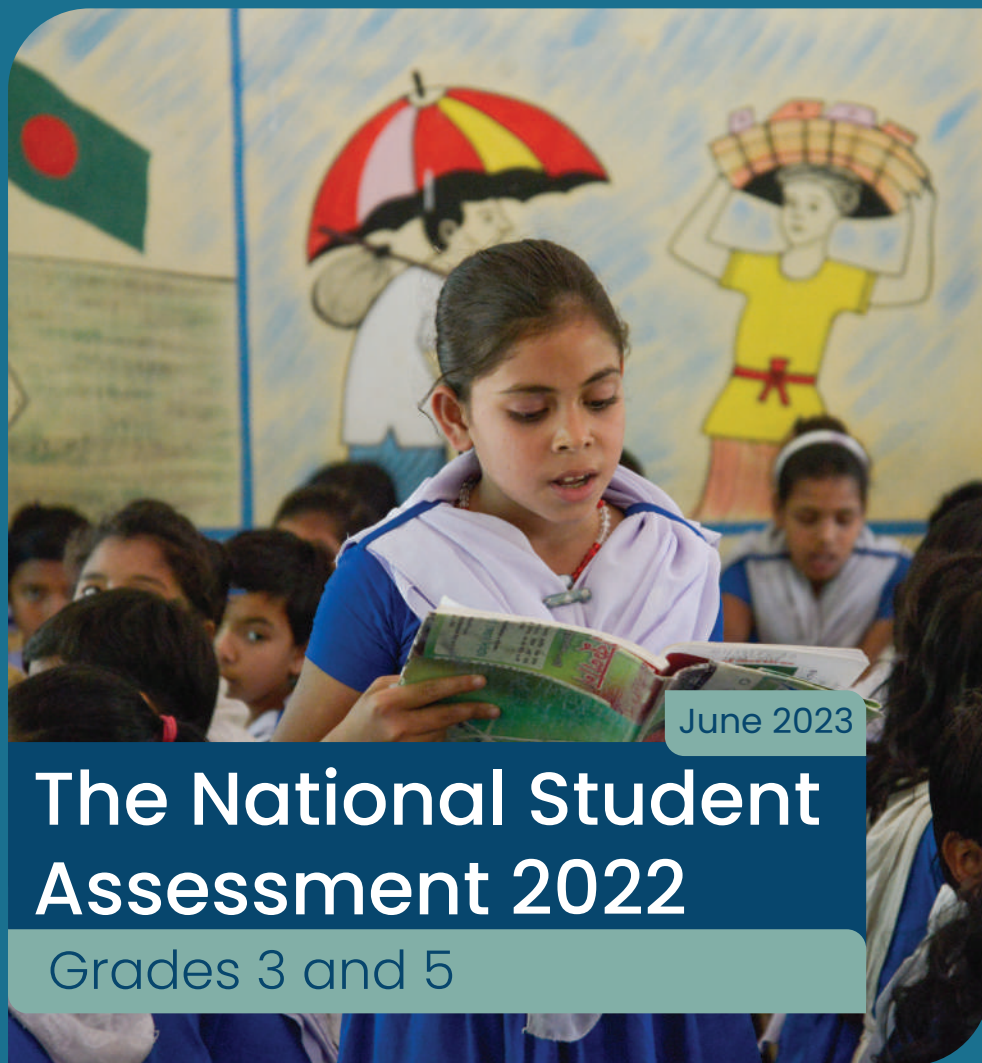




Government of the People's Republic of Bangladesh
Ministry of Primary and Mass Education



June 2023

The National Student Assessment 2022

Grades 3 and 5

Monitoring and Evaluation Division
Directorate of Primary Education

In partnership with



Technical agency





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Published by

Monitoring and Evaluation Division, Directorate of Primary Education
Ministry of Primary and Mass Education

Technical and financial support by

United Nations Children's Fund (UNICEF)
UK Aid

Technical agency

Australian Council for Educational Research (India)

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Suggested citation: Directorate of Primary Education. (2023). *The National Student Assessment (NSA) 2022: Grades 3 and 5*.



Md. Zakir Hossen M.P.



Minister of State

Ministry of Primary and Mass Education
Government of the People's Republic of Bangladesh

MESSAGE

It is with great pleasure and a sense of responsibility that I present the report on the National Student Assessment (NSA) 2022 in Bangladesh. I firmly believe that the future of our nation lies in the hands of our youth, and it is our duty to ensure that they receive the best possible education and opportunities to thrive.

Education is the cornerstone of progress and development for any nation. It empowers individuals, fosters critical thinking, and cultivates a skilled and knowledgeable workforce. Therefore, we need quality primary education for all our children to build strong foundation, and the NSA is a significant undertaking that reflects our commitment to providing quality education and continuously improving our education system.

This comprehensive report is the result of rigorous efforts, collective dedication, and valuable collaboration among the Ministry of Primary and Mass Education (MoPME), Directorate of Primary Education (DPE), local education officials, and Development Partners, especially UNICEF and FCDO who provided technical and financial support in carrying out the NSA 2022. It examines the performance of our students in primary education, identifies areas of strength and weaknesses, and assesses the effectiveness of our educational initiatives.

The findings of this report will serve as a compass to guide our future endeavors in education. It will enable us to make informed decisions, set strategic priorities, and implement targeted interventions to enhance the learning outcomes of our students. By identifying areas that require improvement, we can work towards creating a more inclusive, equitable, and efficient education system that leaves no child behind.

Md. Zakir Hossen M.P.



Farid Ahmed

**Secretary**Ministry of Primary and Mass Education
Government of the People's Republic of Bangladesh

MESSAGE

The National Student Assessment (NSA) 2022 Report is one of the most important pieces of evidence for measuring the learning levels of Bangladeshi students in grades 3 and 5 in Bangla and Mathematics. The NSA 2022 was administered by the Directorate of Primary Education (DPE) under the guidance of the Ministry of Primary and Mass Education (MoPME) with the technical and financial support from UNICEF and FCDO. The NSA serves as a critical tool in assessing the strengths and weaknesses of our education system, enabling us to identify areas for improvement and make data-driven decisions to shape the future of education in Bangladesh.

Education is the foundation of a thriving society. Evaluating the effectiveness of education system continuously is a mandatory task for every country. Thus, it will meet the needs of our youth and prepares them for facing the challenges of the modern world.

The recent global pandemic has brought to the forefront the issue of learning loss. However, the NSA 2022 presents an encouraging scenario with slight gain in learning levels from 2017, indicating that the government's efforts during the school closure were effective. Yet, it is equally important to recognize that a significant portion of students is struggling in terms of achieving the grade-level competencies.

I hope that findings of NSA 2022 report will serve as a roadmap to drive positive change in our education system. I also hope that it will help to formulate updated policies in primary education.

I extend my gratitude to all those who have contributed to this assessment.

Farid Ahmed



Shah Rezwan Hayat



Director General

Directorate of Primary Education
Ministry of Primary and Mass Education
Government of the People's Republic of Bangladesh

PREFACE

The National Student Assessment (NSA) 2022 is the seventh round of the national assessments in primary education in Bangladesh. The current round is particularly important as it has been conducted after five years and more importantly, it is the most comprehensive national-level learning assessment after the global COVID-19 pandemic.

This report sheds light on the students' learning achievements in 2022, a significant year marked by its unique circumstances given that the schools were fully reopened in 2022 after the pandemic. As the world grappled with the unprecedented disruptions caused by the global pandemic, the education sector in Bangladesh faced its share of trials. Education authorities, students, teachers, and parents demonstrated remarkable resilience and adaptability during these testing times. This is also reflected in the NSA 2022 results with almost no learning loss compared to the results of NSA 2017.

Based on the NSA 2022 findings, an action plan was developed; and there is a plan to prepare theme-based policy briefs focusing on specific areas where challenges are more prominent. I would expect that this report will serve as a valuable resource for policymakers, educators, and stakeholders alike, guiding them towards evidence-based decision-making to uplift the standards of education in our country. By analysing the findings, we can collectively forge a path towards fostering a learning environment that empowers our students with the knowledge, skills, and values necessary to shape a prosperous and inclusive Bangladesh.

Shah Rezwan Hayat



Shaheenur Shaheen Khan



Director

Monitoring and Evaluation Division
 Directorate of Primary Education
 Ministry of Primary and Mass Education
 Government of the People's Republic of Bangladesh

ACKNOWLEDGEMENT

I am delighted to present the Report on the National Student Assessment (NSA) 2022, aiming to provide valuable insights and foster continuous improvement in our educational endeavors. The focus of this report is not merely to present statistics but to analyse and interpret the data in a way that enhances our understanding of the challenges faced by our students, teachers, and educational institutions. It highlights the achievements and areas of improvement in different grades and subjects, at different levels of education, and among diverse groups of students. By doing so, we aim to build a foundation for evidence-based decision-making and to ensure equitable and inclusive education for all.

The NSA involves highly technical and rigorous processes, and this would not have been possible without the unwavering support and collaboration of all related stakeholders. Firstly, I express my deepest gratitude to the Ministry of Primary and Mass Education for providing us with strategic guidance and policy direction to conduct this comprehensive assessment. Then, of course, I would like to acknowledge the support we received from the Director General of the Directorate of Primary Education (DPE), especially with the necessary resources, timely approvals and guidance.

I would extend my appreciation to the former Director of Monitoring and Evaluation Division of DPE who led the inception phase of NSA 2022 and played a critical role in the successful conduction of NSA. Also, my sincere appreciation goes to the NSA focal persons, my team and all officials of the National Assessment Cell (NAC) who put tremendous efforts in completing such a comprehensive endeavour.

My earnest gratitude also goes to United Nations Children's Fund (UNICEF) and Foreign, Commonwealth and Development Office (FCDO), UK for their technical and financial support in designing, administering, analysing and reporting NSA 2022. Their expertise, enthusiasm, and dedication were instrumental in ensuring the technical soundness of the NSA process. As the technical agency for NSA 2022, the Australian Council for Educational Research (ACER) played a vital role in ensuring validity, reliability, and objectivity of the whole NSA process.

I am humbled by the collective effort and cooperation of all field-level education officials, including the division and district-level officers, respective upazila-level education officers who played the role of test supervisors and respective headteachers who invigilated the test. My special thanks are due to the students who participated in the NSA test and responded to the survey questionnaires.

Lastly, as we move forward, let us keep in mind that the transformation of our education system is a collective responsibility. Together, we can build a future where every student in Bangladesh receives a high-quality education, unlocking their full potential and contributing to the prosperity of our nation.

Shaheenur Shaheen Khan



Deepa Sankar, Ph.D



Chief of Education

United Nations Children's Fund (UNICEF)
Bangladesh

MESSAGE

It gives me immense pleasure to congratulate the Ministry of Primary and Mass Education (MoPME) and the Directorate of Primary Education (DPE) for carrying out the National Student Assessment (NSA) in December 2022. I would like to express my sincere gratitude to MoPME for trusting UNICEF for providing technical assistance in designing, administering, analysing and reporting NSA 2022. This round of NSA assumes great significance as this has been carried out after five years – the previous NSA was in 2017. The NSA 2022 is also the first national level learning assessment in primary after the COVID19-induced school closures that lasted over 18 months during 2020 - 2022.

First and foremost, I would like to extend my heartfelt appreciation to the National Assessment Cell (NAC) under the Monitoring and Evaluation Division of DPE and all those who contributed to the successful completion of this assessment. The commitment and dedication with which all the stakeholders were involved in during this process reflect a shared vision of generating evidence on learning outcomes for informing policies and programmes aimed at enhancing quality education for all children in Bangladesh.

The NSA 2022 results reveal that learning levels remain similar or are slightly better in comparison with NSA 2017 results, thus alleviating the apprehension of learning loss due to COVID19 school closures and education disruption. It also shows that the collective efforts made by the government and education community during the pandemic ensured that children continued to have learning opportunities even when schools were closed. At the same time, it is essential to acknowledge that still almost half of the students in the middle and end of primary grades have below grade-level competencies in Bangla, and only a third of the students are achieving grade-level competencies in Mathematics. This indicates the presence of a persisting learning crisis, deserving policy and programmatic attention and political commitment. Also, pre-existing learning disparities in terms of regions, school types, and geo locations persist, a critical bottleneck for achieving SDG goal by 2030.

I believe that data-driven systems are vital in shaping education policies and initiatives that benefit the lives of millions of children and young people. We must leverage the results of this assessment to reinforce our commitment to inclusive, equitable and quality education. By identifying the factors that affect learning levels and impact learning disparities, we can tailor strategies that address the unique challenges faced by different student groups. Collaborative efforts among all stakeholders, including policymakers, educators, parents, and civil society, will be instrumental in creating an enabling environment for every child to thrive academically and personally.

UNICEF remains fully committed to supporting Bangladesh in its pursuit of quality education for all. Together, we can build a brighter future for every child, empowering them with knowledge and skills to contribute meaningfully to their communities and society at large.

A handwritten signature in black ink that reads "Deepa Sankar".

Deepa Sankar, Ph.D

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ABBREVIATIONS

ACER	-	Australian Council for Educational Research
ADSL	-	Associates for Development Services Limited
APSC	-	Annual Primary School Census
BSS	-	Bangla Scale Score
CCC	-	Category Characteristic Curve
COVID-19	-	Coronavirus Disease
CR	-	Constructed Response
CTT	-	Classical Test Theory
DPE	-	Directorate of Primary Education
DIF	-	Differential Item Functioning
EGRA	-	Early Grade Reading Assessment
FCDO	-	Foreign Commonwealth and Development Office
GER	-	Gross Enrolment Rate
GPS	-	Government Primary School
HSAPS	-	High School Attached Primary School
HTQ	-	Head Teacher Questionnaire
ICT	-	Information and Communication Technologies
IRT	-	Item Response Theory
KG	-	Kindergarten
MoPME	-	Ministry of Primary and Mass Education
MSS	-	Mathematics Scale Score
NAC	-	National Assessment Cell
NAPE	-	National Academy for Primary Education
NCTB	-	National Curriculum and Textbook Board
NGO	-	Non-Government Organisation
NNGPS	-	Newly Nationalised Government Primary School
NSA	-	National Student Assessment
RNGPS	-	Registered Non-Government Primary Schools
ROSC	-	Reaching Out-of-School Children
SDGs	-	Sustainable Development Goals
PISA	-	Programme for International Student Assessment
PEDP	-	Primary Education Development Programme
PPS	-	Probability Proportional to Size
PSU	-	Primary Sampling Units
SKPS	-	Sishu Kollyan Primary School
TLM	-	Teaching and Learning Material
TQ	-	Teacher Questionnaire
UNESCO	-	United Nations Educational, Scientific and Cultural Organization
UNICEF	-	United Nations Children's Fund

EXECUTIVE SUMMARY

Introduction

The Ministry of Primary and Mass Education (MoPME) began the National Student Assessment (NSA) in Bangladesh in 2006 to measure student achievement in relation to the primary education system performance. The key purpose of the assessment is to promote data and evidence driven policy decisions for improving the level of learning among students in primary grades in Bangladesh and promoting equity.

NSA is a large-scale assessment that uses a nationally representative sample-based approach to obtain information about the learning levels of students in grades 3 and 5 in the schools of Bangladesh in two foundational subjects – literacy (Bangla) and numeracy (mathematics). NSA does not report learning achievement at the level of individual student, instead it reports learner performance at the national level. The assessment also tries to establish the association between learner performance and contextual variables in order to provide useful information to education planners, policy makers and researchers.

This report presents the findings of NSA 2022, the seventh cycle of NSA conducted in Bangladesh by the Directorate of Primary Education (DPE) under MoPME, in partnership with the United Nations Children’s Fund (UNICEF) and Foreign Commonwealth and Development Office (FCDO). The Australian Council for Educational Research (India) in association with its local partner, Associates for Development Services Limited (ADSL), Bangladesh provided technical assistance to DPE in the design, development, administration, analysis, and reporting of NSA 2022.

The context

The design and findings of national assessments such as NSA need to be articulated in terms of both the context in which students are learning, and the purpose of the assessment. It is important to note that NSA 2022 was conducted after a gap of five years – the previous NSA was carried out in 2017. The NSA 2022 is also the first national level learning assessments at primary levels after the COVID19-induced school closures that lasted over 18 months during 2020- 22.

The objectives of NSA 2022 were to:

- understand whether and to what extent children are learning (what children know and can do);
- analyse the changes in students’ learning levels from previous round of NSA (2017)
- identify the specific groups that are falling behind in learning; and
- identify the critical issues or barriers that may be inhibiting them from learning, along with reporting variations across regions and geographical locations.

In order to monitor learning trends in the long term, strategies were adopted to ensure the comparability of NSA 2022 with previous cycles and necessary measures were taken to provide a nationally representative sample. NSA 2022 is also built upon a rich set of background variables and efforts have been made to investigate the students’ performances vis-à-vis the contextual variables.

Assessment design and development

The assessment framework of NSA 2022 was primarily informed by the assessment frameworks of past cycles, to ensure comparability with previous NSAs. The major variation was the addition of concepts or learning outcomes from earlier grades in both domains (Bangla literacy and numeracy), in the form of pre-reading and early numeracy items, to understand the possible impact of prolonged COVID-19 related school closures on learning. The key areas on which learners were assessed in NSA 2022 are mentioned below:

Executive Summary (ES) I: Key learning areas assessed in NSA 2022

BANGLA LANGUAGE	MATHEMATICS
<ol style="list-style-type: none"> 1. Pre-reading skills 2. Reading comprehension 3. Understanding of grammar as related to reading comprehension 4. Understanding of vocabulary as related to reading 	<ol style="list-style-type: none"> 1. Number properties and operations 2. Measurement and units of measurement 3. Shape and space 4. Data

The pool of items that were developed and pilot tested during 2017 was reviewed for inclusion in the main NSA 2022 cycle. In addition to that, a set of new items at the lower end of the NSA scale addressing pre-literacy and pre-numeracy concepts was developed and included in NSA 2022. It was followed by translation into Bangla language (the language of testing the children) and vetting of the translated items and answer keys by the DPE team before the administration. However, new items were not piloted in the NSA 2022 cycle for them to be used in the next cycle, as the national curriculum has recently been revised, and textbooks for grades 3 and 5 based on the revised curriculum are yet to be developed. By the time the next cycle will be conducted, the items designed based on the current textbooks will become obsolete. This is a significant departure from the assessment's prior versions in terms of design.

The structure of the assessment was in accordance with the following specifications:

- NSA 2022 was conducted as a pen and paper assessment.
- The assessment was administered as a two-session test, one for Bangla and the other for mathematics, with each session lasting for 75 minutes.
- There were two test booklets, each for Bangla and mathematics in each grade, to ensure that sufficient items are included in the assessment to develop a robust scale.
- There were 35 test items per booklet for grade 3 and 40 for grade 5.
- Test booklets for both the grades and subjects contained selected response (or multiple choice) and constructed response (CR) items in the ratio of 85:15.

In addition to the student achievement test, NSA involved a socioeconomic background survey administered through questionnaires for students, subject teachers and head teachers.

All the three questionnaires, that is, student questionnaire, teacher questionnaire and head teacher questionnaire comprised multiple choice items, except the question on overall feedback. Responses from these questionnaires were then analysed to investigate the association between learner performance and the background variables.

Sampling and participation

NSA 2022 was a sample-based assessment representing a total population of 3,357,233 students from grade 3 and 3,604,586 students from grade 5 in Bangladesh. The Annual Primary School Census (APSC) 2021 served as the authentic data source for student information for NSA 2022 .

NSA 2022 sampling design was a systematic three-stage cluster sample design. The first stage of sampling involved the selection of 92 upazilas across and within 8 divisions, ensuring at least one upazila from each of 64 districts was selected, with the allocation of upazilas approximately proportional to the size of the population. The second stage involved drawing 1600 sample schools from selected upazilas with Probability Proportional to Size (PPS). The third stage involved sampling a target cluster of 25 students from grade 3 and 20 students from grade 5 from each sampled school, with equal probability. The stratification variables used for sampling were identified as Division, District, Geographic Status and School Type. Details of the drawn sample for NSA 2022 are given below:

ES II: Summary of the sample drawn for NSA 2022

8 divisions	64 districts	11 ² school types	10 geo types	92 upazilas	1600 schools	63,056 students
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In NSA 2022, 34,784 students from grade 3 and 28,272 students from grade 5 were included in the final sample. About 93% of sampled schools participated in the assessment, which is a high participation rate, however the participation rate at student level was low for grade 3. This could be an indication that though children were enrolled in the system, they may be very irregular in attendance, or have dropped out of the system. The description of participants of NSA is given in Table ES III.

