30	36	21	9
Dhaka	6	28	27	28	11
Jessore	6	30	26	27	11
Rajshahi	8	33	31	23	5
Rangpur	9	43	28	17	3
Sylhet	21	44	20	13	2

Figure 34 Percentages of students across the bands in Mathematics by Division/Examination board

Percentages of students across the bands in Mathematics by Examination Board
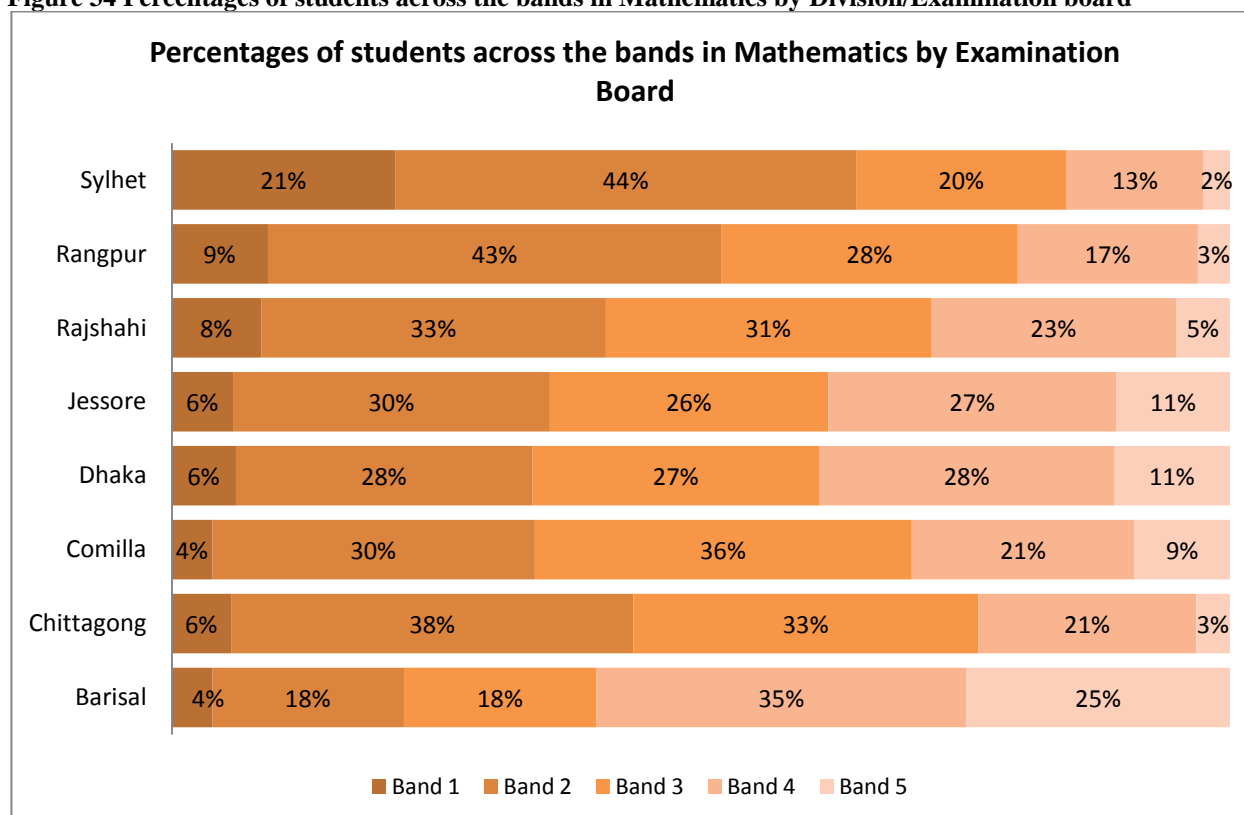
Percentages of students across the bands in Mathematics performance by Gender

About 10 per cent of boys and 9 per cent of girls are achieving Band 5. Nearly 5 per cent of boys are at Band 1 but there are 9 per cent of girls at that level. More percentage of boys are achieving higher bands (Bands 4 & 5 together) compared to girls.

Table 32 Percentages of students across the bands in Mathematics by Gender

Gender	Band 1%	Band 2%	Band 3%	Band 4%	Band 5%
Girls	9	35	25	22	9
Boys	5	28	29	28	10

Figure 35 Percentages of students across the bands in Mathematics by Gender
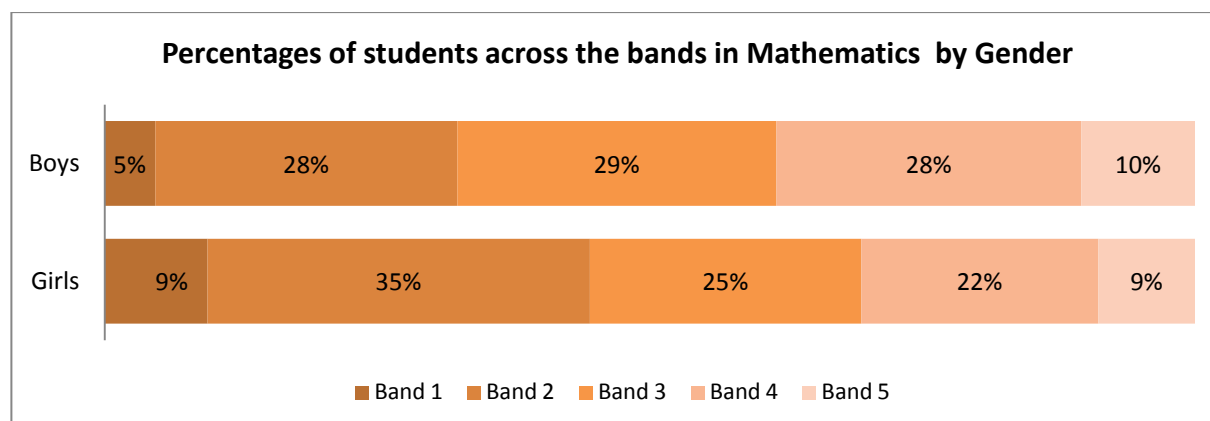
Percentages of students across the bands in Mathematics performance by School type

About 10 per cent of students are achieving Band 5 in General Education schools. However in Madrasah, 7 per cent of students are at that level. In General Education schools only 6 per cent of students are at Band 1 but in Madrasah there are 12 per cent of students at that level.

In Madrasah, 42 per cent of students are at Band 2 as compared to 29 per cent in case of General Education schools. Twenty seven per cent of students from General Education schools are in Band 4, compared to 17 per cent of students from Madrasah.

Table 33 Percentages of students across the bands in Mathematics by School type

School Type	Band 1%	Band 2%	Band 3%	Band 4%	Band 5%
General Education	6	29	28	27	10
Madrasah Education	12	42	22	17	7

Figure 36 Percentages of students across the bands in Mathematics by School type

48
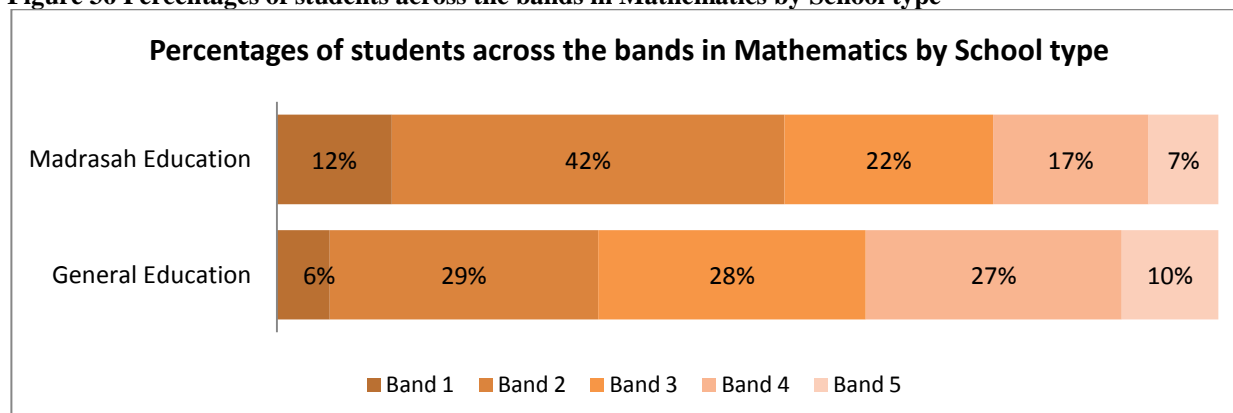
Student background and school management factors

Certain background variables are known to have a big impact on the quality teaching and learning. Parental socio-economic status, the education and training level of parents and teachers, the quality of school facilities as well as student attendance and motivation have been shown to influence student learning outcomes.

To collect information on key background variables that may impact on student learning, questionnaires were given to students who participated in the LASI, head teachers and teachers of schools selected for the testing programme.

Head Teacher Questionnaire

The head teachers of each of the 303 schools completed the questionnaire. The questionnaire included questions about teacher vacancies, overcrowded classrooms and lack of operating funds.

- **Teacher vacancies** are considered a serious problem by 28 per cent of head teachers and 68 per cent consider it no problem or only a minor problem.
- **Over-crowded classrooms** are considered a serious problem by 26 per cent of head teachers and 69 per cent consider it no problem or only a minor problem.
- Head teachers were divided on the issue of whether a **lack of operating funds** was a major problem. It was regarded as a major problem by 47 per cent and just a minor or no problem at all by 49 per cent.

School Management Committees (SMC)

Autonomous schools that are responsive to local needs are considered to be more effective schools. If schools are to have greater control over institutional operations, then systems need to be in place for collaborative decision making and the SMC is a key mechanism for supporting local decision making.

Just over 40 per cent of Head teachers reported they had attended between 1 to 4 SMC meetings and 42 per cent of school head teachers had attended between 5 to 8 SMC meetings. Approximately 3 per cent reported that they had attended none and 14 per cent reported that they had attended nine or more.

The Junior School Certificate (JSC) & Junior Dakhil Certificate (JDC)

Head teachers reported high pass rates for JSC and JDC. These averaged 82 per cent and were skewed towards to the top of the distribution. Pass rates of 60 per cent or less were reported by only 9 per cent of school head teachers. Mean achievement in all three LASI subjects did not vary significantly according to reported pass rates categories.

Subject Teacher Questionnaire

Recent studies have suggested that teachers exert a significant influence on student learning and accordingly, emphasis on better teacher quality is a common feature of all reforms. Countries with high quality education systems like Finland and South Korea recruit elite graduates to teaching and pay them well. Efforts to improve education for all students therefore involve identifying the characteristics of effective teachers.

Subject teachers in the 2012 LASI were therefore asked about their qualifications. In 86 per cent of the 303 schools that participated in the 2012 LASI, the subject teacher questionnaire was answered by three subject teachers. In the remaining 14 per cent of schools, four or five subject teachers responded. The total number of responding teachers was 974. They reported the following levels of qualification:

- 72% - Graduate qualifications
- 23% - Masters qualifications
- 5% - HSC qualifications
- 76% - Bachelor of education degree
- 42% Specific subject based training in 2011.
- 37% - Received SSC teacher incentive awards from SEQAEP in either 2010 or 2011.

Student questionnaire

Attendance

Students were asked about their attendance over the month of June, 2012. Students reported good levels of attendance, with 61 per cent reporting that during June 2012 they had been absent for between 1 and 5 days; 19 per cent reported they had no absences during that time and 14 per cent of students indicated being absent for 5 or more days in June 2012.

Table 34 Days absent

Days absent June 2012	Frequency	Percent
0 days	1551	18.8
1-5 days	5031	60.9
5 or more days	1133	13.7
Missing	541	6.6
Total	8256	100.0

The association between attendance and achievement was then investigated. Student achievement was slightly higher for students who reported being absent for 0 days and slightly lower for student who indicated being absent for 5 or more days. This pattern occurred in all three subjects.