ES III: Participation of schools and students in NSA 2022

Grades	Divisions	Districts	Upazilas	Schools*	Students*
Grade 3	8	64	92	1469 (92%)	28752 (83%)
Grade 5	8	64	92	1483 (93%)	25480 (90%)

(* figure in parenthesis indicates percentage participation out of the drawn sample rounded up to nearest whole number)

Before the data was analysed, sampling weights were applied to ensure that variations due to sampling did not impact NSA results and students' representation in the NSA matched their actual percentage in the school population in the grade assessed.

¹ [APSC 2021 Report_31032022 Latest.pdf \(portal.gov.bd\)](#)

² In order to ensure that the sample is representative, the sample was drawn following PPS method from 11 types of schools, but for reporting purposes certain groups were clubbed to form 7 categories. Details have been provided under relevant sections.

Scaling and psychometric techniques

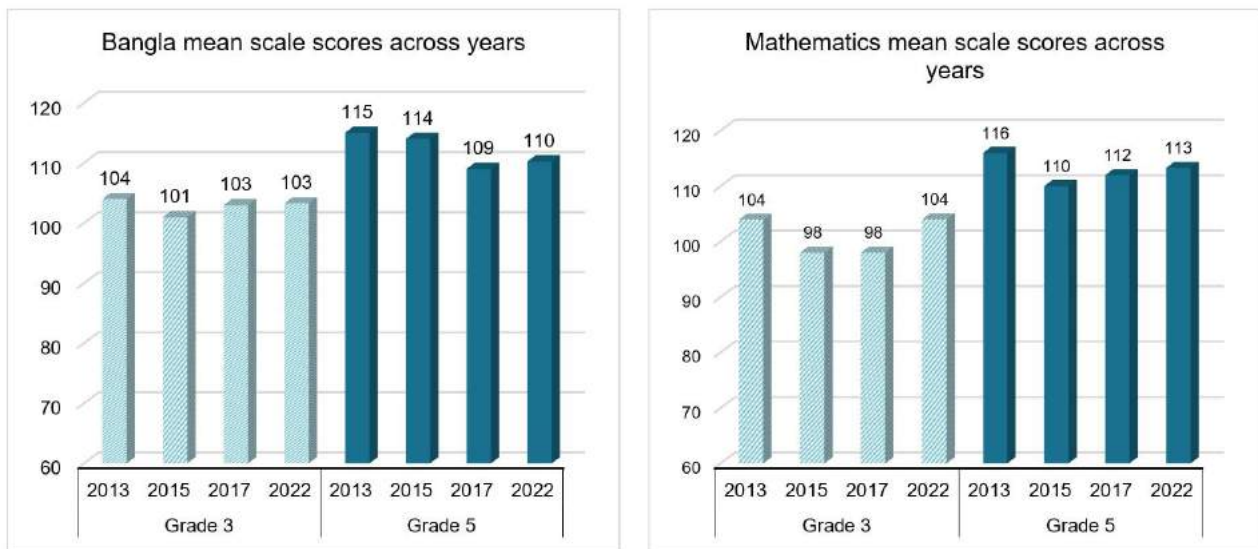
During the analysis of the NSA 2022 data, both psychometric models, that is Classical Test Theory (CTT) and Item Response Theory (IRT) were used. CTT was primarily used to summarise the proposed data inclusion/exclusion rules, classical statistics, differential item functioning (DIF) analysis, and other test relevant factors. This model utilises raw percent correct response to measure students' abilities and item difficulties.

On other hand, IRT was used to construct the test scale, and establish cut scores. Scaling and equating are essential activities for providing valid scores and score interpretations for NSA. Scaling activities included item calibration and the creation of a standardised scale on which scores are reported. Equating activities enable reporting of different forms of assessments on a common scale, reported over time.

Major findings

Illustration ES IV presents the mean scale score for NSA 2022 and three previous cycles across both the subjects and grades.

ES IV: Mean scale score for NSA 2022 and three previous cycles across both the subjects and grades



Overall performance (mean scale score)

- Across the NSA cycles, the Bangla mean scale scores remained quite similar in grade 3. In grade 5, there was a slight increase in the mean scale score in 2022 over 2017, but, the marginal decrease that was registered in 2017 compared to 2013 and 2015 was not compensated.
- The mathematics mean scale scores increased in 2022 over NSA 2017, and the increase was higher in grade 3. In general, NSA 2022 mean scale scores seem to be similar to 2013 levels, for grade 3 and similar to NSA 2017 level for grade 5. It is important to note that the gap between grade 3 and grade 5 mean scale scores has reduced in 2022.
- Learning levels in 2022 are at par or show slight increase as compared to NSA 2017.

Performance by gender

- The performance of girls and boys is similar across all NSA cycles in Bangla as well as mathematics, with slightly better performance by girls in some cases. It suggests a fair gender parity in learning achievement.

Performance by division

- Mymensingh and Dhaka performed above the national average, in Bangla as well as mathematics for both grades. On the other hand, Sylhet lagged behind other divisions in both the subjects like previous cycles. However, understanding the reasons behind this diverging performance needs more analysis, going beyond the NSA, to make meaningful decisions for policy.

Performance by school type

- While there are differences in the way students performed in various school types, the significance of these differences could not be determined for all school types due to the small student population. Bangla performances of learners in Government Primary School (GPS), Kindergarten (KG) and High School Attached Primary School (HSAPS) schools are above the national mean scale score in both grades. Sishu Kollyan Primary School (SKPS) showed the best performance in grade 3, although this is not reflected in grade 5.
- In mathematics, GPS and Newly Nationalised Government Primary School (NNGPS) performed better than the national average in both grades. Madrasah showed the weakest performance across both grades 3 and 5.

Performance by geographical locations

- In Bangla, learners in both grades of schools in plain lands and border areas scored above the national mean. Schools in coastal areas scored better than the national mean in grade 3 and equivalent to the national mean in grade 5. Schools in urban slum areas in grade 5 also performed better than the national mean. Wetlands, remote areas and islands performed low in both grades 3 and 5, and schools in hill tracts also performed poorly in grade 5.
- In mathematics, grades 3 and 5 students in schools in riverside/erosion areas, plain lands and border areas scored above the national mean, with schools in coastal areas scoring better than the national mean in grade 3. Schools in islands performed poorly in both grades 3 and 5, schools in wetland areas performed poorly in grade 3, and schools in remote areas performed unsatisfactorily in grade 5.

Performance on key learning areas and cognitive skills

- Students performed high on pre-reading skills suggesting the mastery of pre-grade level concepts by a majority of the students. Bangla reading comprehension emerged as the most challenging area for students at both grade levels, followed by vocabulary. Items assessing application and higher order thinking skills were found to be the most challenging across grades. Students in grade 3 showed similar performance on items assessing knowledge and items assessing understanding whereas students of grade 5 performed better on knowledge-based items as compared to the items assessing understanding.
- In mathematics, grade 3 students showed similar performance across all three content areas. In grade 5, data was the most challenging content area for students and

measurement was the easiest. Students of both the grades found items assessing application and higher order thinking skills most challenging. Like Bangla, students in grade 3 showed similar performance on items assessing knowledge and items assessing understanding. Girls generally performed better than boys across grades for all content areas and cognitive levels.

Distribution of students along IRT proficiency bands

NSA is reported on the proficiency scale developed in 2011 using IRT. The scale has well defined levels of proficiency called bands with Band 1 being the lowest level of proficiency and Band 5 being the highest level of proficiency.

- The Bangla proficiency scale suggests that there is improvement in Bangla proficiency from grade 3 to grade 5 in NSA 2022 and it is similar or better than language proficiency in 2017. Students of both genders performed in a similar manner with girls doing slightly better.
- In mathematics, there is improvement in the proportion of students at higher proficiency bands especially at grade 3 level. Overall, the performance of students in mathematics is better compared to 2017 for both grades 3 and 5.

Distribution of students along performance standards

During NSA 2017, performance standards were developed that describe four levels of performance, and student performance was reported on those four performance levels. In addition, NSA 2017 adopted the principle that the proportion of students who have/have not achieved grade-level competencies would be determined based on their performance across the performance standards, not the proficiency bands. The performance levels 'Below Basic' and 'Basic' were considered below grade level performance whereas the performance levels 'Proficient' and 'Advanced' were considered grade level.

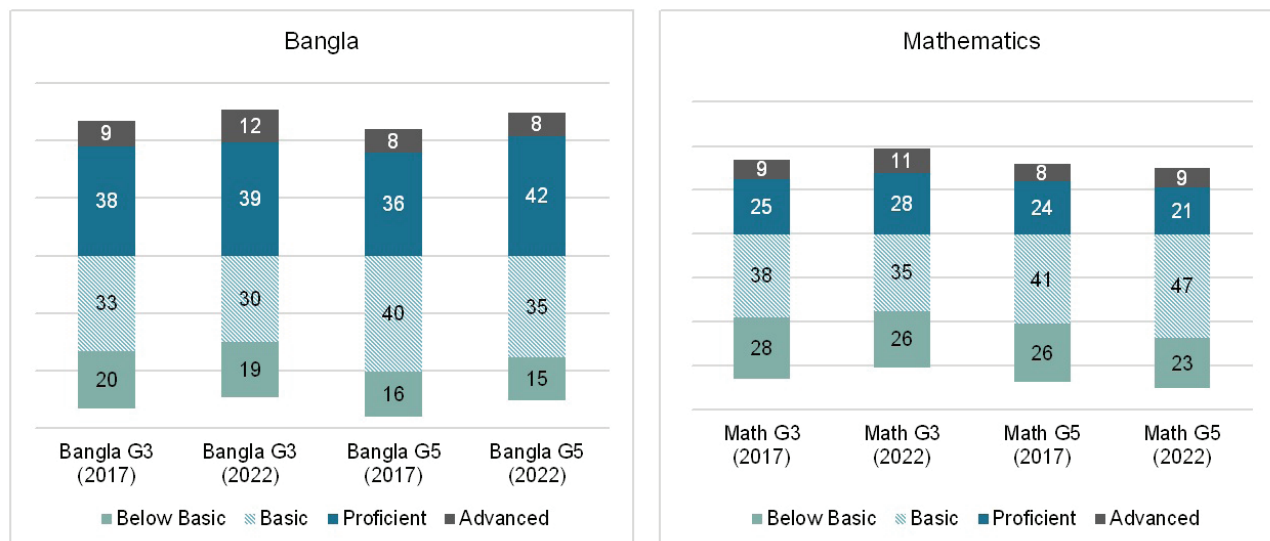
Prior to NSA 2017, performance standards were not used for reporting. Therefore, distribution of students in performance levels in NSA 2022 has been compared with NSA 2017 only.

The performance of students suggests that:

- in Bangla, 51% students from grade 3 and 50% students from grade 5 are proficient and above at grade level performance, which is respectively 4% and 6% higher than performance in NSA 2017; and
- in mathematics, 39% students from grade 3 and 30% students from grade 5 are proficient and above at grade level performance. It is 5% higher for grade 3 and 2% lower for grade 5 performance in NSA 2017.

To summarise, half of the children cannot read at their grade level and two-third cannot do basic counting after completing primary education. The detailed distribution of students at various performance levels in NSA 2017 and NSA 2022 has been given below.

ES V: Percentage distribution of students in grade specific performance levels*



* Students who are at proficient and advanced levels are considered to have achieved grade-level competencies.

Percentages of students achieving grade-level competencies have increased in both subjects in grade 3 but only in Bangla in grade 5. The gender-wise desegregation of the achievement of grade-level competencies shows that girls are doing better than boys. However, disparities between boys and girls have slightly increased compared to the NSA 2017 results.

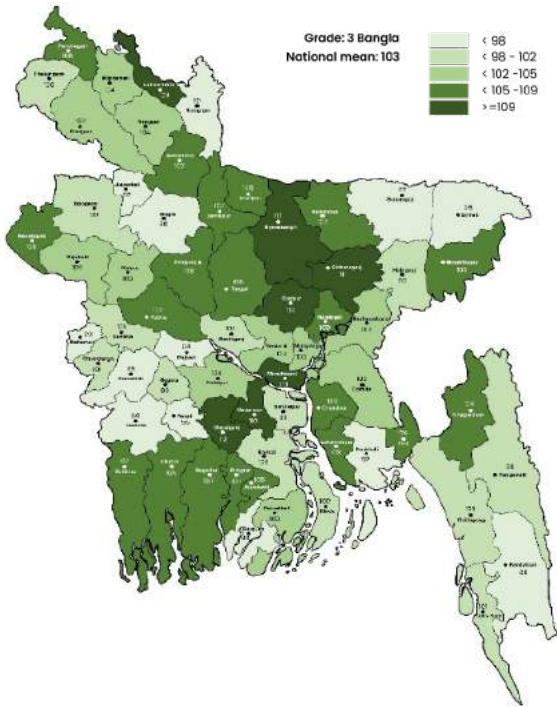
ES VI: Percentages of students achieving grade-level competencies

Subjects		Grade 3		Grade 5	
		2017	2022	2017	2022
Bangla	All	47%	51%	44%	50%
	Boys	45%	47%	43%	47%
	Girls	48%	55%	44%	52%
Maths	All	34%	39%	32%	30%
	Boys	35%	38%	32%	29%
	Girls	33%	40%	34%	31%

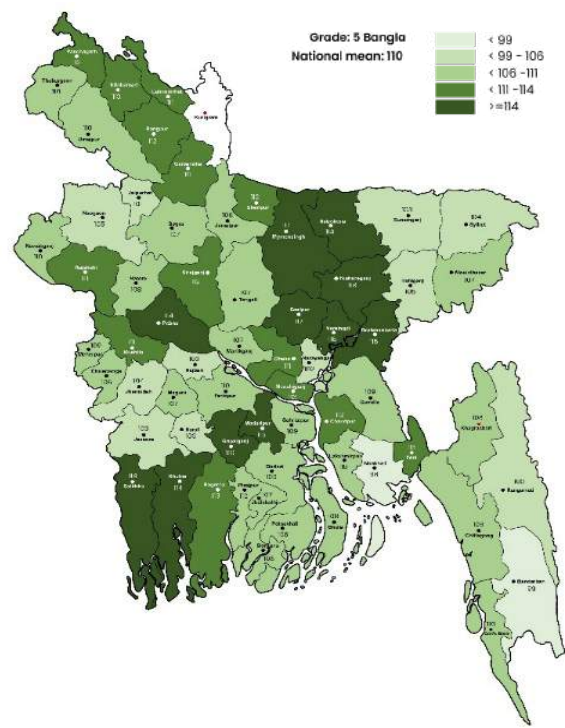
Distribution of student performance across districts

A huge variation in the performance of students from different districts was observed across the subjects and grades. The distribution of performance based on mean scale scores is presented below. It should be noted that as districts were not among sampling strata, samples may not be representative at the district level. Therefore, making judgements on the district-level performance based on NSA results is not recommended, and graphs below intend to provide an overview of the performances across the country.

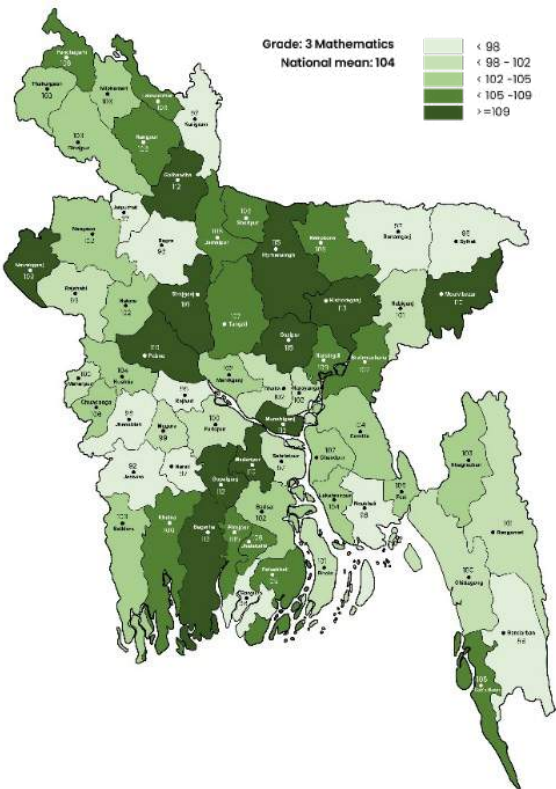
Grade 3 – Bangla



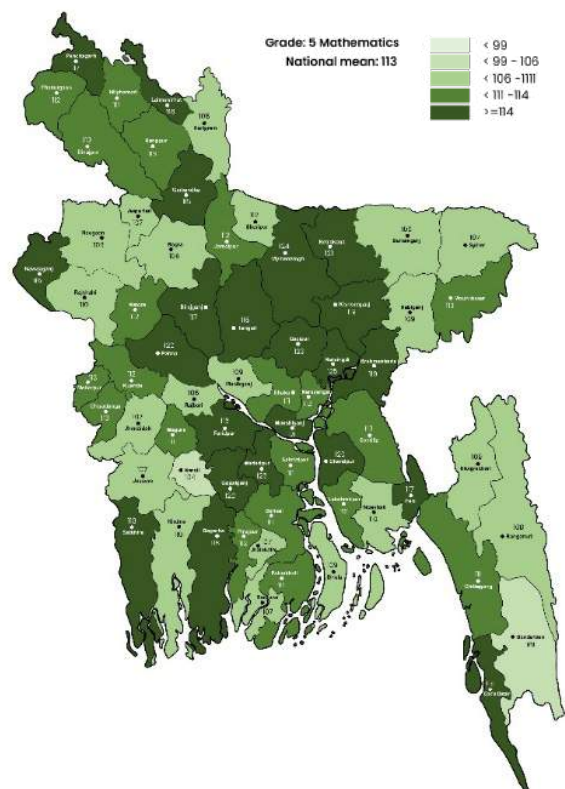
Grade 5 Bangla



Grade 3 – Mathematics



Grade 5 - Mathematics



Chapter 2 of the report presents a summary of the performance of students in NSA 2022, while Chapter 3 and 4 provide further detail regarding the performance of learners in Bangla and mathematics.

Factors associated with performance

There is no denial that many contextual or background-related factors are associated with student learning. Therefore, large-scale assessments that aim to understand how to improve student performance try to identify such contextual factors which are associated with student learning. Keeping this objective in mind, a contextual questionnaire framework was developed for NSA 2022. The development of 2022 context questionnaire framework was guided by emerging priorities in the education system as well as challenges faced by the system during the COVID-19 pandemic. To analyse associations between test scores and various factors, this report uses univariate analysis measures of both statistical significance ($p < 0.05$) and practical significance (Cohen's $D > 0.20$) for all three questionnaires. Given below is a comprehensive summary of contextual factors associated with student performance.

Student characteristics

- Among various factors related to students' background and socio-economic status, parental background and the availability of resources at home showed significant positive associations with student performance while grade repetition had a significant negative association with student performance.
- Students spending more than one year in the same grade have generally shown poorer performance in Bangla, probably due to the lack of motivation. The findings were similar for grade 5 students for mathematics. However, this effect was not significant among grade 3 students for mathematics.
- Wards of parents with graduate and higher qualifications showed significantly better performance than the students whose parents are non-graduates. This holds true across subjects and grades and for both parents. Similar were findings for the wards of government employees vis-à-vis unemployed parents. Mothers being employed as government employees has a greater association than fathers at both grade levels. Wards of unemployed parents are at disadvantage against the wards of employees of government as well as the private sector.
- The home environment has a stronger association with student performance in grade 5 than in grade 3. Among the variables related to the availability of resources, clean water at home is the only variable that was associated with performance in grade 3, and that too, only for mathematics, possibly because it has a direct impact on health. The availability of resources may also be a confounding effect of the education level or occupation of parents. This may be derived from the finding that students living in brick houses performed better than students living in mud houses.
- As expected, study habits of students are strongly associated with their performances. Students who spent more than 5 hours at home in studying performed significantly better than those who do not study at home (large effect size).
- Support from parents in learning was significantly related with the performance in both subjects.

Teacher characteristics

- Amongst teacher background variables in NSA 2022, higher academic and professional

(Masters and M. Ed.) qualifications have a significant positive association with student performance.

- Teachers' knowledge and ability in educational assessments has a higher degree of association with learning (medium to large effect size).
- Frequent interactions between the teacher and head teacher around learning strategies has an observable association with learner performance.