Figure 37 Mean achievement by days absent
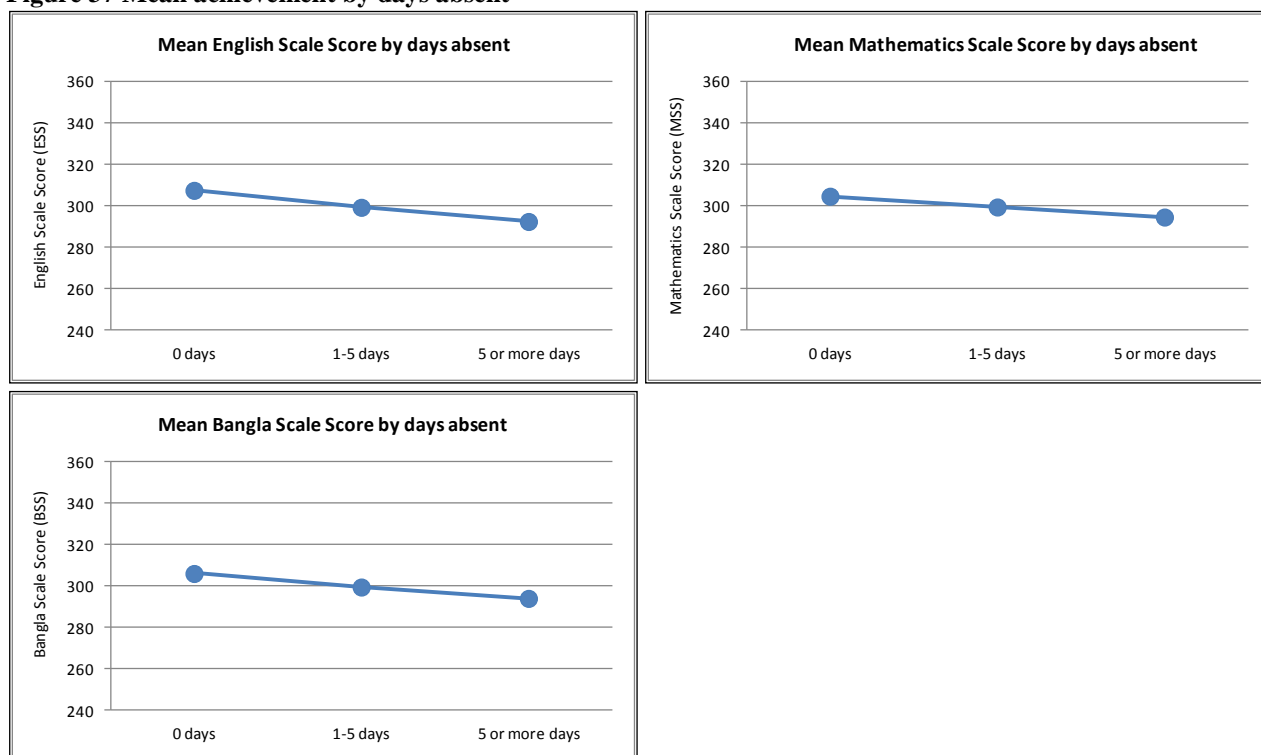
Financial Support

There are a number of programmes in Bangladesh designed to support children's participation in school by mitigating effects of extreme poverty. The Proxy Means Test (PMT) and tuition waivers are two such programmes. Thirty nine per cent of students tested in the 2012 LASI indicated they receive PMT stipend and 17 per cent of students reported that they receive tuition waivers.

A small per cent (9%) indicated they receive both PMT stipend and tuition waivers, while 51 per cent indicated they receive neither PMT stipend nor tuition waivers.

Table 35 Financial support

PMT stipend

PMT stipend	Frequency	Percent
Yes	3202	38.8
No	4920	59.6
Missing	134	1.6
Total	8256	100.0

Tuition waiver

Tuition waiver	Frequency	Percent
Yes	1396	16.9
No	6442	78.0
Missing	418	5.1
Total	8256	100.0

PMT stipend and tuition waiver

		Tuition waiver			
		Yes	No	Missing	**Total**
PMT stipend	Yes	783 (9%)	2190 (27%)	229	3202
	No	576 (7%)	4205 (51%)	139	4920
	Missing	37	47	50	134
	Total	1396	6442	418	8256

SEQAEP Intervention

Thirty nine per cent of students reported attending in the additional class intervention operating under SEQAEP 2011. (This slightly varied from the achievement data information where around 32 per cent of students indicated attending either form of additional class intervention.) The mean and distribution of achievement did not vary significantly in any subject according to additional classes interventions.

Table 36 Additional class in 2011

Additional class in 2011	Frequency	Percent
Yes	3178	38.5
No	4927	59.7
Missing	151	1.8
Total	8256	100.0

Incentive awards

Eight per cent of students received Incentive awards. This group's achievement was significantly higher than the group who did not receive incentive awards.

- For Bangla, mean student achievement was 309.4 BSS for those who received incentive awards and 299.3 BSS for those who did not.

- For English, mean student achievement was 308.1 ESS for those who received incentive awards and 299.1 ESS for those who did not.
- For Mathematics, mean student achievement was 306.2 MSS for those who received student incentive awards and 299.4 MSS for those who did not.

Parents' level of education

There is significant research shows that parents' education level and mothers' education level are particularly highly correlated with student achievement.

Table 37 shows that 28 per cent of students who responded to the survey reported that their fathers are illiterate and 34 per cent of students indicated their fathers completed only primary education. For mothers, these figures were 30 per cent and 36 per cent respectively. A very small per cent reported that their father (4%) or mother (1%) had achieved an under graduate or higher degree.

Table 37 Father and Mother education

Levels of Education	Father's education		Mother's education	
	Frequency	Percent	Frequency	Percent
Illiterate	2303	27.9	2506	30.4
Completed primary education	2782	33.7	2972	36.0
Read at secondary level	1439	17.4	1501	18.2
SSC	859	10.4	667	8.1
HSC	429	5.2	176	2.1
Degree	225	2.7	63	0.8
Masters	100	1.2	35	0.4
Missing/No Response	119	1.4	336	4.1
Total	8256	100.0	8256	100.0

Across all three subjects mean achievement was lowest for students with illiterate parents and highest for students with parents who have degrees. There was a slight association between improving educational levels of mothers and improving student achievement.

Table 38 Student achievement by education of Father and Mother

Mean Bangla Scale Scores by Parental Education		
Education level	Father (BSS)	Mother (BSS)
Illiterate	298.0	298.4
Completed primary education	298.6	299.2
Read at secondary level	301.6	303.3
SSC	302.7	305.3
HSC	305.6	305.4
Degree	314.6	313.5
Masters	307.2	305.0
Missing/No Response	286.1	290.5

53

Mean English Scale Scores by Parental Education		
Education level	Father (ESS)	Mother (ESS)
Illiterate	297.3	297.4
Completed primary education	298.9	299.5
Read at secondary level	300.8	302.1
SSC	303.2	305.3
HSC	306.2	306.7
Degree	313.5	317.3
Masters	305.2	310.2
Missing/No Response	289.3	294.0

Mean Mathematics Scale Scores by Parental Education		
Education level	Father (MSS)	Mother (MSS)
Illiterate	298.2	297.9
Completed primary education	299.5	300.5
Read at secondary level	300.6	301.3
SSC	300.9	302.9
HSC	304.4	304.5
Degree	311.9	313.1
Masters	305.3	306.0
Missing/No Response	291.7	294.2

Parental occupation

Like education levels, parental occupation is highly correlated with student achievement and so students participating in 2012 LASI were asked to report on their parents' occupations. More than half of students reported their father's occupation as either agricultural work-non day labour (36%), or Agricultural day labour, (24%). Eighteen per cent of fathers were reported as self-employed, while 86% of mothers were reported as home makers (house wives).

Table 39 Father and Mother occupation

Occupations	Father's occupation		Mother's occupation	
	Frequency	Per cent	Frequency	Per cent
Agricultural work (non day labor)	2994	36.3	303	3.7
Agricultural day labor	1940	23.5	174	2.1
Home maker (house husband)	277	3.4	7129	86.3
Government employee	385	4.7	96	1.2
Employee of a private company	461	5.6	63	0.8
Non-agricultural day laborer	292	3.5	48	0.6
Self-employed (non-agricultural)/own business	1486	18.0	24	0.3
Retired/Not working	187	2.3	130	1.6
Unemployed (looking for work)	109	1.3	66	0.8
Missing/No Response	125	1.5	223	2.7
Total	8256	100.0	8256	100.0

Across all three subjects the pattern of student achievement somewhat reflects the patterns found for education levels, that is, children of unskilled workers (and who may be assumed to have lower levels of formal education), have lower levels of achievement.

Table 40 Achievement by Father and Mother Occupation

Mean Bangla Scale Scores by Parental Occupation		
Occupation	Father (BSS)	Mother (BSS)
Agricultural work (non day labor)	298.8	288.2
Agricultural day labor	298.0	288.1
Home maker (house husband)	299.0	301.5
Government employee	306.4	300.9
Employee of a private company	303.6	308.3
Non-agricultural day laborer	299.9	283.9
Self-employed (non-agricultural)/own business	301.9	286.7
Retired/Not working	306.3	288.5
Unemployed (looking for work)	304.5	293.1
Missing/No Response	299.0	291.9

Mean English Scale Scores by Parental Occupation		
Occupation	Father (ESS)	Mother (ESS)
Agricultural work (non day labor)	298.8	292.6
Agricultural day labor	297.6	288.7
Home maker (house husband)	298.6	300.8
Government employee	305.5	305.6
Employee of a private company	303.6	306.3
Non-agricultural day laborer	300.7	288.2
Self-employed (non-agricultural)/own business	301.6	286.1
Retired/Not working	305.9	293.9
Unemployed (looking for work)	303.2	297.2
Missing/No Response	301.7	294.9

Mean Mathematics Scale Scores by Parental Occupation		
Occupation	Father (MSS)	Mother (MSS)
Agricultural work (non day labor)	299.4	294.1
Agricultural day labor	298.5	290.8
Home maker (house husband)	299.6	300.7
Government employee	304.1	302.3
Employee of a private company	301.3	303.9
Non-agricultural day laborer	301.2	286.9
Self-employed (non-agricultural)/own business	300.7	292.4
Retired/Not working	301.8	294.0
Unemployed (looking for work)	305.2	302.8
Missing/No Response	303.8	295.9

Overview of findings and implications for policy and practice

The LASI student achievement data is intended for closely related purposes: accountability and improvement. On the basis of achievement data, intervention programmes can be evaluated; resources can be allocated to effective programmes, and particular areas of need can be targeted.

Between school variation

High on the Bangladesh national agenda for education is to foster the achievement of all students in all schools, regardless of their background. To investigate how well Bangladesh is achieving quality education outcomes for all, a range of analyses was conducted on the LASI 2012 data. The results of the analyses show:

- Relatively small variations are observable by intervention type
- Some variations by Division/Examination Board, with Barisal, Jessore (Khulna) performing relatively strongly in all subjects and Sylhet and Rangpur more poorly.
- Significant differences in the performance of Madrasha schools and general schools in all three subjects (see pages 11, 24, 37)
- Little or no significant difference between boys and girls (see pages 10, 24, 37)

Understanding whether the variation of achievement arises between students (within-school variance) or between schools (between school variance) is also very important. This information supports good policy decisions about where to direct resources. If the variance occurs between schools, then supporting schools, their staff and the infrastructure is likely to be the most effective intervention. If the variance occurs between students, then direct support to students and their families is likely to have more impact. A further analysis was therefore done that investigated the variation in performance between all schools in each subject. This analysis identified differences in achievement between students within schools and between schools. The results showed that the variation between schools was very large. [1] This suggests that the quality of education received in Bangladesh is highly variable and dependent on the particular school a student attends.

For Bangla, 55 per cent of the variation was within schools and 45 per cent of the variation was between schools. This is the most moderate between school-variation and consistent with the observations that more first language learning occurs outside the formal school curriculum than other subjects, such as mathematics.

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[1] In Indonesia, Korea, Canada and Australia, about 20% of the differences in performance of 15-year-old students tested in PISA are found between schools while around 80% are located between students within schools. Germany, Peru and Austria have a large proportion (about 52%) of the differences is located between schools.