School and head teacher characteristics

- Access to clean toilets and drinking water have a large effect size, while access to a computer has a small effect size. In general, access to technology is not associated with learning, rather, the effective use of technology for learning enhances efficiency of the learning process.
- Student performance was also significantly higher when head teachers monitor classroom activities, as supported by the findings from the teacher and head teacher questionnaire.
- Parent participation in school activities was associated with a significant positive difference in performance except in mathematics in grade 3.
- In grade 5, conducting additional classroom activities frequently was significantly related with performance in both subjects.
- Additionally, the performance in Bangla was higher when schools participated frequently in co-curricular activities.
- The performance was also higher in instances where the head teachers did not perceive teacher vacancy as a serious problem.

Remote/distance/online learning during COVID-19 period

- Performances of students across grades and subjects were higher 'when every teacher was involved in online classes' compared to 'when none of the teachers being involved'.
- A surprising finding is that students who used smart phones to attend online classes performed significantly better than those who used a tablet across grades and subjects. The difference was quite high.
- Mathematics performance in both grades was significantly higher, when learning deficits were identified.
- Significantly higher performance across grades and subjects was found when remedial action was taken to address identified learning deficits by teachers. Similarly, performances in both grades and subjects benefitted from special classes conducted to address learning deficits post COVID-19 as opposed to providing extra time in class.
- In grade 3, mathematics performance was significantly higher with teachers who were provided with different tools rather than just laptops.

Further details on contextual factors have been discussed in Chapter 5.

Conclusion

The NSA 2022 assessment was found to be valid and reliable. In general, the performance of students was similar to or better than NSA 2017. The performance of girls was similar or slightly better than that of boys indicating the prevalence of gender parity.

Mymensingh is the highest performing division and also showed substantial gains compared to 2017 while Sylhet continues with low performance. Students in different school types showed some differences in their achievements with GPS consistently doing well and Madrasahs requiring a lot of support. Schools in border areas and plain lands performed the best across subjects and grades with coastal area students doing well in grade 3 across subjects but falling behind at grade 5 level and students in riverside/erosion prone areas performed well in mathematics. Students who require maximum support live in remote areas, islands and wetland areas.

Teacher classroom behaviour and feedback mattered to students. Students who made extra efforts showed better performance. During school closures, students who could access online classes performed better. Interactions between the head teacher and teachers on learning strategies and the intervention of the head teacher at classroom level have significant association with learning. On the other hand, the education of parents up to graduate and above, and the employment status also have a positive and large association with learning.

Chapter – 1

Introduction

CHAPTER 1. INTRODUCTION

The National Student Assessment (NSA) is a large-scale assessment of students' achievement, administered periodically since 2006 at the primary level in Bangladesh, to monitor the growth in learning. The main purpose is to promote data and evidence driven policy decisions for improving the level of learning and promoting equity. The NSA is conducted by the Directorate of Primary Education (DPE), under the MoPME, Bangladesh, employing a sample-based approach to obtain information about the learning levels of students in grade 3 and grade 5 in two foundational subjects – literacy (Bangla) and numeracy (mathematics). NSA serves the dual purposes of i) informing MoPME activities for classroom instruction, teacher professional development, and curriculum reform, and ii) reporting on domestic and international indicators over time. It is managed by the National Assessment Cell (NAC) under the Monitoring and Evaluation (M&E) Division in DPE. Technical counterparts are the National Curriculum and Textbook Board (NCTB), and the National Academy for Primary Education (NAPE).

The assessment measures foundational skills in Bangla and mathematics at two different points – grade 3 (midpoint of primary schooling) and grade 5 (endpoint of primary schooling).

The main objectives of the NSA are to:

- understand whether and to what extent children are learning (what children know and can do);
- analyse the changes in students' learning levels from previous round of NSA (2017)
- identify the specific groups that are falling behind in learning; and
- find out the critical issues or barriers that may be inhibiting them from learning, including the variations across regions and geographical locations.

NSA 2017 in Bangla and mathematics was administered to representative samples of grades 3 and 5 students in schools of Bangladesh in Bangla and Mathematics. In NSA 2017, 52,547 learners from 1,470 schools across 8 administrative divisions in Bangladesh participated. This included 28,402 learners in grade 3 and 24,145 learners in grade 5.

NSA 2022 followed a similar approach in general, however two changes were introduced:

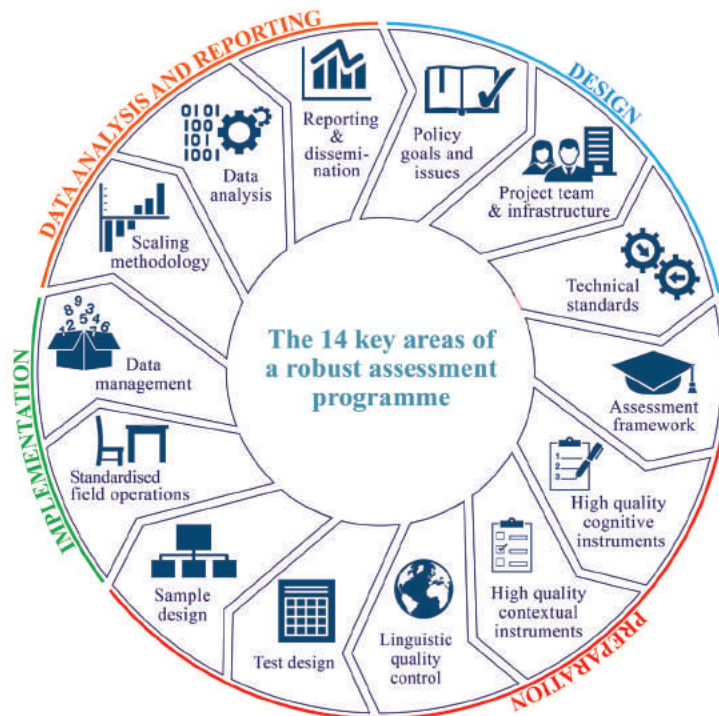
- Items assessing pre-reading and early numeracy were included as part of the assessment. It was based on the assumption that students may be at a lower learning level than previous years as COVID-19 pandemic severely disrupted school education.
- NSA 2022 is more representative of the student population of Bangladesh because 'geographical types' were included as an additional stratification variable.

1.1. Approach to NSA 2022

The primary purpose of a national assessment is to support informed policymaking through the generation of robust, reliable and high-quality data. Therefore, national assessments need to be planned, designed and implemented in a systematic manner.

NSA 2022 ensured this by adopting ACER's research-informed approach to robust large-scale assessments. The approach is briefly outlined below:

Figure 1: The ACER Robust Assessment Cycle



The areas illustrated in the above robust assessment cycle can be grouped into four phases. Below is a description of the phases and how they applied to NSA 2022.

1.2. Process of NSA 2022

NSA 2022 adopted the following process that aligns with the ACER Robust Assessment Cycle mentioned in the previous section. A brief outline for the whole process is presented below:

1. Design:

a. policy goals and issues

The questions to be addressed in NSA 2022 were defined based on the objectives stated for NSA 2022 with additional consideration for the impact of the pandemic on learners and learning.

b. project team and infrastructure

The existing team and infrastructure of the DPE were utilised to the extent possible and team capacities enhanced, so that NSA can be conducted by DPE in the future. ACER and UNICEF also supplemented the team, as and when necessary, to ensure quality control or technical robustness.

c. technical standards

Technical standards in line with international best practices were followed to reinforce the consistency, precision, and generalisability of data.

2. Preparation:

a. assessment framework

Assessment frameworks of previous cycles were reviewed and modified as necessary. The primary consideration for any modification was to ensure that the assessment remains comparable with previous cycles.

The impact of COVID-19 on learning standards was to be accommodated as far as possible. It was hypothesised that students may be at a lower stage of learning development than what would have been otherwise. Therefore, concepts or learning outcomes (LOs) from earlier grades were included in both the domains (Bangla literacy and numeracy). The assessment framework was extended in scope to reflect this step.

The test design from NSA 2017 was also reviewed while keeping in mind the following factors:

- number of test forms;
- number of items per form;
- number of anchor items, both horizontal and vertical; and
- number of historical anchor items.

b. high quality cognitive instruments

Assessment items are at the heart of an assessment programme and careful attention was paid to their development and quality. Item development is a professional activity that is both a science and an art. On one hand, it is informed by the theories of cognitive and learning sciences, while on the other hand the quality of an item depends on the experience of developers in the context in which learners are engaged in learning activities. The DPE team, ACER subject experts and the UNICEF team reviewed each and every item rigorously against predetermined technical standards including the comparability of instruments over time.

c. high quality contextual instruments

To be able to accurately inform teaching strategies and policymaking, data collected from any student assessment should enable reporting that identifies nuanced differences between student cohorts, school types, and other pertinent contexts. One of the objectives of the NSA programme is to investigate differences in pupil achievement by significant system, school, and pupil factors. This was achieved with the development and use of contextual questionnaires alongside the assessment of students.

Three contextual questionnaires namely student questionnaire, teacher questionnaire and head teacher questionnaire were developed in NSA 2022.

d. linguistic quality control

Linguistic quality control is more relevant in assessments that are conducted in multiple languages. For NSA 2022, linguistic quality control was relevant only for pre-reading and early numeracy where items were developed in English and adapted into Bangla by native Bangla speakers.

e. test design

In designing an assessment, several factors are considered. The comprehensive measurement of the assessment domains, as defined in the curriculum, is balanced against the amount of testing time so that student fatigue does not become a contributing factor. The test design specifies the format of materials; the number of test forms; how the materials are rotated and linked between booklets; the number of items required to form assessment scales; the number of items required to establish historical and vertical (across grades) links; and the balance of contextual and cognitive questions. NSA 2022 test design for cognitive instruments is provided in Figure 2 and Table 1.

Figure 2: NSA 2022 test design

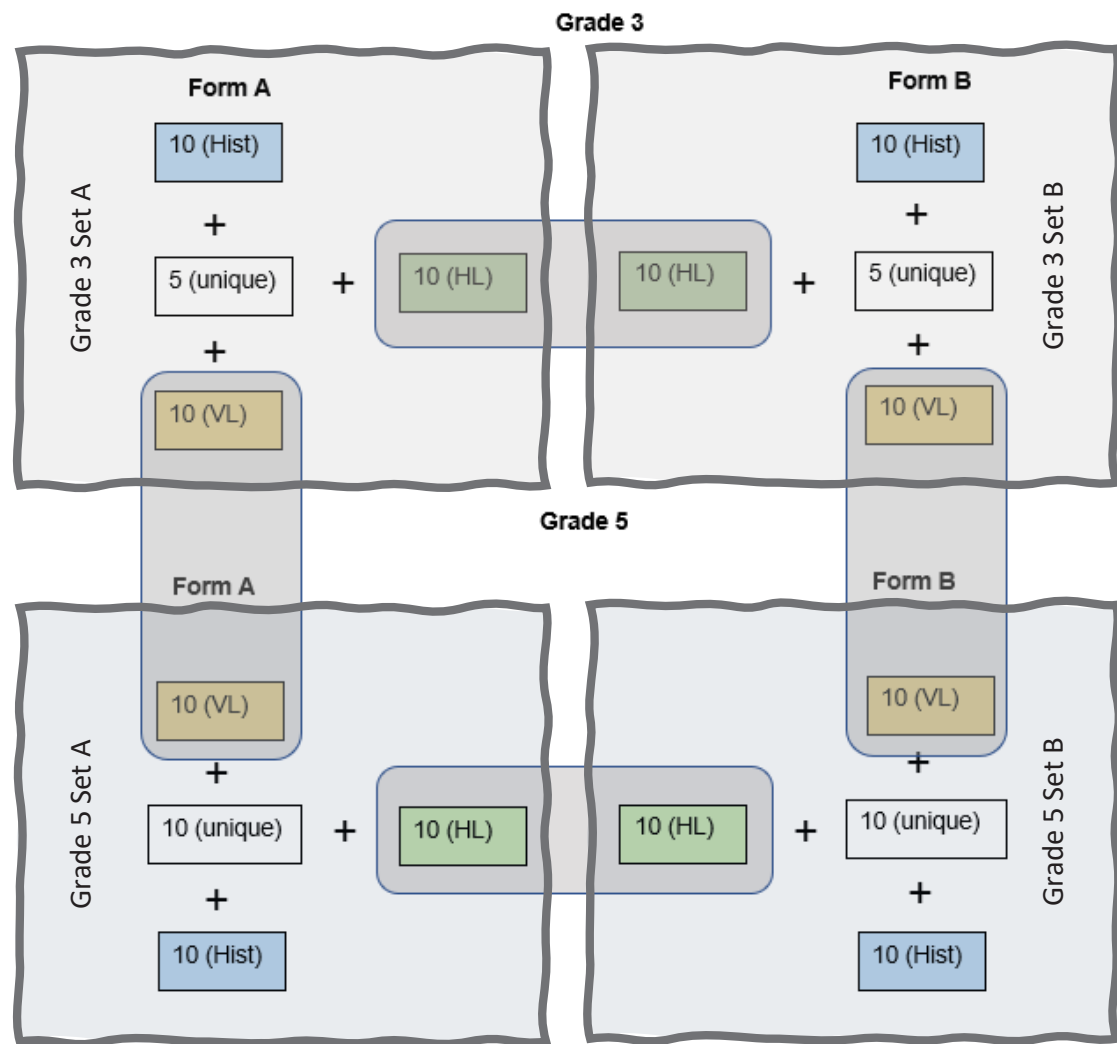


Table 1: Distribution of items in each set for grade 3 and grade 5

Item types	Grade 3	Grade 5
Horizontal link items	10	10
Vertical link items	10	10
Historical link items	10	10
Unique items	5	10
Total	35	40

* Horizontal Link – Common items that are used across booklets of the same grade so that they can be placed on the same measurement scale.

** Vertical Link – Common items that are used across booklets of different grades so that they can be placed on the same measurement scale.

*** Historical Link – Common items from previous cycles of testing used in the booklets used in the current cycle of testing so that they can be placed on the same measurement scale.

f. sample design

Scientific sampling methods were adopted to draw a sample to achieve appropriate levels of statistical precision and validity in the interpretation of assessment results.

3. Implementation:

a. standardised field operation

While it is important to develop high quality test items, it is equally important to develop mechanisms to provide similar testing conditions to all students to get a true picture of student achievement. To fulfil this requirement in NSA 2022, field operations manuals were developed, and administrators were trained and oriented, prior to administration.

b. data management

Data management is a process that covers data security, data collection, data cleaning, and version control. In NSA 2022, data collection was done through manual data entry procedures where the data from cognitive instruments was keyed in the predetermined data collection sheets. These sheets had controls to ensure valid entries are entered and that incorrect entries are flagged at the time of data entry to the extent possible.

4. Data analysis and reporting:

a. scaling methodology

Scaling methodology included item calibration and the creation of a standardised scale on which scores are reported. Equating activities ensured that different forms of assessments are put on a common scale, as are scores reported over time. Across grades, assessments were vertically equated. This process required correct calibration of items data sufficiently fitting the IRT model sufficiently fitting the data. It included evaluating the IRT model; confirming the hypothesised dimensionality of the assessments; developing and /or evaluating equating documentation and estimates of equating error; and evaluating the viability of a single construct (dimension) across grades.

b. data analysis

Data analysis involved the computation of various statistical parameters from the data that conform to Classical Test Theory and also Item Response Theory. It involved group comparisons, significance testing, and weighting to draw inferences about the population.

5. Reporting and dissemination

NSA 2022 will produce a wide range of reports while keeping in view the needs of different stakeholders to fully comprehend and utilise the information and insights derived from the learning assessment programme. Therefore, NSA 2022 findings must be disseminated in ways that are readily accessible and useful to different stakeholders. This report is one of the series of documents that will be released for the use of data and insights from NSA 2022.

1.3. Description of participants

The NSA 2022 is a sample-based assessment that represents a total population of 3,357,233 students from grade 3 and 3,604,586 students from grade 5 in Bangladesh. This was the eligible population after applying exclusions of 3.67% due to various reasons. The NSA 2022 adopted a multistage, stratified, Probability Proportional to Size (PPS) sampling method. To report at 95% confidence level, the sample size was calculated to be 1600 schools from Bangladesh with the division, district, school types and geographical location as the stratification variables. The cluster size for grade 3 was a maximum of 25 students per sampled school and 20 students for grade 5. The selection of students in each sampled school was done using equal probability through systematic random sampling method.

The first stage of sampling involved the selection of 92 upazilas, the second stage involved the selection of 1600 schools from sampled upazilas, and the third stage was the selection of students from sampled schools. After finalising sample schools, 34,784 students from grade 3 and 28,272 students from grade 5 were selected to participate in this assessment.

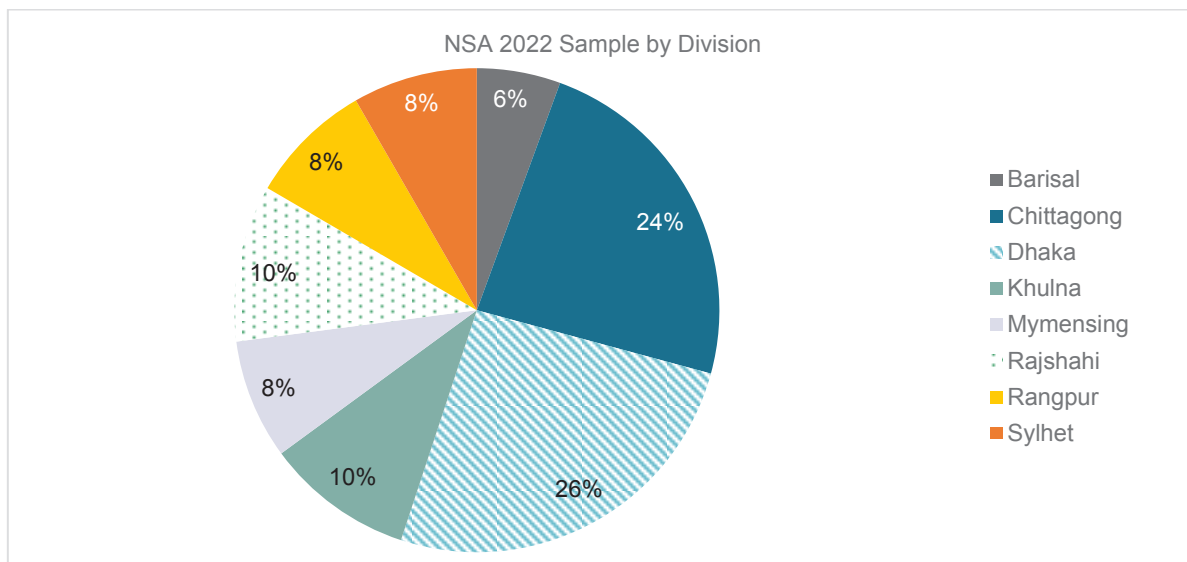
The table given below shows the participation of students, schools and districts across divisions in NSA 2022, while the figure below shows the distribution of students of grade 3 across divisions. As proportional sampling procedure was adopted, one might anticipate a similar distribution for grade 5 as well.

Table 2: Participation of districts, schools, and students in the NSA 2022

Division	Districts	Sampled schools	Grade 3				Grade 5			
			Participating Schools	Sampled students	Participating Students	Per centage of Participating Students	Participating Schools	Sampled students	Participating Students	Per centage of Participating Students
Barisal	6	91	90	1850	1604	86.7%	90	1666	1497	89.9%
Chittagong	11	357	342	8222	6796	82.7%	345	6649	6084	91.5%
Dhaka	13	427	384	9528	7433	78.0%	381	7242	6451	89.1%
Khulna	10	155	144	3422	2835	82.8%	145	2864	2529	88.3%
Mymensingh	4	123	116	2688	2300	85.6%	113	2103	1893	90.0%
Rajshahi	8	179	154	3546	3017	85.1%	168	3130	2858	91.3%
Rangpur	8	145	123	2813	2378	84.5%	125	2347	2112	90.0%
Sylhet	4	123	116	2715	2389	88.0%	116	2271	2056	90.5%
Total	64	1600	1469	34784	28752	82.7%	1483	28272	25480	90.1%

50% of learner participants were from Dhaka and Chittagong division, as these two are the most populous divisions and the sample was drawn following PPS method. The distribution was same in each grade.

Figure 3: Participation of students in NSA 2022 by division



Distribution of the students by school types

Samples were drawn from 11 school types as per the APSC database 2021. However, for reporting, these 11 types were grouped into 7 categories. The following table outlines the school types that were included in the sampling process and regrouping for NSA reporting.