**Figure 38 Between School Mean Bangla Achievement**
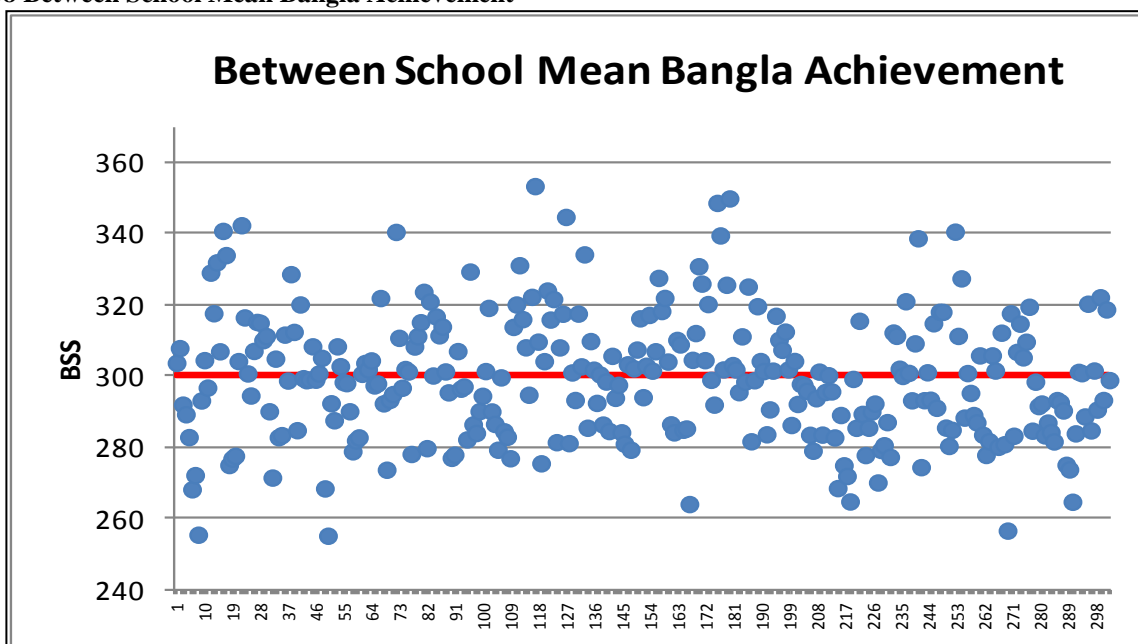
For English, 39 per cent of the variation was within schools and 61 per cent of the variation was between schools. There is a difference of over 100 points on the ESS between the means of the highest and lowest achieving schools. The highest performing school has a mean in Band 5, while the lowest performing school has a mean low in Band 2.

Figure 39 Between School Mean English Achievement
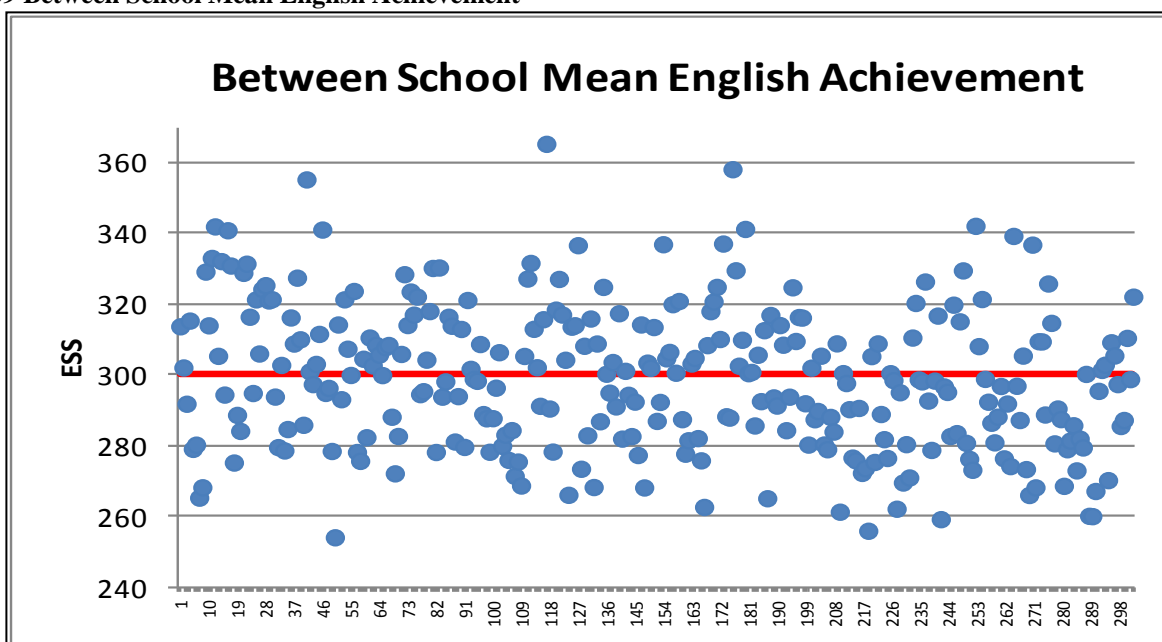
For Mathematics, 36 per cent of the variation was within schools and 64 per cent of the variation was between schools suggesting that a mathematics school's results are highly dependent on school factors such as the quality of teaching that occurs.

Figure 40 Between School Mean Mathematics Achievement
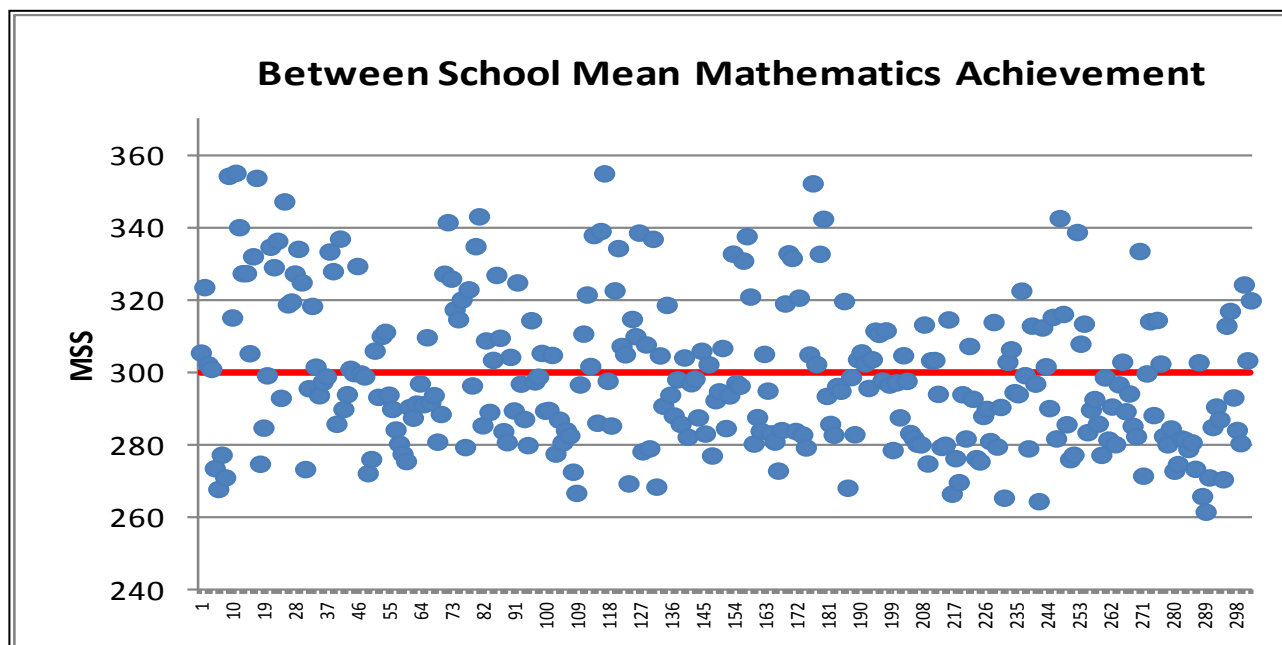
Looking deeper at the key messages from the 2012 LASI

There is a relatively wide variation in performance between students. Similar learning assessments in other countries show similar wide variation in student achievement within a grade level. This shows that students within a grade can be at quite different stages in their learning and development. Responding to the needs of students in the same grade but at different stages of development is a considerable curriculum and teaching challenge. Teaching from a narrow grade-related syllabus does not meet the needs of many students and treating all students of the same age and grade as though they are more or less equally ready to be taught the curriculum for that grade is inconsistent with what is now known about the range of students' levels of achievement and development within grades. Learning is enhanced when learning opportunities are matched to individuals' current levels of knowledge, skill and understanding, so classroom activities are likely to be most effective in raising achievement levels if they are differentiated.

Differences between Divisions/Examination Boards

The mean performances across examination boards in all subjects' show that Syhlet has consistently poorer educational outcomes and that students from this examination board are more likely to lack the essential skills needed to participate effectively and productively in society. Barisal is a consistently better performing Board/Division.

Performance of boys and girls

The gender-wise results in Bangla and English show a surprising pattern in 2012 LASI. There were no overall differences in mean or distribution between boys and girls in either grades in Bangla or English. These results are in significant contrast to international data on the comparative performance of boys and girls, which show that in all 65 countries and economies that participated in PISA 2009, girls have significantly higher average reading scores than boys. [OECD 2010][2] Further research is required to understand the factors that have contributed to equitable gender results in Bangla and English.

In Mathematics boys do better than girls and the range of girls' performance is wider. In mathematics, the weakest girls do worse than the weakest boys. In some countries, girls perform as well as boys in mathematics which indicates that skills in mathematics do not have to be related to gender and that more can be done to raise girls' level in mathematics.

Differences between school types

General Education schools out-performed Madrasah in Bangla, English and Mathematics. Systematic differences in the educational outcomes achieved between education providers within a country are cause for concern, since they may be a result of systemic inequity in resourcing, a lack of quality assurance by one provider, inequality associated with socio-economic or religious factors, or a combination of these things.

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[2] OECD (2010), *PISA 2009 at a Glance*, OECD Publishing.
http://dx.doi.org/10.1787/9789264095298-en

Exemplary system assessment practices and aligned curriculum expectations

Piloting of test forms in April revealed that insufficient students could answer the English and mathematics pilot questions. This suggested that expectations of curriculum experts within Bangladesh are misaligned with actual academic achievements of secondary students. The test questions for these subjects were significantly revised so that they were much easier and a second pilot was conducted. Final forms were selected from the pool of easier questions. The main study conducted in July actually shows that the skills of Bangla students lie somewhere between the high expectations of the first pilot and the much easier set of questions chosen for the main study. The sample for the pilot study must be selected to match the main population. This will ensure the best match between test difficulty and the target population. As the first two trials have already shown, this can be difficult to achieve in practice.

Methodology: How student achievement is measured in the LASI

Test development

The assessment instruments for the LASI were developed by ACER in close consultation with the MEW and the NCTB. Subject committees were convened by NCTB that included curriculum experts and practicing teachers. The committees were responsible for guiding the development of assessment frameworks for each subject. Based on syllabus documents and informal advice, two parallel tests for each subject were developed that met Assessment Framework specifications relating to questions type and to curriculum coverage. Questions types used were multiple choice questions (MCQ) and short structured questions (SSQ). Questions were also classified according to the cognitive domain they addressed: knowledge, comprehension, application.

Review of pilot test forms

The original set of draft pilot test forms were reviewed by expert panels in Dhaka in January 2012. In the light of their advice, adjustments were made and the pilot forms were approved by the MEW.

Pilot

A pilot was conducted of the Bangla, English and Mathematics test materials. The final test instruments were produced based on two parallel pilot forms for each subject. These pilot tests were developed and trialled on approximately 400 students in 30 schools.

The data from the pilot study were analysed by ACER using ConQuest software. Items (questions) that did not fit the Rasch measurement model were flagged for inspection and discussion. In some instances the pilot data results pointed to particular problems with a question. Questions that could be refined or improved were adjusted in the light of the pilot data.