Table 3: School types included in the sampling process in reporting in NSA 2022

SN	Types of Institutions in APSC database	Name of types reported in NSA 2022	Remarks
1	Govt. Primary Schools	Type 1: Govt. Primary Schools (GPS)	These three categories are considered GPSs in the APSC database. For NSA sampling, representative samples were drawn from all three categories, but for reporting, these have been considered as one category and labelled as 'GPS'.
2	Experimental Schools		
3	1500 New Govt. Primary School		
4	Newly Nationalised PS	Type 2: Newly Nationalised Government Primary Schools (NNGPS)	These are also GPSs, but separate sampling and reporting was done.
5	Ebtadayee Madrasah	Type 3: Madrasah	These two categories were sampled separately but reported as one category and labelled as 'Madrasah'.
6	Attached to High Madrasah		

SN	Types of Institutions in APSC database	Name of types reported in NSA 2022	Remarks
7	Kindergarten	Type 4: Kindergarten (KG)	This type has been sampled and reported as one category.
8	NGO Schools	Type 5: NGO Schools	These two categories were sampled separately but reported as one category and labelled as 'NGO Schools'.
9	BRAC		
10	Primary Sections of High Schools	Type 6: Primary Sections of High Schools (PSHS)	This type has been sampled and reported as one category.
11	Sishu Kollyan Primary School	Type 7: Sishu Kollyan Primary School (SKPS)	This type has been sampled and reported as one category.

Figure 4 and Figure 5 provided below show the distribution of students sampled from grade 3 based on school type. It is evident that approximately half of the student sample in NSA 2022 were from Government Primary Schools (GPS), while 19% participants were from Newly Nationalised Government Primary Schools (NNGPS). The kindergarten group contributed another 13% students to the assessment, while all other groups together made up less than 10% of the participant group.

Figure 4: Sample of students by School Type in NSA 2022 (grade 3)

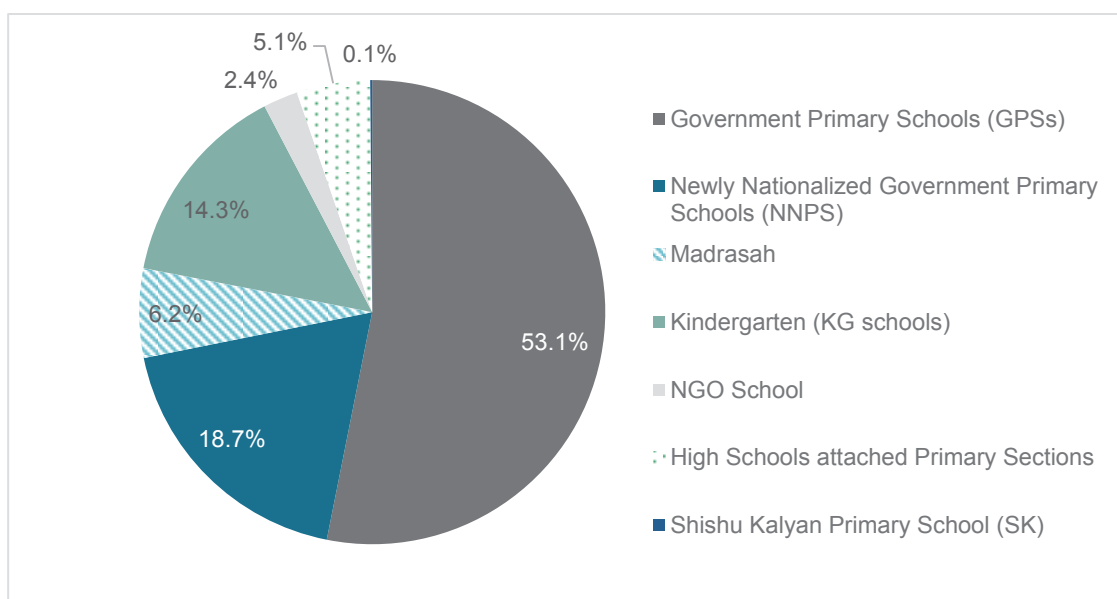


Figure 5: Sample of students by School Type in NSA 2022 (grade 5)

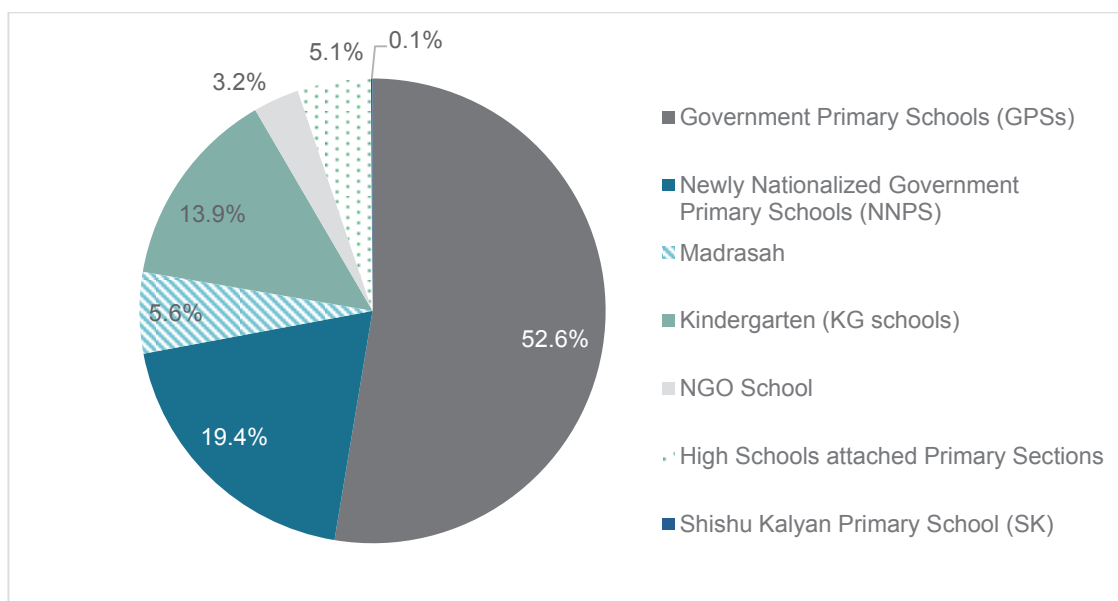


Table 4 shows that approximately 85% of the student sample in NSA 2022 was from schools located in plain lands, while around 6% was from coastal areas. Other areas contributed 1-2%. The geographies with less than 450 participants have been excluded from the test of significance for comparison.

Table 4: Sample of students by geographical location type

SN	Geo Location Types	Code	Sampled Grade 3 (percentage)	Sampled Grade 5 (percentage)
1	Haor (wetlands)	1	1.9	2.0
2	Hill Tracts	2	1.4	1.5
3	Coastal Area	3	6.4	6.6
4	Char (lowlands)	4	2.4	2.3
5	Urban Slum Area	5	1.2	1.0
6	Riverside/erosion area	6	0.7	0.7
7	Plain Land	8	85.5	85.2
8	Border Area (up to 5 km from border)	10	0.1	0.1
9	Island	11	0.2	0.3
10	Remote Area	12	0.2	0.2
	TOTAL		100	100

This chapter was primarily about main characteristics of the NSA 2022 and participants. The remaining chapters of the report are focussed on findings and recommendations.

Chapter – 2

Key findings from NSA 2022

CHAPTER 2. KEY FINDINGS FROM NSA 2022

This chapter summarises the findings from NSA 2022.

The assessment followed the distributions proposed in the assessment framework for both domains – Bangla and mathematics across both grades 3 and 5. This ensured that the assessments were valid. All the booklets used in the NSA 2022 assessment were also found to be reliable.

Based on the data from the study, findings aligned with the objectives of NSA 2022 are provided in the table below.

Table 5: Key findings of NSA 2022

Finding 1	Performance in NSA 2022 similar or better than NSA 2017	<p>Bangla mean scale scores remained similar in grade 3 and grade 5 when compared to NSA 2017. Mathematics mean scale scores in both grades showed an increase from NSA 2017 with grade 3 showing a higher-than-expected growth.</p> <p>In Bangla, 51% grade 3 students and 50% grade 5 students showed grade level performance (proficient and above on performance standards), with a respective gain of 4% and 6% over NSA 2017.</p> <p>In mathematics, 39% grade 3 students and 30% grade 5 students showed grade level performance (proficient and above on performance standards), 5% higher for grade 3 and 3% lower for grade 5 as compared to NSA 2017.</p>
Finding 2	Grade 5 students have higher ability than students in Grade 3	Grade 5 students showed higher ability than grade 3 for both Bangla and mathematics based on the mean scale score. In Bangla, grade 5 students were 7 mean scale score higher than those in grade 3. In mathematics, grade 5 students fetched 9 scale score points higher than students in grade 3.
Finding 3	Students from Madrasah are falling behind	GPS schools performed better than the national average across both grades in both subjects whereas students from Madrasah performed significantly below all other types of schools, across grades and subjects.
Finding 4	Among divisions, Mymensingh performed best and Sylhet lowest	In both Bangla and mathematics, students from Mymensingh division showed relatively better performance compared to other divisions, followed by Dhaka. However, students from Sylhet underperformed in both the subjects as in previous years.

Finding 5	Students from plain land and coastal region performed better	Students from plain lands and coastal regions showed better performance in comparison to students from wetlands, remote areas and island regions in both grades for Bangla. In mathematics, students from island areas showed poor performance in both grades.
Finding 6	NSA 2022 demonstrated gender parity in academic performance	The evidence across multiple NSA cycles, points to parity in performance between boys and girls in both subjects and grade
Finding 7	Teachers matter for student performance	Significant increase in performance was observed for teachers being friendly and providing feedback, and teachers and students doing classroom activities together. Teachers' motivation, and beliefs, instantiated particularly by their professional interactions with the head teacher and monitoring of learning by head teachers along with parental engagement were associated with better student performance.
Finding 8	Learning at home and access to resources influence learning	Students who studied regularly at home after school hours and read additional materials that were not in their curriculum performed better.
Finding 9	Online learning during COVID-19 was useful	Better performance was observed for students who attended online classes during school closure and had ready access to learning resources.

Critical Assumptions about Learning Loss/Gain

There were some general assumptions that the findings of NSA 2022 would reflect learning loss, due to prolonged school closures during COVID-19. It is to highlight that:

- NSA typically assesses student learning achievement and looks into the trend of students' learning levels over a period. Therefore, the objective of NSA 2022 was to find the current learning levels of students and identify the trend, if any. It did not intend to look into whether there was any learning loss due to COVID-19 school closures. The design of NSA 2022 largely followed the same parameters as in previous rounds, in order to ensure that the results are comparable to the extent possible. Considering the COVID-19 context, several questions were incorporated in the background questionnaires (for head teacher, assistant teacher and students) to understand how the pandemic might have affected students' learning. Substantial changes in these questionnaires could not be made due to comparability issues. Therefore, it is recommended not to draw a conclusion on the basis of NSA 2022 that no learning loss has happened despite COVID-19 school closures. However, there is evidence that students' learning levels are similar to or slightly better than what they were in NSA 2017.
- The previous round of NSA was conducted in 2017. Right after this, the PEDP4 was

designed, which envisioned 10% increase in the learning achievement from 2017 to 2021 (initially the current round was planned for 2021). After five years, in 2022, there is a slight improvement in learning levels as compared to 2017. More importantly, if the NSA 2022 results are compared with NSA 2013 results, there is no improvement, rather a decline in achievements.

- While the learning achievements in NSA 2022 remained same as compared to that in NSA 2017, the learning divide has increased. A comparison in standard deviations suggests that disparities in learning from 2017 to 2022 have increased to the extent which is statistically significant. Besides, it is evident that the gender disparities in terms of achieving the grade-level competencies have increased, especially in Bangla. Also, regional differences in learning achievements in 2022 are more prominent. It can be assumed that students from higher socioeconomic quantiles, were able to continue their studies during the COVID-19 school closures, probably due to better access to online learning facilities and favourable learning environment and support at home. Data also indicate that students who had better access to online learning and TV lessons performed better in NSA 2022.
- During the design phase of NSA 2022, different stakeholders shared that NSAs are often conducted in a silo approach without proper orientation and capacity building of field-level officials and test administrators. Most of the times, schools and education officials deem NSA as a mere research work, and the significance of NSA is underestimated as performance is not graded or used for promotion to the next grade. This perception may often result in a low item response rate than expected, with students leaving many questions unattended, even the MCQs. Considering this observation, NSA 2022 included extensive orientation of the field-level officials and capacity building of the test supervisors and invigilators as a part of the test administration process. This might have resulted in a higher response rate, and in turn, probability of better performance. Data show that on average, above 96% of students attempted all items of each test booklet. It can be assumed that if the response rate was low like it was in previous rounds, there would have been a statistically significant learning loss. But this is just an assumption; the response rates from the previous rounds were not available for this comparison.
- Another important assumption is that a significant portion of primary school students dropped out during the school closures. Studies usually indicate that children at low achievement levels are more prone to be dropped out and often the first to do so. It is possible that the NSA sample was not representative of these students who are assumed to have already dropped out.
- It is important to note that despite school closures for a year and a half during the COVID-19 pandemic during 2020-2022, NSA 2022 reported slightly better performance in terms of achieving grade-level competencies compared to NSA 2017. It indicates that at the national level, the school closure did not affect student learning as expected. One assumption that can be made from this is that there is significant room for schools to improve their effectiveness so that schools can make substantial differences in students' learning achievement. The prevailing concerns about the instructional practices, teacher effectiveness and school environment are more likely to be the reasons behind this.

Conclusion

The NSA 2022 assessment was found to be valid and reliable.

Due to the disruptions caused by the COVID-19 pandemic, there were assumptions that students might have fallen behind in their learning. In general, the performance of students was similar to or better than in 2017. An important finding is that the performance of girls was similar or slightly better than boys suggesting that gender parity is prevalent in this context

Considering performance by region, Mymensingh division showed substantial gains compared to the 2017 NSA cycle and Sylhet continued with low performance. Students in different school types showed some differences with GPS schools consistently doing well and Madrasah requiring plenty support. Schools in border areas and plain lands performed the best across subjects and grades, coastal area students did well in grade 3 across subjects but lagged behind in grade 5, and students in riverside/erosion prone areas performed well in mathematics. Students that require the most support are in remote areas, islands and wetland areas.

Teacher behaviour and feedback mattered to students. Students who made extra effort showed better performance. During school closures, students who could access online classes showed higher association with better performance.

Teachers' professional interactions and beliefs and motivation along with parental support were found to be associated with better performance.



Chapter – 3

NSA 2022 Bangla language assessment

CHAPTER 3. NSA 2022 BANGLA LANGUAGE ASSESSMENT

As Bangla is the national language, thus, it is required in official interactions in institutions such as schools and government offices. It is also required for social interaction with the family, friends and others, as it is the mother tongue.

During schooling, Bangla being the mother tongue helps develop students' creative thinking, imagination, and artistic awareness. It is also the medium to understand other subjects in the curriculum, and to attain knowledge and skills. Therefore, the curriculum aims to enable students to read, write and speak correctly and creatively so that students may use the language effectively for these purposes.

The major domain (key area) of interest in Bangla is reading comprehension. Two additional domains or key areas – grammar and vocabulary – are closely tied to and support the acquisition of reading comprehension (Key Bangla skills that students are expected to demonstrate in grade 3 and grade 5 in the areas assessed have been listed in the tables below.) and are included in the assessment.

The content standards for both grades 3 and 5 Bangla language are in many respects the same; however, the content differs across grades in terms of a range of features related to text appropriateness for the grade, as well as grammatical and lexical complexity of various types. NSA 2022 undertook sub-domain analyses to provide meaningful information, and reported on the following sub-domains (key areas) for Bangla language:

1. pre-reading skills
2. reading comprehension
3. grammar as related to reading comprehension
4. vocabulary as related to reading comprehension

As the number of items is limited, the further sub-division of these skills is not recommended as they might not yield reliable results.

Appendix 1 provides a complete description of the key Bangla skills that students are expected to develop in grades 3 and 5, in the areas assessed.

3.1. Bangla assessment and content expectations

The Bangla assessment focussed on four key skills – pre-reading, reading comprehension, grammar, and vocabulary. The major focus in NSA remains on reading comprehension as it is a skill that is foundational for learning across domains. The proportion of pre-reading items was higher in grade 3 as students are expected to have mastered these skills by this level. The proportion of items in the assessment for the strand is provided in table 6.

Table 6: Proportion of key areas assessed in Bangla in NSA 2022

Key areas	Grade 3 (Proposed)	Grade 3 (Actual)	Grade 5 (Proposed)	Grade 5 (Actual)
Pre-reading skills	25%	21%	15%	12%
Reading Comprehension	50%	51%	60%	66%
Language Elements (Grammar and Vocabulary)	25%	28%	25%	22%

The Programme for International Student Assessment (PISA) framework (OECD, 2000) suggests that reading comprehension goes beyond decoding and literal comprehension and should incorporate understanding and reflecting on texts. The framework further mentions that reading literacy 'involves the ability of individuals to use written information to fulfil their goals, and of complex modern societies to use written information to function effectively'. Following this approach, in the grade 3 and grade 5 reading comprehension section, students were required to locate, identify, interpret, infer, and synthesise information in and about texts.

3.1.1. Text types and length

The Bangla assessment included three broad categories of texts: imaginative texts, information texts and argumentative (or persuasive) texts. Texts were between 60–120 words in grade 3 and 80–180 words in grade 5.

Imaginative texts: texts that involve the use of language to represent, recreate, shape and explore human experiences in real and imagined worlds. They include, for example, fables, short stories, novels, plays, and poetry. Included in imaginative texts are narrative and descriptive fictional text types.

Informative/descriptive texts: non-fictional texts that involve the use of language to represent ideas and information related to people, places, events, things, concepts, and issues. They include, for example, reports, descriptions, biographies, explanations, news articles.

Argumentative / persuasive texts: texts that systematically present a point of view and seek to persuade or change the behaviour or attitude of the reader. They include, for example, formal essays, letters, advertisements, interviews, and reviews.

3.1.2. Cognitive processing level

Items were classified into one of 3 categories defined by the cognitive level measured by the item. The proportions of cognitive levels (Table 7) were decided based on global best practices. As grade levels increase, students are expected to demonstrate higher order skills.

Table 7: Cognitive levels for Bangla language tests and their percentage weights

Cognitive processing level	Proposed		Actual	
	Grade 3	Grade 5	Grade 3	Grade 5
1. Knowledge	40%	30%	39%	39%
2. Understanding	40%	40%	44%	37%
3. Application and higher order thinking skills	20%	30%	18%	24%

The percentage distribution of cognitive processing levels was close to the target in most cases (+/- 5%). However, the percentage of knowledge items was higher in grade 5 than the target, though within acceptable limits. The difference occurred due to the selection of items based on other parameters defined in the assessment framework.

This categorisation followed the approach from previous NSA cycles. However, in the future, it is recommended that a framework that is more reading focussed is adopted. For instance, the approach followed by PISA which focusses on the sub-skills of reading could be adopted (OECD, 2019).

Contexts

The assessment provided a measure of reading performance that reflects students' typical reading experiences. Therefore, the selected texts reflected contexts that were grade appropriate and relevant to students.

Sensitivity and social balance

Cultural and social considerations underpin text/context selection. Representations of individuals and groups should be positive and constructive.

The assessment allowed equity of access for students of both genders and from different religious and language backgrounds. Texts were self-contained and did not depend on prior knowledge or knowledge of other texts. Table 8 provides the overall specifications and other details of the Bangla assessment.

Table 8: General features of the Bangla language tests in NSA 2022

Feature	Details		
Grades	3 and 5		
Number of test sessions	1 held on 06 December 2022		
Test time	75 minutes		
Number of test forms	2 booklets per grade		
Length of texts	Grade 3: maximum 120 words Grade 5: maximum 180 words		
Balance of texts	Text type	Grade 3	Grade 5
	Imaginative	4	6
	Informative	3	3
	Persuasive	1	1
Number of items (per booklet)	Grade 3: 35 Grade 5: 40		
Total unique items (both booklets)	Multiple choice - Grade 3: 50 items; Grade 5: 59 items Constructed response - Grade 3: 7 items, Grade 5: 9 items		

3.2. Bangla reliability estimates

Reliability is a measure of how consistently an assessment instrument is likely to give the same results each time, when used in the same setting with the same type of subjects. Reliability essentially means consistent or dependable results. In educational contexts, it is essential for an assessment to be reliable so that policy makers can confidently use the information generated. The reliability measure adopted for NSA 2022 was Cronbach's alpha. The value of Alpha ranges from 0 to 1, and a higher value of Alpha indicates higher degree of internal consistency.