The data from the first pilot revealed that the questions for English and mathematics were too hard for the pilot population. The mean facility of the first trial for English was 32 per cent correct for all items, and the mean facility for the first trial for Mathematics was 28 per cent correct for all items. The test questions for these subjects were therefore significantly revised so that they were much easier and a second pilot was conducted.

Selection of test items

Final forms were selected from the pool of easier questions. Items selected for the final test forms were chosen based on their psychometric properties and through a qualitative review process. This allowed for the best available items to be chosen for the final forms. Test questions were chosen on empirical and substantive factors including: the psychometric characteristics of individual questions as revealed by the pilot; the need for the test instrument to encompass the range of student abilities and the breadth of the assessment domain.

The tests in all subjects were constructed to include questions with a range of difficulty. The tests contain some very easy questions at the beginning, getting progressively harder throughout the test.

Selecting the sample

A random sample of Grade 9 students was drawn from a sample of SEQAEP schools. Bangla, English and Mathematics test instruments were then administered to the schools in the drawn samples.

All SEQAEP schools are located in 123 Upazilas out of 500 in Bangladesh. The SEQAEP sample was drawn from 303 schools covering 7 Examination boards, 28 Districts and 29 Upazila. The sample consisted of 228 General Education schools and 75 Madrasah; 302 private schools and one government school and all 303 sampled schools are under Monthly Payment Order (MPO). The Bangla, English and Mathematics test was administered to 8278 Grade 9 students. The sample consisted of 4154 (50.2%) boys and 4124 (49.8%) girls.

Test administration

The assessments were administered to students in the selected schools in July. The tests were invigilated by trained supervisors to ensure high levels of consistency of administration across the country. Students selected in the sample at each grade level were expected to sit for the Bangla, English and Mathematics tests.

Data collection

Analysis

On completion of marking and data entry, ACER undertook the analysis of the data applying Rasch measurement methodology using ACER's ConQuest software. The Rasch model of analysis used in the 2012 LASI testing programme allows a representative sample of the population to be scaled against a range of questions that test a sample of the curriculum. The scaling allows inferences to be made, based on a total score, about the probability of a student's success on all individual questions.

Raw scores in future test administrations will not be directly comparable and all comparisons must be made in the scale score metric. These scales have been designated the Bangla Scale (BS), the English scale (ES) and the Mathematics Scale (MS). For all scales, the achievement of the 2012 grade 9 sample was set to have a mean of 300 and a standard deviation of 25. The three subjects have been analysed separately and it is not valid to compare the scale scores across subjects.

Development of Band (Achievement Standard)

Band descriptors for each subject were developed separately. The way in which the skills tested clustered was observed and, where possible, a judgement was made about how these aligned with the curriculum. The band descriptors provide a generalised statement of how skills develop in each subject. Bands provide a useful reference for monitoring growth over the grades/years.

Subject experts determined the bands by firstly mapping each item to the curriculum, identifying clusters of skills and then making a judgement about where there appears to be a qualitative shift in skill development. Besides the subject experts' judgement, the location of items (logit) on the scale was considered. The decision about level-cut scores is therefore based on two important things: quantitative evidence and expert curriculum judgment. The cut point was then converted to scale score.

In order to triangulate the development of bands, a detailed review of the items was carried out against the curriculum and textbooks to identify the most relevant grade for each item. The results of this review broadly confirm the matching of bands with the defined grade level.

Considering the spread of skills required to correctly respond the items and the ability of the students, 5 bands have been developed. The skills of Band 1 and Band 2 are considered well below Grade 8 level, the skills of Band 3 are found to be below Grade 8 level, the standard of Band 4 is considered meeting Grade 8 standard and the skill levels at Band 5 are above Grade 8 level.

Raising the Standard across the system

Some systematic inequities are suggested by the 2012 LASI results and there is evidence now that the standards expressed through textbooks, syllabus and other curriculum documents are not being achieved. To raise the standards of student learning overall requires overall improvement in standards of teaching. To achieve this, all teachers need to be well-trained for the demands of teaching in the twenty-first century.

Bangladesh needs a teaching force that is well prepared through pre-service teacher education programmes
The quality of learning in primary schools depends in part on how well teachers are prepared through pre-service teacher education programmes to teach. Teachers new to the profession should be familiar with, and beginning to develop a repertoire of, evidence-based teaching strategies, that is, teaching strategies that are proved to be effective.

Teachers also require good levels of Bangla and Mathematics themselves if they are to be effective teachers. They also need strong interpersonal and communication skills, a willingness to learn and a strong motivation to teach. Teachers need support and professional training to develop these qualities.

Teachers need access to high quality professional learning
Opportunities for professional learning need to be available in a range of areas relevant to the work of schools. If schools are to lift student achievement, then they require access to high quality professional development focused on subject teaching. Professional development must be firmly grounded in evidence-based research and practice, and be designed to build teachers' levels of expertise, including their own content knowledge and their knowledge of effective ways to teach. High quality professional development also must be available in ways that allow it to be tailored to local teacher and school requirements.

Teachers need access to ongoing expert advice
Expert advice is best provided at the local level by 'specialist' teachers who coach other teachers, team teach with newer, less experienced teachers and provide curriculum leadership and advice on teaching methods and resources. Ensuring that all schools have access to specialist advice and support is likely to be a key to raising achievement levels across the country.

Teachers need clear and sufficiently detailed documentation about what they are expected to teach and what students are expected to learn by particular stages of schooling. Teachers also need support in monitoring the extent to which this is occurring.

Classroom curriculum and assessment resources aligned with teaching and learning expectations assist teachers in developing teaching programmes and monitoring student achievement and progress. The LASI reports should provide schools with a level of information that allows them to compare their own school performance with performance in the rest of the country.

Provision of high quality professional learning and support for school leaders

School leaders are ultimately responsible for school improvement and need to build staff capacity and to be skilful in their allocation of physical and human resources to improve learning. They need on-going professional learning to do these things successfully.

Reform of the examination system

High stakes examination systems narrow the curriculum, encourage teaching to the test and rote learning. If examinations focus on memory of textbook content, important curriculum reform will be impeded. Examinations need to be reformed so that higher order thinking skills and application of knowledge skills are tested.

LASI: the next steps

Quality learning assessment provides information needed to shape programmes at the macro–level of public policy and at the micro-level of teaching within the classroom. However, if the information derived from the learning assessments systems does not positively affect the quality of public policy, school practice and classroom teaching, then the learning assessments, regardless of their other strengths, are failing to fulfil their purpose.

It is therefore important that all stakeholders be informed of the results of the LASI. Government policy makers, school administrators, teachers and parents all need accessible, relevant information about the results that will inform their decision making and practice. A systematic plan for appropriate reporting to stakeholders is required to achieve this.

The capacity of stakeholders to interpret assessment data is likely to be an issue and all stakeholders need support in using the data. Teachers in particular need specific training to interpret and use LASI data to inform their teaching practice.

Learning assessments of the type that has been introduced in Bangladesh often produce unexpected findings. Developing a comprehensive research agenda for investigation of issues such as the large variation that exists between schools will provide evidence to support the systematic planning for improvement.

Finally, to support Bangladesh in maintaining and extending a world-class assessment system, it is essential to engage in long-term capacity building. Quality assessment programmes are long-term programmes, requiring vision, a capacity-building programme and detailed planning. A Strategic Plan is needed that will ensure quality data collection in 2013 and will prepare future learning assessment cycles that increasingly rely on local expertise for implementation. Such a Strategic Plan should be developed as a matter of urgency.

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ANNEXURE I

Item Mapping - English

Item Number	Item Descriptor	Grade level (NCTB)	Band
1	Match picture with a very simple sentence	2	1
2	Interpret less familiar label	5	2
3	Know the simple past tense form of an irregular verb	6	3
4	Identify correct use of the comparative	5 or 6	2
5	Make a simple inference from a short environmental print text	8	3
6	Locate specific information in a short environmental print text	8	3
7	Match symbol with word	3	1
8	Locate specific information in a short environmental print text	8 or 9	3
9	Locate simple information in a short biography	3	1
10	Locate specific information in a short biography	8 or 9	2
11	Identify correct pronoun in context	6 or 7	2
12	Locate and write directly stated information in a short biography	4 or 5	2
13	Recognise recipient of a postcard	5 or 6	2
14	Retrieve information by backward referencing in a short letter	5	2
15	Locate specific information in a short letter	6	3
16	Identify correct form of conditional	8 or 9 or 10	3
17	Identify the main purpose of a list of rules	7 or 8	4
18	Locate detail in a list of rules	7 or 8	3
19	Locate detail in a list of rules	7 or 8	3
20	Locate detail in a list of rules	7 or 8	3
21	Identify correct use of infinitive	5 or 6	3
22	Retrieve information by forward referencing reference in a short email	5 or 6	2
23	Locate directly stated information in a recount	5 or 6	2
24	Identify correct usage of verb 'to be'	3	1
25	Interpret vocabulary in context	7 or 8	2
26	Identify the recipient of an email	9 or 10	3
27	Locate directly stated information in a short narrative text	7	2
28	Recognise sequence of events in a short narrative text	6 or 7	2
29	Match visual to explicitly stated information in a short narrative text	8 or 9 or 10	2
30	Interpret character in a short narrative text	7	4
31	Make simple inference from a short narrative text	5	4
32	Identify structure in an instruction text	7 or 8	4
33	Interpret word in context	5	3
34	Identify appropriate usage of 'could' as a form of request	6	3
35	Identify the verb in a phrase	5	2
36	Understand sequence of events in an instruction text	6	3
37	Infer from detail in an instruction text	6	5

Item Mapping – Mathematics

Item No	Descriptor	Grade Appropriateness			Band
1	Multiply two decimal numbers	6		8	Band 1
2	Subtract decimal numbers	6		8	Band 3
3	Add two unlike fractions	6			Band 2
4	Convert metres into centimetres		7	8	Band 3
5	Identify process to calculate the perimeter of a rectangle			8	Band 4
6	Identify a squared number closest to 20		7		Band 3
7	Identify the correct relationship between sides in a right triangle			8	Band 3
8	Calculate a basic average speed	6	7	8	Band 2
9	Calculate a basic average rate	6	7	8	Band 2
10	Identify which shape matches the dimensions of a quadrilateral			8	Band 2
11	Calculate the mean of given numbers	6		8	Band 3
12	Identify the relation between a percentage and a ratio			8	Band 4
13	Convert fractions to decimals			8	Band 2
14	Convert units between volume and capacity		7	8	Band 3
15	Identify which quadrant a coordinate point lies			8	Band 2
16	Identify a fraction of a kilogram equal to a given amount of grams	6	7	8	Band 2
17	Calculate the amount of expenditure in transactions	6	7	8	Band 1
18	Evaluate the value of an algebraic expression by substitution	6	7		Band 2
19	Apply percentages to solve daily life situations	6		8	Band 3
20	Convert a recurring decimal to a simplified fraction			8	Band 4
21	Identify the algebraic equation corresponding to a given situation		7	8	Band 2
22	Factorise of algebraic expressions		7	8	Band 3
23	Recognise the solution of a linear equation where the solution is a negative integer	6	7	8	Band 3
24	Find ratio between different quantities in a collection		7	8	Band 3
25	Calculate area of rectangles with changed dimensions		7		Band 2
26	Calculate the volume of a cuboid		7		Band 3
27	Calculate the area of a triangle with given dimensions		7		Band 3
28	Identify which average will change with new data			8	Band 3
29	Solve problems using the mean	6			Band 3
30	Identify simplification of an equation of the form ax + b = cx + d	6	7	8	Band 2
31	Identify formula to calculate profit / loss	6		8	Band 4
32	Identify a true statement on areas of triangles with equal bases and between two parallel lines			8	Band 4
33	Identify a true statement about a quadrilateral with diagonals that cross at 90 degrees and bisect each other			8	Band 3
34	Identify a true statement given some geometrical conditions			8	Band 4
35	Solve problems related to angle sum property of triangle		7	8	Band 5
36	Solve problems on ratio and proportion in some basic areas of real life situations			8	Band 5