Table 9: Bangla language reliability coefficients (Cronbach Alpha)

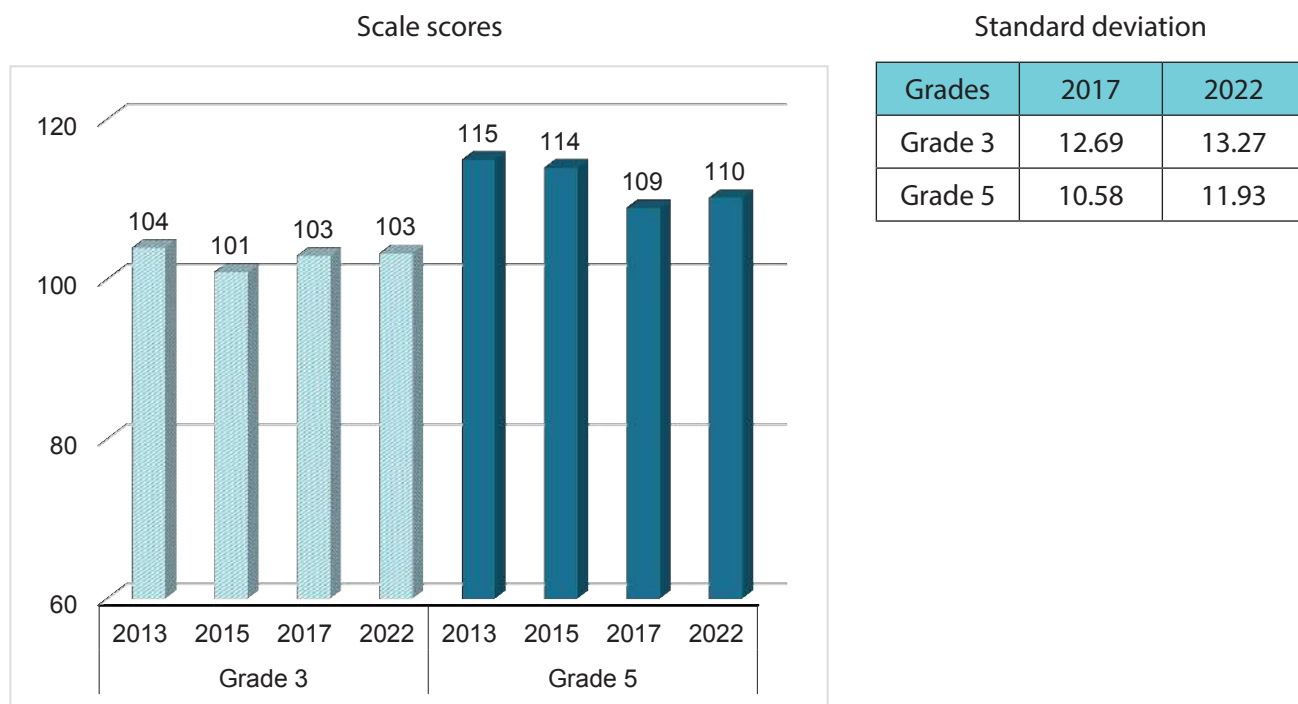
Test	Number of items ³	Cronbach-alpha
Bangla Grade 3 Set A	34	0.85
Bangla Grade 3 Set B	33	0.86
Bangla Grade 5 Set A	39	0.86
Bangla Grade 5 Set B	38	0.86

In general, educational assessments with a Cronbach-alpha of 0.80 and above are considered reliable so it may be inferred that Bangla assessment booklets were reliable.

3.3. Bangla mean scale scores

The overall mean scale scores in Bangla for NSA 2022 and previous three cycles are presented in Figure 6. Looking across the NSA cycles, it can be observed that Bangla mean scale scores remained quite similar in grade 3 over the years. However, in grade 5, there was a decrease in the mean scale score in 2022 compared to 2013 and 2015 and a single point increase over 2017.

Figure 6: Overall Bangla mean scale scores and standard deviation by grade and year

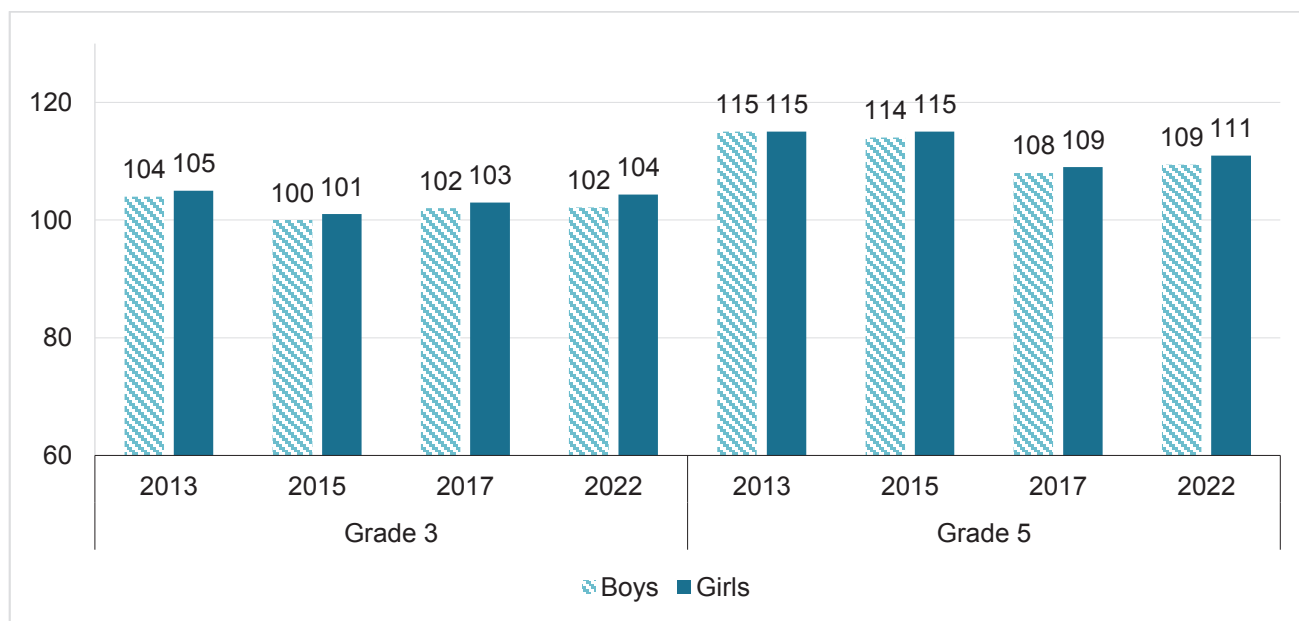


³ Due to technical reasons like poor item functioning, a few items were excluded from the analysis.

Though the mean scale scores increased for both grades 3 and 5, so did the standard deviation of scores, indicating increased disparity in learning.

The figure below shows the mean scale score in Bangla across NSA cycles disaggregated by gender. The data clearly indicates that performance was similar between boys and girls, with girls performing slightly better in both the grades.

Figure 7: Bangla mean scale scores by gender, grade and year



3.4. Bangla mean scale scores by division

The tables below display performance in Bangla categorised by division based on the mean scale score. In both grades, Mymensingh division showed the best performance and a substantial difference compared to other divisions, especially in grade 3. Further, the performance was much better than the 2015 cycle.⁴ For almost all the other divisions, performance was similar to 2017. Although, across all the cycles of NSA, Sylhet has consistently lagged behind the other divisions. Mymensingh and Dhaka performed better than the national average in both grade 3 and grade 5. In grade 5, Rangpur division also performed better than the national average.

Further, the differences were compared to see if they were significant. Groups were arranged in ascending order of means and each mean value was compared to the immediately higher value and those that were significant placed in different groups. Groups with non-significant difference were grouped together as homogenous groups.

Table 11 indicates that in grade 3, Barisal and Khulna formed a homogenous group though they performed significantly better than Sylhet. In turn, Chittagong, Rajshahi and Rangpur formed a homogenous group that performed significantly better than the previous group. Dhaka performed significantly better than this group and Mymensingh was significantly better than Dhaka. In grade 5, Table 10 indicates that there was significant difference in performance across most districts with only Khulna and Rajshahi forming a homogenous group.

⁴ Mymensingh became a division in 2015.

Table 10: Bangla mean scale scores by division (grade 3)

Division	2013			2015			2017			2022		
	Mean BSS	Std. Dev	N	Mean BSS	Std. Dev	N	Mean BSS	Std. Dev	N	Mean BSS	Std. Dev	N
Barisal	108.5	11.9	1278	99.6	11.7	1425	104.6	12.9	1248	101.2	12.6	1604
Chittagong	105.7	12.1	4962	100.1	12.3	4474	101.4	12.7	6945	102.4	12.9	6796
Dhaka	101.9	11.7	6883	101.6	11.6	6940	103.8	11.9	6940	105.9	12.9	7433
Khulna	103.7	11.2	2430	101.3	12.9	2336	101.8	12	2629	100.8	13.8	2835
Mymensingh							103.4	12.5	2586	109.3	11.5	2300
Rajshahi	106.9	12.8	2782	104	11.8	2901	103.5	12	2863	102.3	13.6	3017
Rangpur	105.5	10.7	2606	100.8	10.9	2845	105.2	11.1	2813	102.9	12.3	2378
Sylhet	100.9	12.7	1928	94.7	12.6	1968	97.6	12.4	2077	98.4	12.7	2389
National Mean	104			101			103			103		
TOTAL			22869			22889			28101			28752

Table 11: Bangla score differences grouped by statistical significance (grade 3)

Division	N	Homogeneous Groups				
		1	2	3	4	5
Barisal	1604		101.2			
Chittagong	6796			102.4		
Dhaka	7433				105.9	
Khulna	2835		100.8			
Mymensingh	2300					109.3
Rajshahi	3017			102.3		
Rangpur	2378			102.8		
Sylhet	2389	98.4				
TOTAL	28752					

Table 12: Bangla scale scores by division (grade 5)

Division	2013			2015			2017			2022		
	Mean BSS	Std. Dev	N	Mean BSS	Std. Dev	N	Mean BSS	Std. Dev	N	Mean BSS	Std. Dev	N
Barisal	118.2	10.8	1115	112.6	15.1	1254	108.4	11.6	1101	108.2	12.0	1497
Chittagong	115.3	11.5	3919	112.2	12.5	4177	108.2	10.7	6305	109.9	11.6	6084
Dhaka	114.7	10.6	5145	116.1	15.4	5727	110.1	10.5	6192	112.6	11.3	6451
Khulna	113.9	9.2	2038	115.9	13.8	1977	108	10.4	2570	109.0	12.0	2529
Mymensingh							108.5	10.6	1953	114.3	11.5	1893
Rajshahi	117.6	10.8	2171	117.6	14.8	2530	109.6	10.4	2383	109.0	12.1	2858
Rangpur	116.4	11	2054	112.5	13.8	2138	109.7	11	2087	111.2	10.6	1790
Sylhet	111.2	12.2	1386	107.3	13.4	1603	103	10.1	1518	104.5	11.9	2056
National Mean	115			114			109			110		
TOTAL			17828			19406			24109			25158

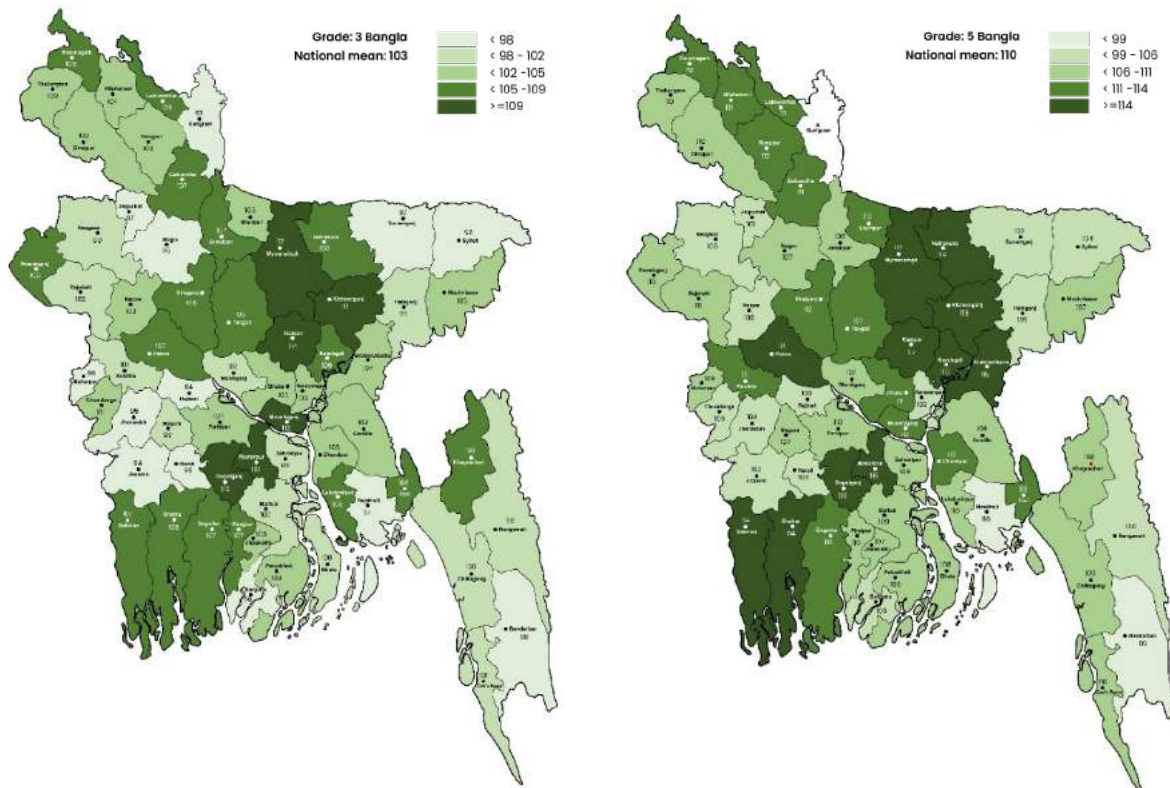
Table 13: Division-wise Bangla score differences grouped by statistical significance (grade 5)

Division	N	Homogeneous Groups						
		1	2	3	4	5	6	7
Barisal	1497		108.2					
Chittagong	6084				109.9			
Dhaka	6451						112.6	
Khulna	2529			109.0				
Mymensingh	1893							114.3
Rajshahi	2858			109.0				
Rangpur	1790					111.2		
Sylhet	2056	104.5						
TOTAL	25158							

3.5. Bangla mean scale scores by district

The figures below present the distribution of Bangla mean scale score across districts. In general, grade 5 students across districts have performed better than grade 3 as stated earlier. NSA samples were not necessarily representative at district level, so it is recommended not to draw any conclusion from the figure below. The intent is to provide an overview of the performances across the country. The district-wise value of mean scale score for Bangla is provided in Appendix 5.

Figure 8: Distribution of student performance (mean scale score) across districts in NSA 2022



3.6. Bangla mean scale scores by School Type

Table 14 and Table 16 below indicate the performance of students categorised by the school type in which they are studying. The basis of comparison is the mean scale score. In NSA 2022, seven types of schools were included in the assessment. ROSC was no longer considered relevant and therefore, excluded, while BRAC learning centres were grouped with NGO schools.

The performance of different types of schools shows some difference. GPS, KG and HSAPS were above the national mean in both grades. SKPS showed the best performance in grade 3, although this was not reflected in grade 5, and HSAPS showed the best performance in grade 5. Madrasah and NGO schools showed the weakest performance across both grades 3 and 5.

The test of significance was conducted to see if these differences are meaningful⁵. It was found that performances of students in Madrasah were significantly lower than other school types in both grades. In grade 3, KG and HSAPS formed a homogenous group that performed significantly better than the former. In grade 5, the performance also was less homogenous, with KG and HSAPS forming the only homogenous group.

⁵ School types that had less than 450 students have not been considered for the test of significance.

Table 14: Bangla mean scale scores by school type (grade 3)

School Type	2013			2015			2017			2022		
	Mean BSS	Std. Dev	N	Mean BSS	Std. Dev	N	Mean BSS	Std. Dev	N	Mean BSS	Std. Dev	N
GPS	104	12.5	13322	100	12.2	13531	103	12.4	17585	104	13.6	16865
NNPS				100	11.7	4042	101	12.5	4706	102	13.0	5424
KG	107	10.5	1485	107	10.4	1723	108	10.5	2592	104	11.3	3325
HSAPS	105	9.8	869	103	11.8	632	105	12.0	909	105	12.2	1398
Madrasah	104	12.2	1078	100	13.3	1018	100	12.6	1334	100	13.2	1309
NGO										99	14.4	391
SKPS										106	13.9	40
ROSC	106	12.7	1082	97	12.0	1355	101	11.2	502			
BRAC	99	7.8	414	102	10.1	588	107	10.8	470			
RNGPS	103	11.5	4619									
OVERALL	104		22869	101		22889	103		28098	103		28752

Table 15: Bangla score differences by school type grouped by statistical significance (grade 3)

School Type	N	Homogeneous Groups			
		1	2	3	4
GPS	16,865		104		
NNGPS	5,424			102	
KG	3,325	104.5			
HSAPS	1,398	105			
Madrasah	1,309				100

Table 16: Bangla mean scale score by school type (grade 5)

School Type	2013			2015			2017			2022		
	Mean BSS	Std. Dev	N	Mean BSS	Std. Dev	N	Mean BSS	Std. Dev	N	Mean BSS	Std. Dev	N
GPS	116	11.1	10633	115	13.8	11526	109	10.6	14501	111	11.7	14357
NNPS				111	13.1	3359	106	9.9	3756	109	11.5	4960
KG	118	10.2	1187	122	16.7	1491	113	9.8	2189	112	11.3	2918
HSAPS	114	11.8	710	118	16.7	560	111	11.4	922	113	11.9	1223
Madrasah	110	12.0	935	108	14.7	945	103	10.9	1515	105	12.1	1373
NGO										106	14.1	298
SKPS										109	10.0	29
ROSC				108	13.8	447	104	10.4	527			
BRAC	112	8.2	994	116	13.8	1060	109	8.9	699			
RNGPS	113	10.3	3419									
OVERALL	115		17878	114		19388	109		24109	110		25158

Table 17: Bangla scale score differences by school type grouped by statistical significance (grade 5)

School Type	N	Homogeneous Groups			
		1	2	3	4
GPS	14,357		111		
NNGPS	4,960			109	
Madrasah	1,373				105
KG	2,918	112			
HSAPS	1,223	113			

The figures below show the performance of students across all school types (as applicable) for NSA 2017 and 2022.

Figure 9: Bangla mean scale score by school type (grade 3)

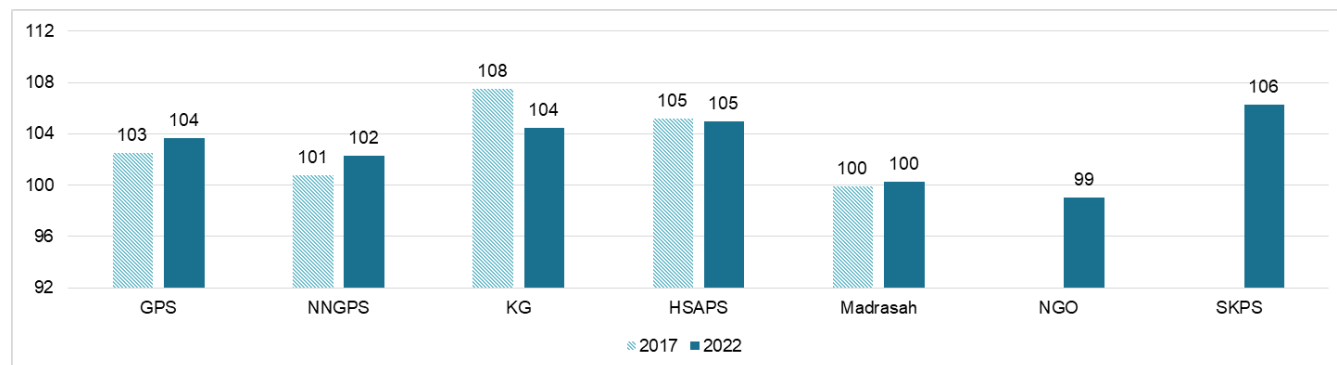
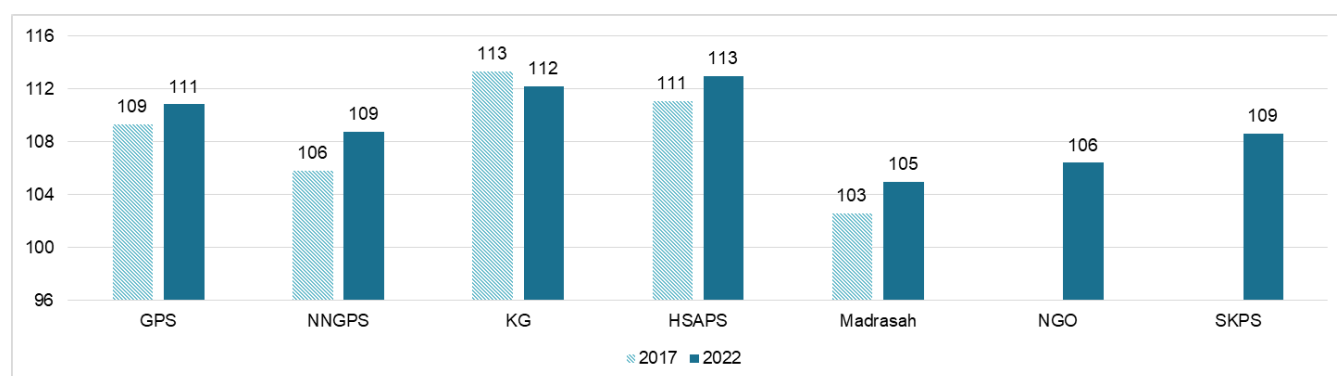


Figure 10: Bangla mean scale score by school type (grade 5)



3.7. Bangla mean scale scores by geographical location

The tables below indicate the performance of students categorised by geo-location. The basis of comparison is the mean scale score. In NSA 2022, 10 different geographical locations were included in the assessment.

In grades 3 and 5, schools in plain lands and border areas scored above the national mean with schools in coastal areas scoring better than the national mean in grade 3 and equivalent to the national mean in grade 5. Schools in urban slum areas in grade 5 also performed better than the national mean. Wetlands, remote areas and schools in islands performed poorly in both grade 3 and 5 and schools in hill tracts also performed unsatisfactorily in grade 5.

The test of significance was carried out to see if these differences are meaningful. As the number of students were low (less than 450) in many areas, only four groups were included in these significance tests. It is evident from the table below that the performance of students in coastal areas and plain lands was significantly better than others in grades 3 and 5, with coastal area students performing significantly better than students in plain lands in grade 3.

Table 18: Mean Bangla scale score by geographical location in NSA 2022 (grade 3)

Geographical Location Name	Mean BSS	Std. Dev	N
Haor (wetlands)	99.8	11.9	523
Hill Tracts	101.7	13.0	402
Coastal Area	104.6	13.3	1764
Char (lowlands)	102.1	13.1	633
Urban Slum Area	100.2	11.8	329
Riverside/erosion area	103.0	13.7	211
Plain Land	103.4	13.2	24750
Border Area (up to 5 km from border)	104.2	8.7	37
Island	99.9	11.4	82
Remote Area	99.2	8.8	21
National	103		
Total			28,752

Table 19: Bangla mean scale scores by geographical location grouped by statistical significance (grade 3)

Geographical Location	N	Homogeneous Groups*			
		1	2	3	4
Haor (wetlands)	523	99.8			
Coastal Area	1764				104.6
Char (lowlands)	633		102.1		
Plain Land	24750			103.4	

*groups with population size <450 have been excluded from the test of significance

Table 20: Bangla mean scale score by geographical location in NSA 2022 (grade 5)

Geographical Location Name	Mean BSS	Std. Dev	N
Haor (wetlands)	105.6	14.4	453
Hill Tracts	105.0	12.8	378
Coastal Area	110.0	10.8	1647
Char (lowlands)	107.5	11.8	511
Urban Slum Area	111.6	10.6	286
Riverside/erosion area	109.4	10.8	161
Plain Land	110.5	11.8	21598
Border Area (up to 5 km from border)	114.4	6.6	30
Island	105.4	9.3	74
Remote Area	103.1	9.6	20
National	110		
Total			25,158

Table 21: Bangla mean scale scores by geo-location grouped by statistical significance (grade 5)

Geographical Location	N	Homogeneous Groups*		
		1	2	3
Haor (wetlands)	453	105.6		
Coastal Area	1647			110.0
Char (lowlands)	511		107.5	
Plain Land	21598			110.5
*groups with population size < 450 have been excluded from the test of significance				

3.8. Bangla proficiency bands

Assessment results are reported globally using proficiency scales as they provide many benefits, including the ability to compare student performance across years/assessment cycles. They also allow the development of described achievement scales that provide meaningful descriptions of student achievement. If a student is at a particular level on the scale, the skills and knowledge they are likely to demonstrate are described.

For ease of use, the scale is divided into multiple bands in a way that students in higher bands are likely to exhibit most of the skills described in those bands but also are most likely to demonstrate skills in the bands below. Each band (and its associated description) is at a higher level of proficiency compared to the bands below. Therefore, based on empirical evidence, the band descriptions show how learners typically progress in their learning through a domain.

The descriptors of current proficiency bands, based on the NSA assessments for Bangla language (referred to as “legacy bands” to distinguish them from performance levels), are presented in the table below. They originate from the NSA 2011 (ACER, 2012) and are intended to capture the achievement of students from grades 3 to 5 in Bangla language.

Table 22: Proficiency band descriptors and cut scale scores for Bangla language (ACER, 2012)

Bangla Scale Score	Band Descriptor for Bangla Language
122 and above	<p>Pupils working in Band 5</p> <ul style="list-style-type: none"> • Read a range of short, more challenging texts, including poems⁶ • Interpret figurative language • Identify literal and implied meaning • Connect ideas in different parts of a text • Show detailed knowledge of the rules of punctuation

⁶ The descriptions are intended to be read as – ‘The student is likely to be able to ...’

Bangla Scale Score	Band Descriptor for Bangla Language
108 – 121	Pupils working in Band 4 <ul style="list-style-type: none"> • Read a range of short texts with more complex ideas • Identify main ideas, literal meaning • Make inferences • Understand the sequence of events in imaginative texts • Identify text types based on format • Identify meanings of familiar words in new contexts • Know how to punctuate direct speech
96 – 107	Pupils working in Band 3 <ul style="list-style-type: none"> • Read short, simple texts of different types with some unfamiliar vocabulary • Make use of simple clues to make simple inferences and identify main ideas • Deduce simple word meanings • Show knowledge of word formation
85 – 95	Pupils working in Band 2 <ul style="list-style-type: none"> • Read short, simple, mostly imaginative texts • Locate and interpret directly stated information • Identify correct word orders of simple sentences • Identify the meaning and correct spelling of high frequency words • Recognise the correct use of some punctuation
Below 85	Pupils working in Band 1 <ul style="list-style-type: none"> • Read simple, highly familiar texts, such as signs that contain strong visual support to interpret and locate information

The band descriptors indicate, for instance, that a student with a scale score of 100 will be at band 3 level and is likely to read short, simple texts of different types with some unfamiliar vocabulary, make use of simple clues to make simple inferences and identify main ideas, etc. (based on the description associated with band 3). They are also expected to read short, simple, mostly imaginative texts, locate and interpret directly stated information, etc. (based on the description associated with band 2). Further, they are unlikely to read a range of short texts with more complex ideas, identify main ideas, literal meaning, etc. (based on the description associated with band 4).

The figure below shows the proportion of students at each band level across all the cycles of NSA. There is a clear improvement from grade 3 to grade 5 as the proportion of students increases towards the higher levels. The performance of students when compared to 2017 was similar in grade 3 and slightly better at higher levels in grade 5. However, the percentage of students at band 5 level (in grade 5) has reduced substantially in 2017 and 2022 as compared to 2013 and 2015.

Figure 11: Distribution of Bangla performance by proficiency bands by grade and year

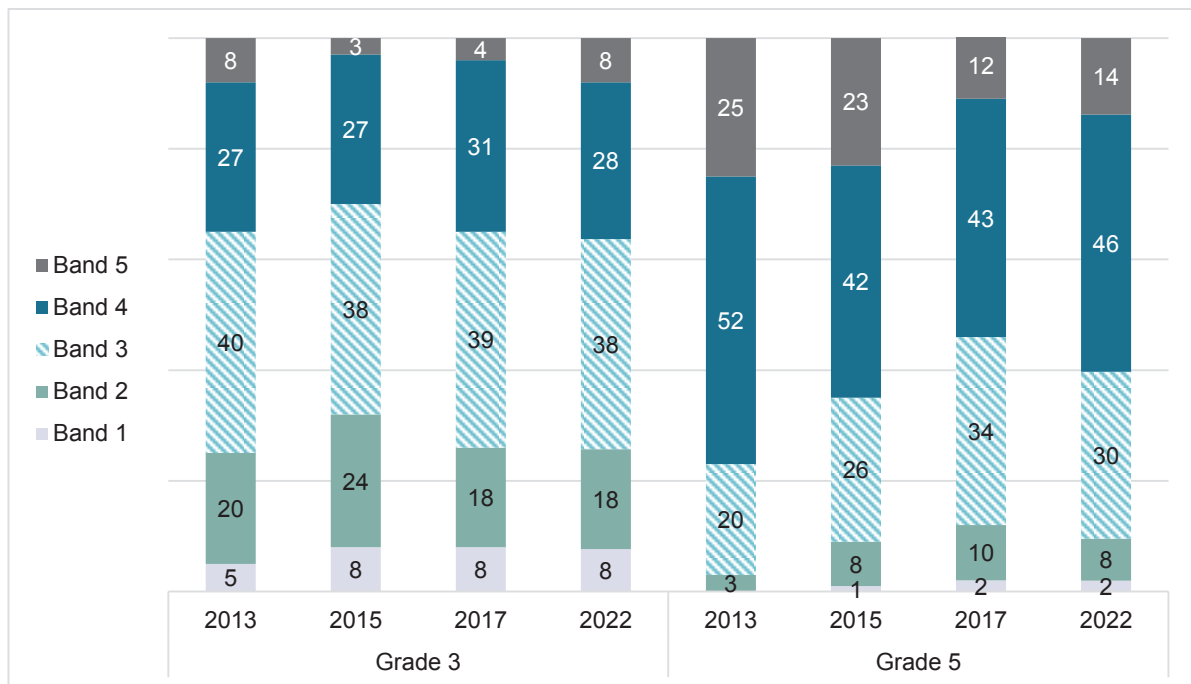


Figure 12 and Figure 13 below, disaggregate the proportion of students by gender. In general, student performance was similar between genders although there was a slightly higher proportion of girls at the higher levels in both grades. This tendency was more pronounced in 2022 than in earlier years.

Figure 12: Bangla proficiency bands by gender (grade 3)

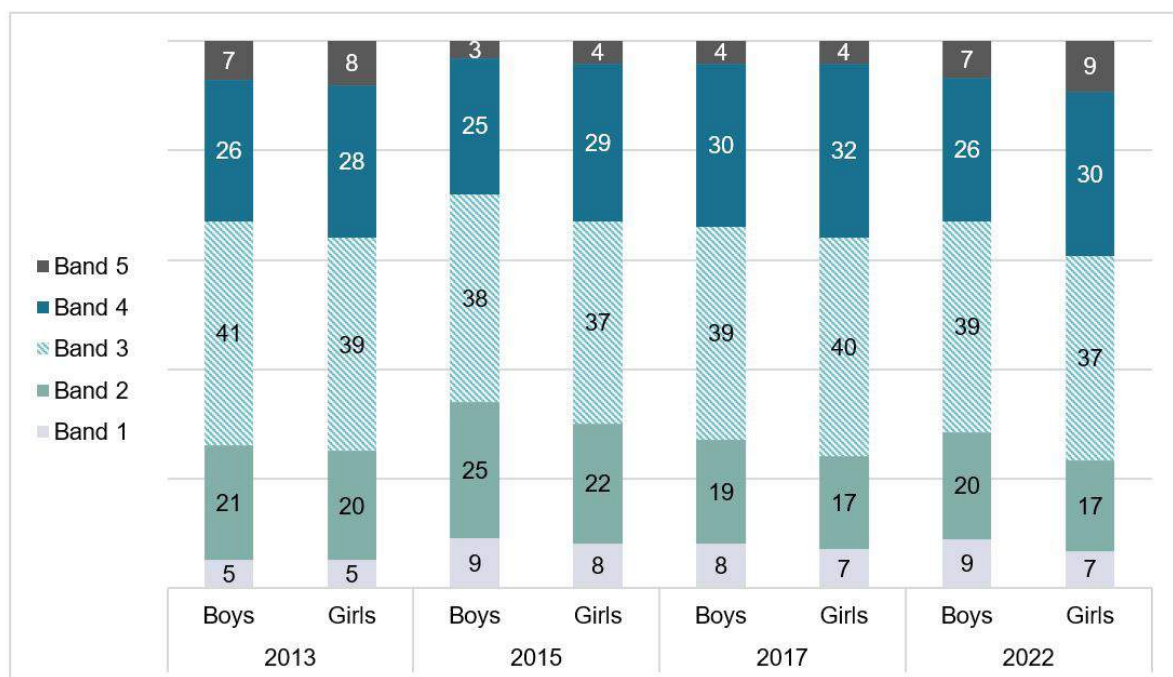
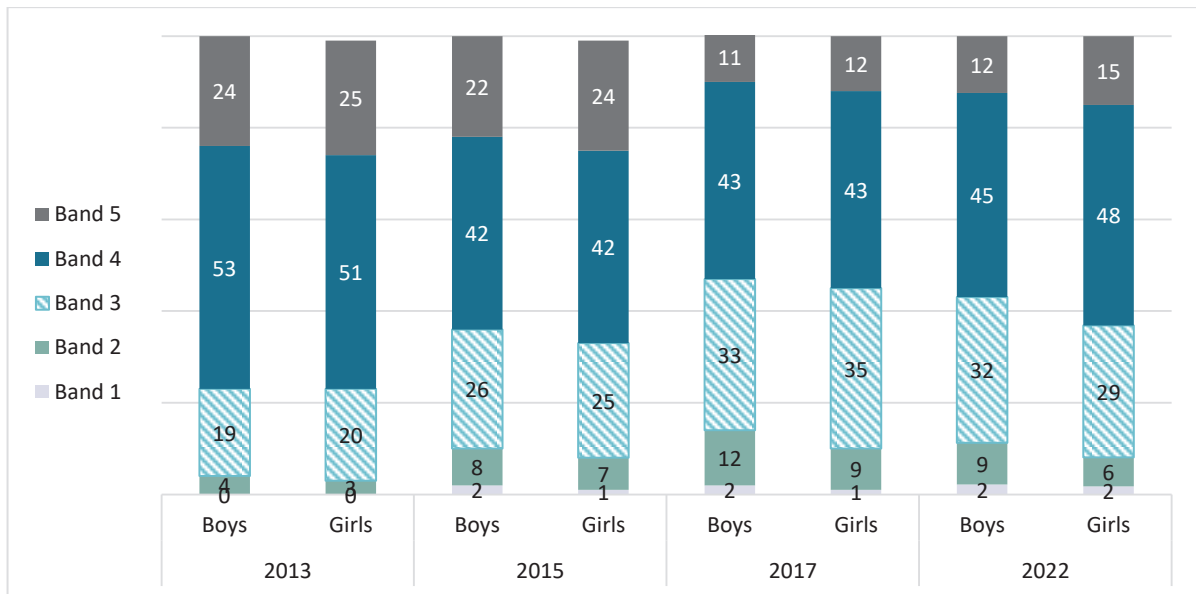


Figure 13: Bangla proficiency bands by gender (grade 5)



3.9. Bangla performance standards

Setting performance standards is a process for defining a framework that links test scores to pre-defined criteria based on a national curriculum. It is a procedure that conceptualises and operationalises the performance levels to be used to report assessment findings.

During NSA 2017, four performance standards were developed that describe four levels of attainment of performance. NSA 2017 student performance was also reported on those four performance standards. In addition, NSA 2017 adopted a principle that the proportion of students who have/have not achieved grade-level competencies would be determined based on their performance across the performance standards, not the proficiency bands. The standards 'Below Basic' and 'Basic' were considered below grade level performance whereas the standards 'Proficient' and 'Advanced' were considered grade level attainment.

This procedure consisted of two stages: Setting Performance Levels and Setting Cut Scores. During the Setting Performance Levels stage, the development of conceptual definitions of performance levels was carried out for grades 1 to 5. It was decided that 4 performance levels were appropriate, each with its general and specific definitions created for each grade level and subject.

The detailed process followed to set up the performance standards is described in the NSA 2017 Public Report⁷. The descriptors for each level are provided in Appendix 3.

In NSA 2022, the following steps were undertaken to report on student performance based on the 4 levels described in the performance standards:

- All items were arranged by difficulty (scale score).
- Item intent (what the item is assessing) was reviewed and matched with performance descriptors for each level.
- The cut scores were decided based on the previous step.

⁷ The National Student Assessment 2017 Book (1).pdf (portal.gov.bd)

- Finally, as a confirmatory step, the number of items in each level was reviewed to ensure that sufficient items are present in each category.

The cut scores originally generated in NSA 2017 were based on a different scale (created in NSA 2017). However, the information required to place items on the NSA 2017 Bangla scale was unavailable and therefore, the cut scores had to be regenerated and aligned with the NSA Bangla scale. The cut scores for Bangla are provided below.

Table 23: Cut scores based on raw scores of students in Bangla NSA 2022

Test	Max Score points	Basic	Proficient	Advanced
Bangla Grade 3 Set A	34	21	27	32
Bangla Grade 3 Set B	33	20	27	32
Bangla Grade 5 Set A	41	23	32	39
Bangla Grade 5 Set B	41	25	34	40

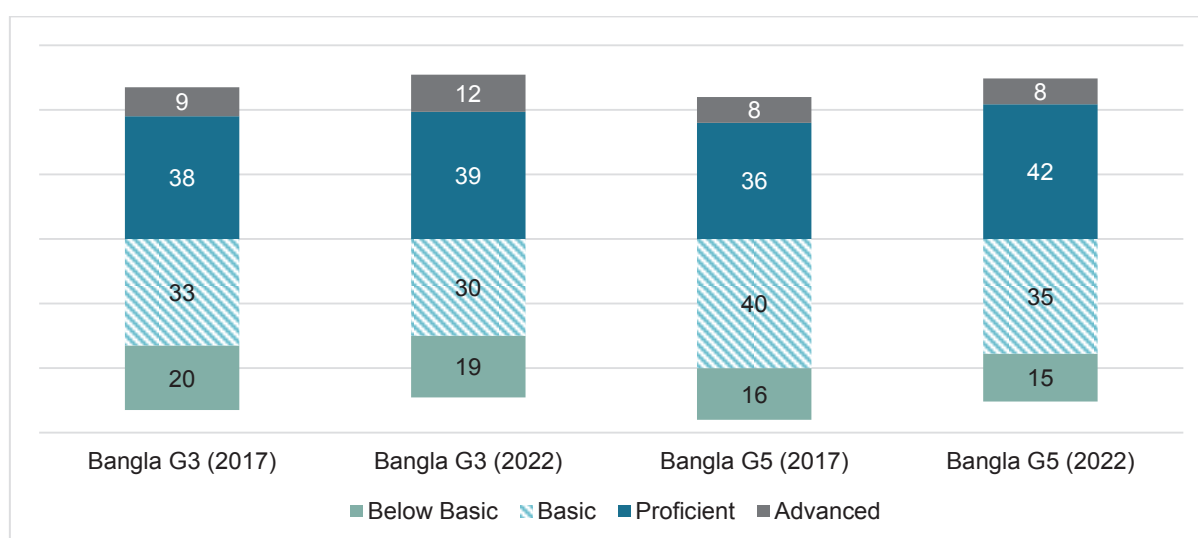
Table 24: Cut scores in Bangla based on the Bangla Scale Scores (BSS) in NSA 2022

Test	Basic	Proficient	Advanced
Bangla Grade 3	93	104	119
Bangla Grade 5	96	111	128

The figure below illustrates the proportion of students at each performance level in NSA 2017 and 2022 for Bangla. The data suggests that the percentage of students has increased at the higher levels (Advanced and Proficient) in grade 3 and has increased at the Proficient level in grade 5, while remaining constant at the advanced level. Overall, this indicates better performance and is consistent with the findings based on the proficiency levels.

- Fifty-one percent (51%) grade 3 students demonstrated grade level performance in NSA 2022 as compared to forty-seven percent (47%) students in NSA 2017.
- Fifty percent (50%) grade 5 students demonstrated grade level performance in NSA 2022 as compared to forty-four percent (44%) students in NSA 2017.

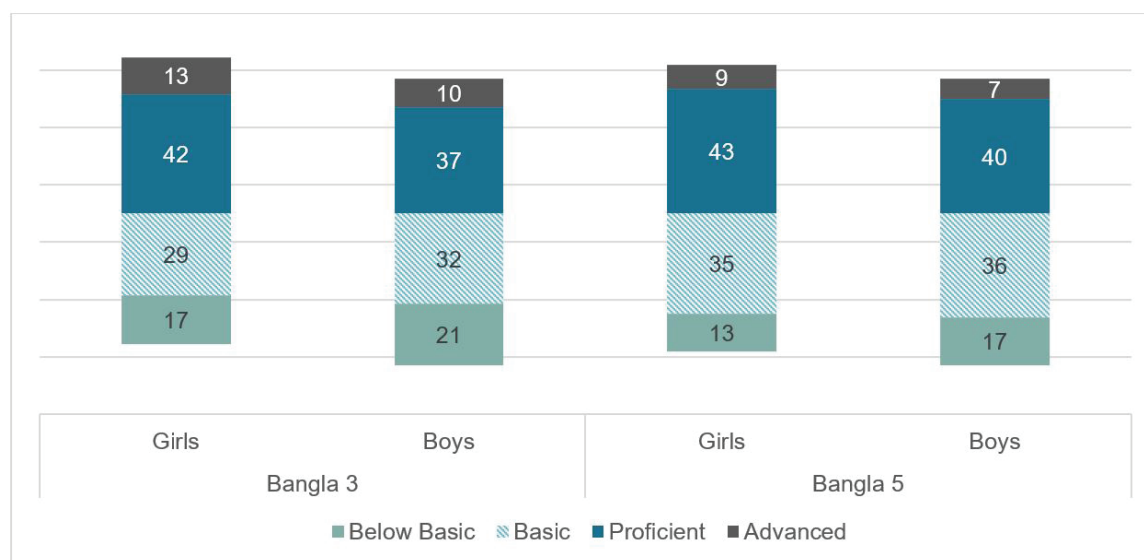
Figure 14: Percentage of students at each performance level* in Bangla (2017, 2022)



* Students who are at proficient and advanced levels are considered to have achieved grade-level competencies.

NSA 2022 performance disaggregated by gender shows that 53% boys in each grade are at basic or below basic level, while at least 50% girls at each grade level have achieved grade level standards.

Figure 15: Bangla performance by gender in grade 3 and grade 5



Percentages of students achieving grade-level competencies in Bangla have increased in both grades, with slightly more increase for girls. However, disparities between boys and girls in terms of the achievement of grade-level competencies have slightly increased compared to the NSA 2017 results.

Table 25: Percentages of students achieving grade-level competencies in Bangla

	Grade 3		Grade 5	
	2017	2022	2017	2022
All	47%	51%	44%	50%
Boys	45%	47%	43%	47%
Girls	48%	55%	44%	52%

NSA 2022 performance by division shows variations in distribution of students attaining grade level standards. Mymensingh division shows the best performance with 68% and 63% students attaining grade level performance standards in grade 3 and grade 5, respectively. On other hand Sylhet showed the lowest performance in both grades with 62% grade 3 students and 69% grade 5 students at basic or below basic level. Other two divisions where at least 50% students have achieved grade level standards for both the grades were Dhaka and Rangpur. In all other divisions, above 50% students are either at basic or below basic level.

Figure 16: Grade 3 Bangla attainment on performance standards by division in NSA 2022

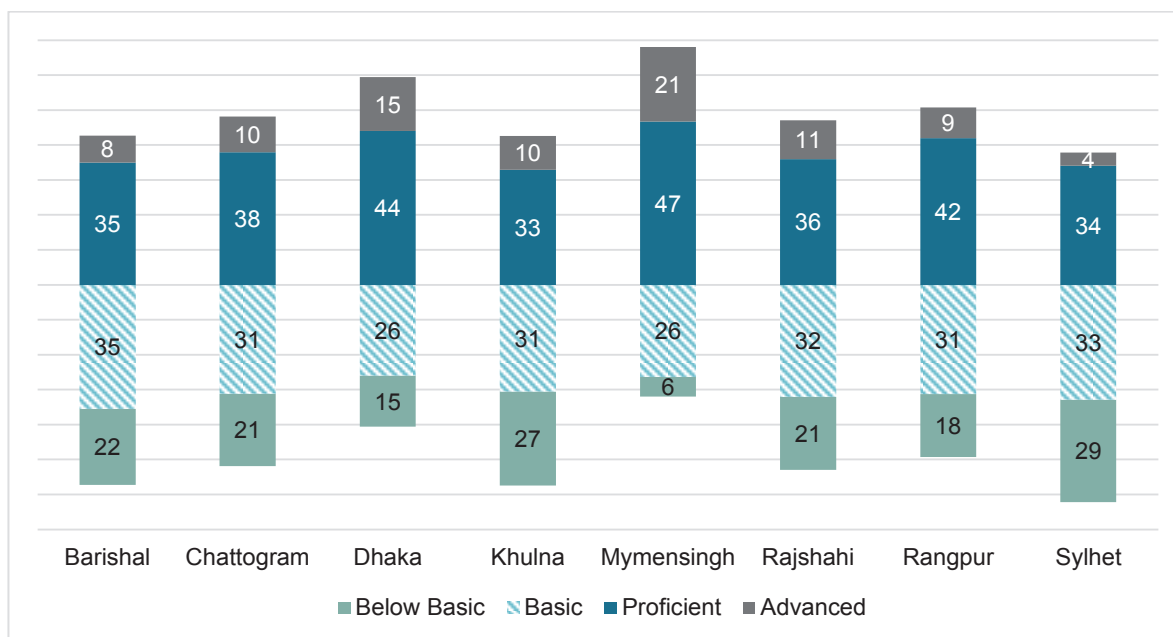
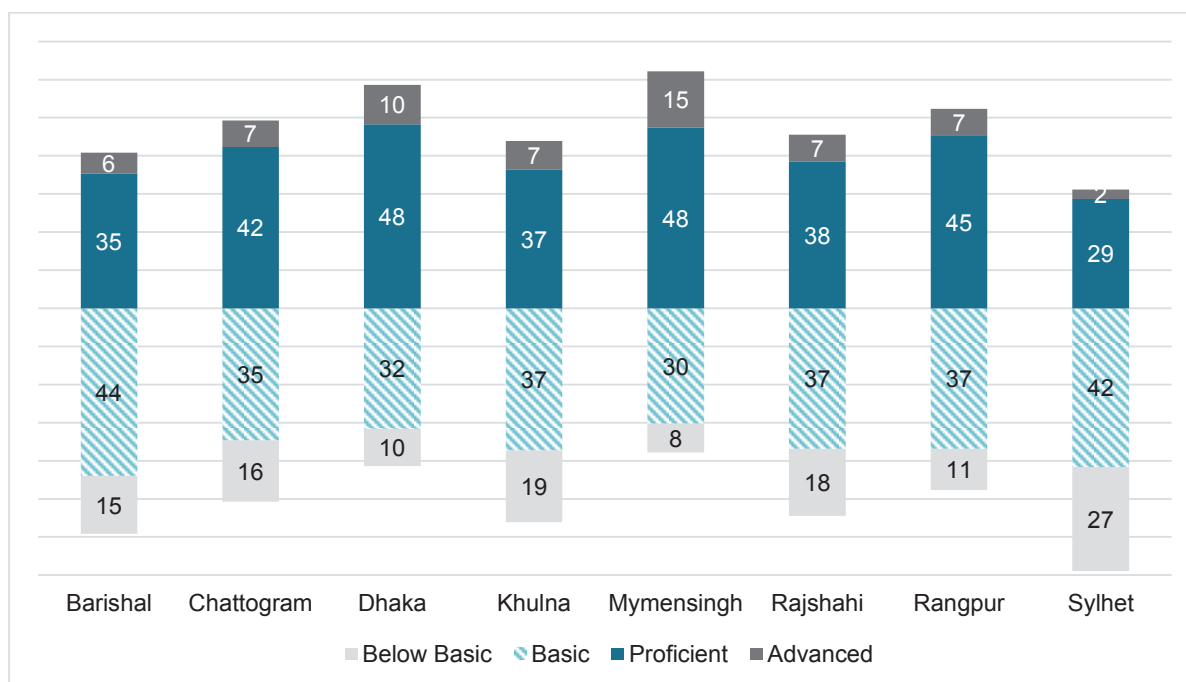


Figure 17: Grade 5 Bangla attainment on performance standards by division in NSA 2022



NSA 2022 Bangla performance by school type is provided in Figure 18 and Figure 19. KG and HSAPS show higher performance in both grades. In KG, 54% grade 3 students and 59% grade 5 students showed achievement of grade level standards, while in HSAPS, 56% grade 3 students and 60% grade 5 students are at the grade appropriate level. In GPS and SKPS, more than 50% students are at the grade appropriate level in both the grades. In all other school types, more than half of the students are either at basic or below basic level.

Figure 18: Bangla performance by school type in grade 3 in NSA 2022

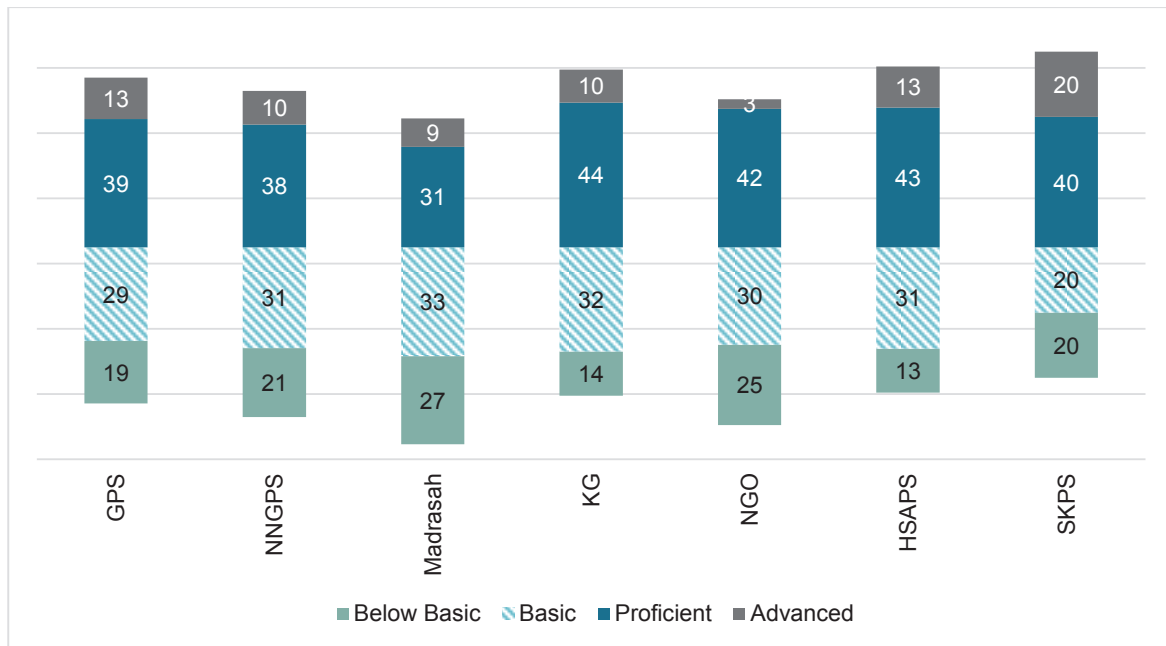
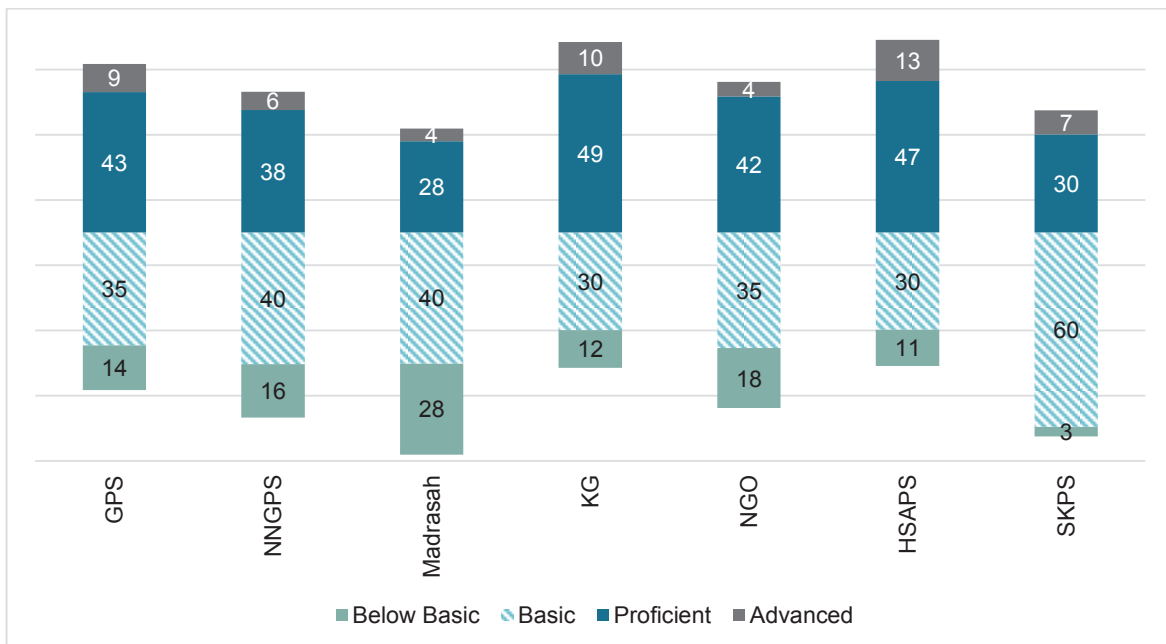


Figure 19: Bangla performance by school type in grade 5 in NSA 2022



3.10. Bangla performance by key learning area

This section describes the performance of students in Bangla in different key areas that constituted the NSA 2022 Bangla language assessment.

As described above, the four key areas that were assessed in Bangla are:

1. pre-reading skills
2. reading comprehension
3. grammar as related to reading comprehension
4. vocabulary as related to reading comprehension

The figures below show the mean performance on items by strand. It is the percentage of correct responses on all the items assessing the strand. It is evident that the overall performance was best in pre-reading skills. These are the concepts below-grade level and are considered pre-requisites for acquiring skills and concepts at the grade level. In grade 3, reading comprehension was the most challenging area followed by vocabulary whereas in grade 5, both reading comprehension and vocabulary were found to be areas of concern. Girls invariably showed slightly better performance than boys across all key areas.

Figure 20: Performance by key areas in Bangla (grade 3)

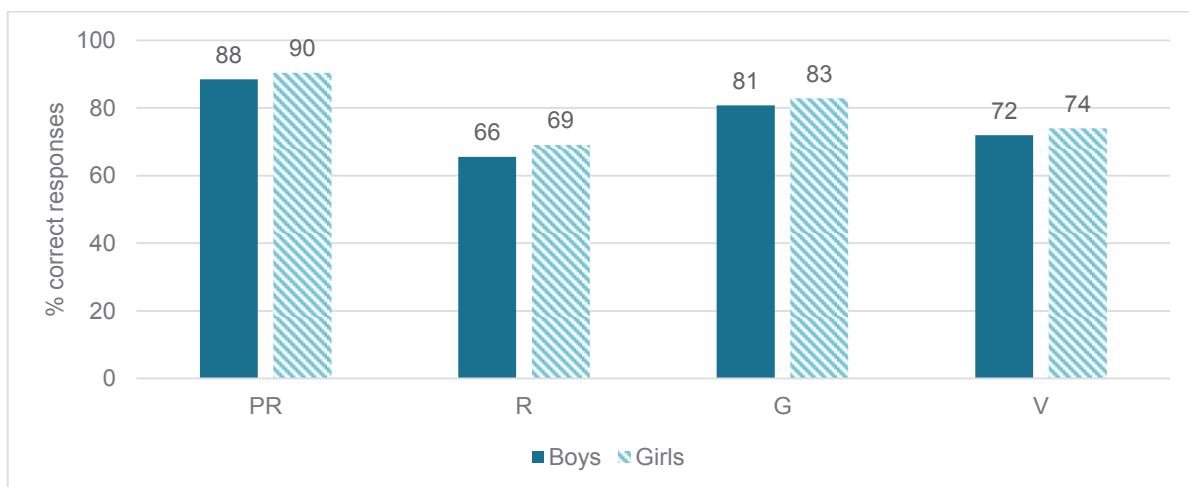
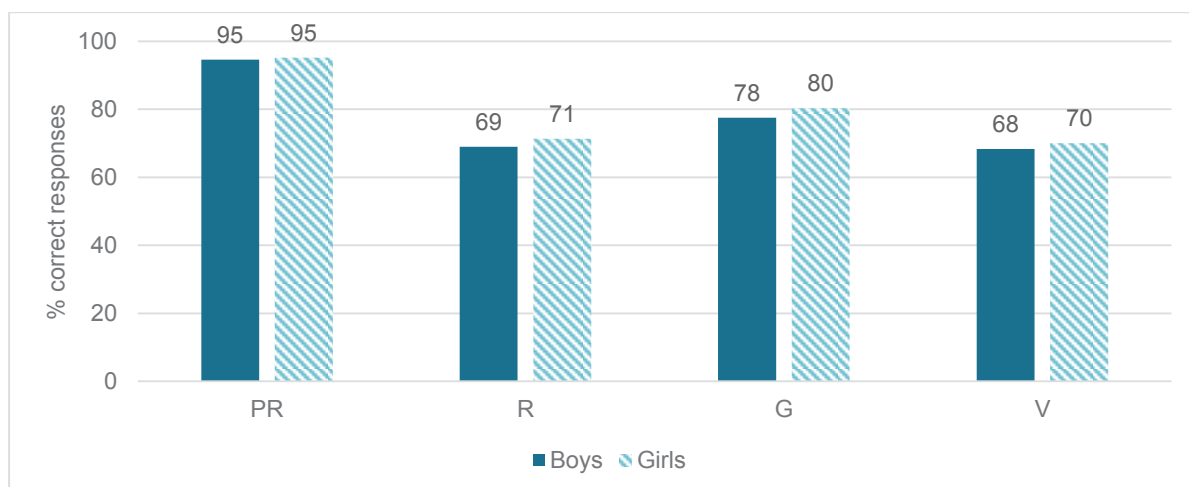


Figure 21: Performance by key areas in Bangla (grade 5)



3.11. Bangla performance on pre-reading skills

NSA 2022 incorporated items developed on pre-reading skills. These items were added under the assumption that learning disruptions brought on by the COVID-19 may have resulted in learning loss.

In grade 3 and 5 the focus skills included the skills above and also incorporated those that are mentioned below:

- distinguish letters from other shapes
- recognise letters that begin words presented in the form of images

- match words/phrases and images
- match sentences and images

The performance on pre-reading showed that 89.5% responses were correct in grade 3 while 95.3% responses were found to be correct in grade 5. This indicates that students have the required pre-requisite skills to attain the grade level competencies.

3.12. Bangla performance by cognitive levels

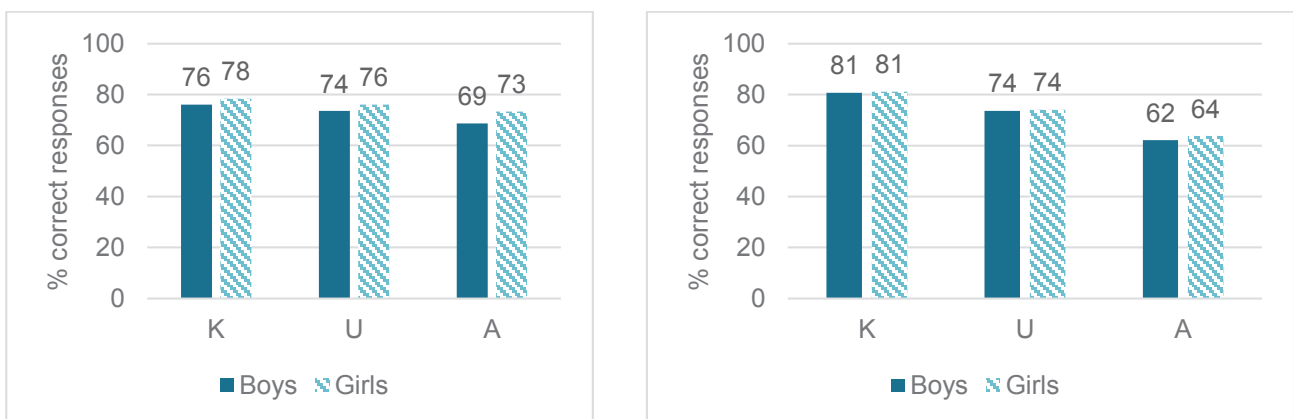
This section describes the performance of students in Bangla in different cognitive levels that were assessed in the NSA 2022 Bangla language assessment.

The cognitive processing levels that were assessed in Bangla were:

1. knowledge
2. understanding
3. application and higher-order thinking skills

The figures below show the mean performance on items belonging to different cognitive levels disaggregated by gender. Interestingly, grade 3 students seem to perform similarly on items assessing knowledge and understanding, while items assessing application and higher order thinking skills were the most difficult. In grade 5, items on knowledge were easiest followed by items assessing understanding, with items on application and higher order thinking skills being the most difficult. Girls invariably performed slightly better than boys across all cognitive levels.

Figure 22: Performance in Bangla by cognitive level (grade 3)



3.13. Summary

NSA 2022 assessed the four key areas in Bangla language mentioned below:

1. pre-reading skills
2. reading comprehension
3. grammar as related to reading comprehension
4. vocabulary as related to reading comprehension

Pre-reading skills is an area that has not been previously included in the NSA scale. However,

due to the disruptions caused by the COVID-19 pandemic, it was considered important to include concepts that were below particular year levels to identify where students are currently in their learning.

Further, the assessment categorised each item by the following cognitive levels:

1. knowledge
2. understanding
3. application and higher order thinking skills

This classification follows the approach of the earlier cycles of NSA. However, it is recommended that in future cycles, an approach more appropriate for an assessment that is more reading focussed could be adopted. This approach could also incorporate the sub-skills of reading.

In order to ensure that the assessment consisted of a valid representation of the domain, the assessment framework proposed how the assessment should be organised with specific proposed distributions for some of the parameters. The assessment largely achieved these distributions ensuring a valid assessment. Further, all the booklets used in the Bangla NSA 2022 assessment were found to be reliable.

3.13.1. Findings by mean scale score

Across the NSA cycles, Bangla mean scale scores remained quite similar in grade 3. In grade 5, there was a marginal increase in the mean scale score in NSA 2022 over NSA 2017, however the level is still lower compared to NSA 2013 and NSA 2015. The mean scale scores were similar for boys and girls with slightly better performance by girls in some cases.

When analysed by division, Mymensingh showed a substantial improvement from 2017, while others showed performance similar to 2017. Mymensingh and Dhaka were the only divisions that consistently performed above the national average. Sylhet division has consistently lagged behind the others across NSA cycles.

Students in different types of schools showed some difference though in many cases, the significance was not calculated as the number of students were quite low. GPS, KG and HSAPS were above the national mean in both grades. SKPS schools showed the best performance in grade 3, although this was not reflected in grade 5. Madrasahs and NGO schools showed the weakest performance across both grades 3 and 5.

In grades 3 and 5, schools in plain lands and border areas scored above the national mean, and schools in coastal areas scored better than the national mean in grade 3 and equivalent to the national mean in grade 5 and their performance was significantly better than other schools. Schools in urban slum areas in grade 5 also performed better than the national mean. Wetlands, remote areas and schools in islands performed poorly in both grade 3 and 5 and schools in hill tracts also performed unsatisfactorily in grade 5. As most geo-locations had fewer than 450 students, they were not included in the significance tests.

3.13.2. Findings based on proficiency bands

The proficiency scale suggests that there was improvement from grade 3 to grade 5 in NSA 2022 and was similar or better than in 2017. Boys and girls students performed in a similar manner with girls doing slightly better.

3.13.3. Findings based on performance on key areas and cognitive levels

Reading comprehension is the area that was most challenging for students at both grade levels, followed by vocabulary. Students performed very well on pre-reading skills suggesting the mastery of pre-grade level concepts by majority of the students.

Application and higher-order thinking skills items were found to be the most challenging across grades. Students in grade 3 performed similarly on knowledge and understanding items.

Girls outperformed boys across grades in all categories (both by key areas and cognitive processing levels).

3.13.4. Findings based on performance standards

The data suggested that the percentage of students has increased at the higher performance levels (Advanced and Proficient) in grade 3 and has increased at the proficient level in grade 5, while remaining constant at the advanced level. Overall, this indicates better performance and is consistent with the findings based on the proficiency levels.

- Fifty-one percent (51%) grade 3 students demonstrated grade level performance in NSA 2022 as compared to forty-seven percent (47%) students in NSA 2017.
- Fifty percent (50%) grade 5 students demonstrated grade level performance in NSA 2022 as compared to forty-four percent (44%) students in NSA 2017.
- There is a wide variation in the percentage of students at grade appropriate level among divisions.

3.14. Conclusion

The NSA Bangla 2022 assessment was found to be valid and reliable. In general, the performance of students was similar to or better than in NSA 2017. An important finding is that the performance of girls was similar or slightly better than boys performance suggesting that gender equity is prevalent in this context.

Considering performance by region, Mymensingh division showed substantial gains compared to 2017 and Sylhet continued with a low level of performance. Performances of students in different school types showed some differences with NGO schools and Madrasah requiring a lot of support in the future.

Chapter – 4

NSA 2022

mathematics assessment

CHAPTER 4. NSA 2022 MATHEMATICS ASSESSMENT

The objective of mathematics instruction in the primary grades is to acquaint learners with arithmetical logic, methods and skills so that students become imaginative, curious, creative and intellectual learners; and increase students' abilities to apply such knowledge and skills for problem solving in real world contexts and activities.

The assessment framework for mathematics reflects consistent focus towards collecting information on student performance in four key content areas:

1. number properties and operations (including computation and understanding of number concepts)
2. measurement and units of measurement (including scale of measurement; principles of measurement; metric system of measurement; application of processes and concepts of area; operations related to differentiate between and carry out)
3. shape and space (understanding of concepts and using instruments)
4. data (graphical representations, relationships, and central tendency of data)

This categorisation into key areas is a helpful classification scheme that describes the full spectrum of mathematical content and does not intend to separate mathematics into discrete elements.

Learners in grades 3 and 5 are from diverse backgrounds and with varied learning experiences. It is necessary that learners develop numeracy and mathematical skills as they build their knowledge and understanding of mathematics and demonstrate an increasing sophistication to interpret questions, select appropriate processes, solve problems and interpret solutions, use mathematical vocabulary and notation, and reason mathematically. To be able to attain full potential in mathematics, students must first be able to get the foundational skills required to progress further in mathematics. Therefore, mathematics assessment for NSA 2022 incorporated a component of early numeracy to help understand the attainment level in numeracy. These foundational concepts focus primarily on being able to count, compare, operate, and measure.

Early numeracy primarily focuses on number and measurement, where a student is expected to know to count and be able to do the fundamental mathematical operations of addition and subtraction, and learn to compare quantities using non-standard measures. It is, therefore, important to understand their current proficiency level especially in foundational skills to cope with national expectations. Early numeracy content areas are not separate from the mathematical content areas, however, the only distinction is the number of digits involved and the ease of doing calculations involved with small numbers.

Appendix 2 provides a complete description of the key mathematics skills that students are expected to develop in grades 3 and 5.

4.1. Mathematics assessment and content expectations

In NSA 2022 information on student performance was collected in 4 key areas of mathematical content (Table 26). The content coverage reflects what was proposed in the assessment framework with minor variations (+/-5%). Considering the nature of the subject, early numeracy is a horizontal strand across all content areas and has not been considered as a separate strand in the assessment framework. However, for the purpose of reporting, these items were segregated as a group.

Table 26: Content areas of mathematics and their percentage weights in NSA 2022

Content area	Grade 3		Grade 5	
	Proposed	Actual	Proposed	Actual
Number properties and operations	55%	52%	55%	59%
Measurement and units of measure	30%	31%	25%	23%
Shape and space	15%	17%	15%	14%
Data	-	-	5%	4%

Mathematics items were classified into three categories defined by cognitive levels. The classification adopted the same definitions as in previous cycles to allow for comparisons. Assigning cognitive levels to a task depends on the thinking process needed to successfully complete the task. In mathematics, each item was assigned only one cognitive level, the highest level, as lower levels are subsumed in that. The table below provides the distribution of items by cognitive levels in the mathematics assessment. It is evident that the proportion of items classified by cognitive processing level was as specified in the assessment framework with minor variations (+/-5%).

Table 27: Cognitive levels for mathematics tests and their percentage weights in NSA 2022

Cognitive processing level	Grade 3		Grade 5	
	Proposed	Actual	Proposed	Actual
Knowledge	40%	40%	40%	41%
Understanding	35%	36%	25%	26%
Application	25%	24%	35%	33%

The table below provides the overall specifications and other details of the mathematics assessment.

Table 28: General features of the mathematics test

Features	Details			
Grades	3 and 5			
Number of test sessions	1 held on 06 December 2022			
Test time	75 minutes			
Number of test forms	2 booklets per grade			
Balance of content (Total coverage)	Content area	Grade 3	Grade 5	
	Number Properties and Operations	31	37	
	Measurement and Units of Measure	18	15	
	Shape and Space	10	9	
	Data	-	2	
Number of items (per booklet)	Grade 3: 35 Grade 5: 40			
Total unique items (Both booklets)	Multiple choice - Grade 3: 51 items; Grade 5: 55 items Constructed response - Grade 3: 9 items, Grade 5: 10 items			

4.2. Mathematics reliability estimates

As mentioned in chapter 3, reliability is a measure of how consistently an assessment will provide the same result under similar conditions. Educational assessments with a measure above 0.80 are considered reliable.

The table below provides the estimates for reliability for mathematics booklets indicating they were found to be reliable as the Cronbach Alpha was greater than 0.80.

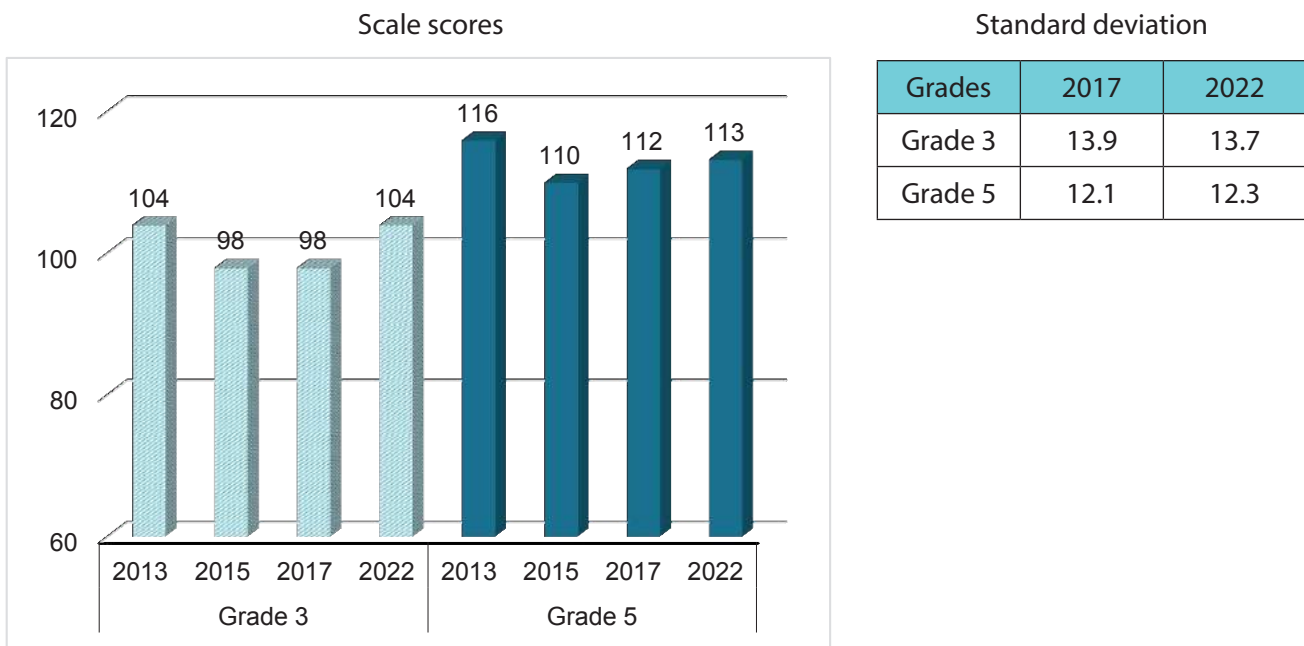
Table 29: Reliability estimated for mathematics tests (Cronbach Alpha)

Test	Number of items	Cronbach Alpha
Mathematics grade 3 Set A	35	0.84
Mathematics grade 3 Set B	34	0.85
Mathematics grade 5 Set A	40	0.87
Mathematics grade 5 Set B	39	0.88

4.3. Mathematics mean scale scores

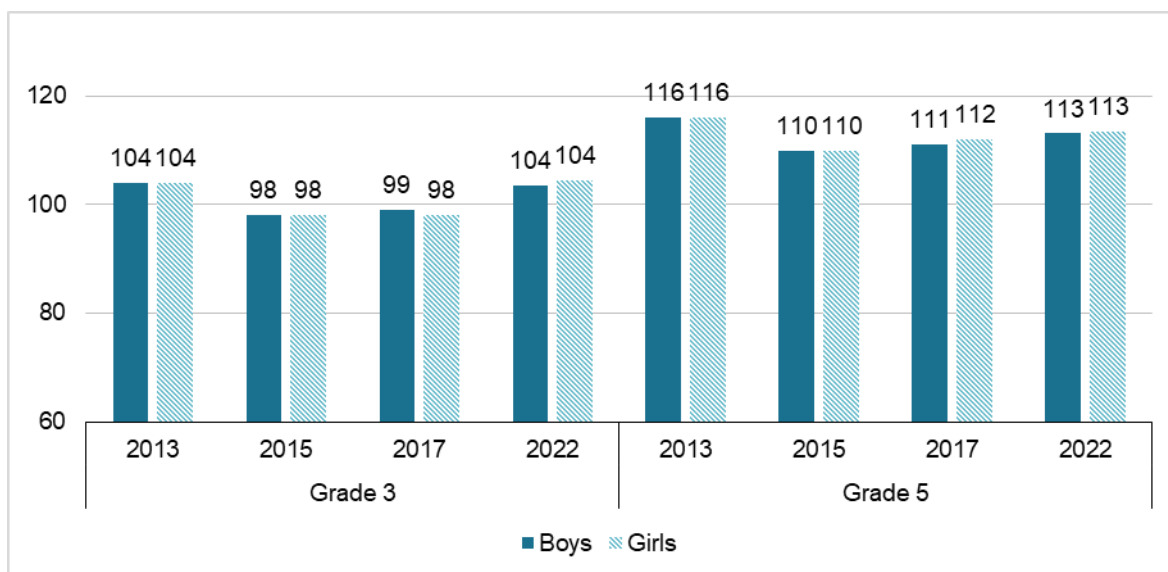
The overall mean scale scores in mathematics across four NSA cycles are presented in the figure below. It can be observed that mathematics mean scale scores in both grades decreased from 2013 to 2015 but showed a steady increase after that with the mean scale score in 2022 being close to 2013 levels. However, the gap between grade 3 and grade 5 has reduced in 2022, indicating a decline in learning gains between grade 3 and grade 5.

Figure 23: Mathematics mean scale scores and standard deviation by grade and year



The figure below shows the mean scale score across NSA cycles disaggregated by gender. The performance of girls and boys was consistently similar across cycles and grades.

Figure 24: Mathematics mean scale scores by gender, grade and year



4.4. Mathematics scale scores by division

The tables below show the relative performance of various divisions based on the mean scale score. As described in chapter 3, the differences in the mean scale score were compared to see if they were significant. Each mean value was compared to the immediately higher value and those that were significant placed in different groups. Those that were not significantly different were grouped together as homogenous groups.

Mymensingh and Dhaka showed the best performance in both grades, with Mymensingh performing significantly better than the rest and Dhaka significantly better than others except Mymensingh. Both these divisions were consistently above the national mean. Rangpur and Chittagong were also above the national mean in grades 3 and 5, respectively. Sylhet consistently lagged behind with a significantly lower score.

Table 30: Mathematics mean scale scores by division (grade 3)

Division	2013			2015			2017			2022		
	Mean MSS	Std. Dev	N	Mean MSS	Std. Dev	N	Mean MSS	Std. Dev	N	Mean MSS	Std. Dev	N
Barisal	106.4	12.8	1458	96.8	10.2	1433	103.4	15.7	1297	102.5	13.1	1604
Chittagong	105.5	12.6	4968	97.8	11.2	4525	96.8	13.1	7096	103.1	13.2	6796
Dhaka	100.9	12.3	6881	98.9	11.5	6919	98.5	13.0	7047	105.6	13.9	7426
Khulna	102.7	11.8	2432	98.8	11.3	2336	97.3	12.7	2651	100.7	13.9	2835
Mymensingh							101.1	14.3	2620	111.1	11.6	2300
Rajshahi	107.9	14.5	2791	101.3	11.3	2906	99.3	13.4	2926	103.2	14.4	3009
Rangpur	105.9	11.5	2607	99.7	10.3	2866	101.6	13.8	2811	104.7	12.0	2378
Sylhet	98.4	13.2	1927	92.4	11.6	1969	93.5	13.1	2148	99.8	12.9	2389
National Mean	104			98			98			104		
TOTAL			23064			22954			28597			28737

Table 31: Mathematics 2022 scale scores by division grouped by statistical significance (grade 3)

Division	N	Homogeneous Groups					
		1	2	3	4	5	6
Barisal	1604			102.5			
Chittagong	6796			103.1			
Dhaka	7426					105.6	
Khulna	2835		100.7				
Mymensingh	2300						111.1
Rajshahi	3009			103.2			
Rangpur	2378						104.7
Sylhet	2389	99.85					
TOTAL	28737						

Table 32: Mathematics mean scale scores by division (grade 5)

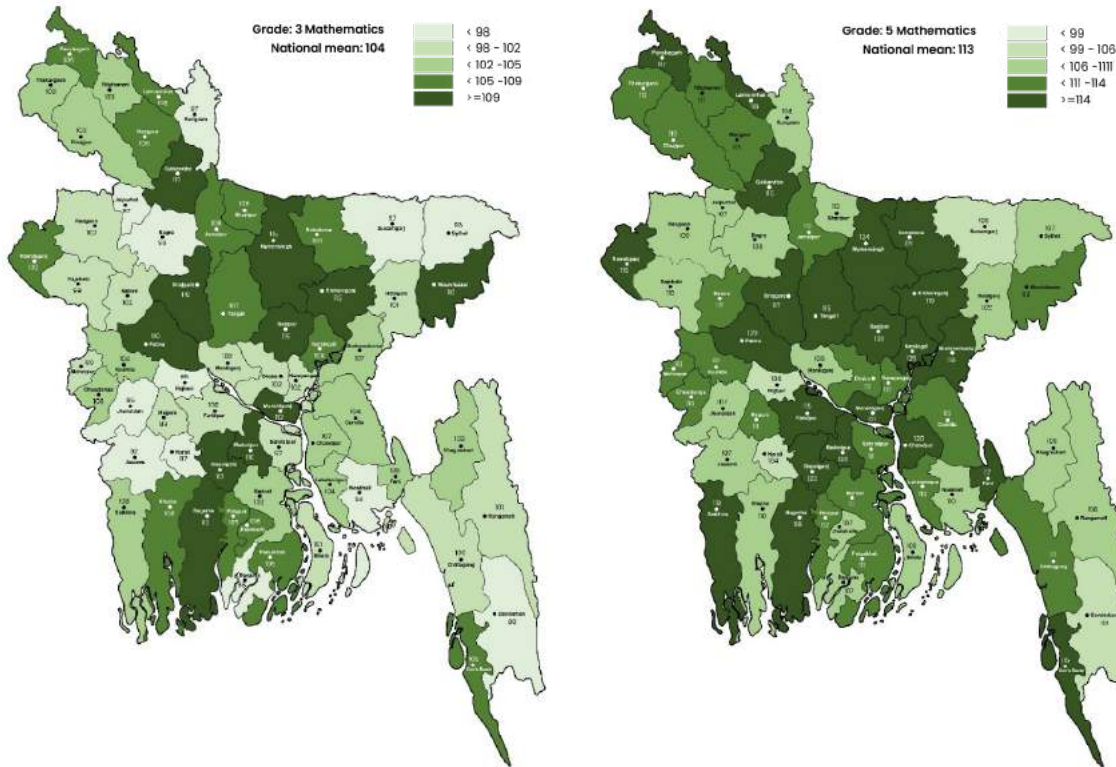
Division	2013			2015			2017			2022		
	Mean MSS	Std. Dev	N	Mean MSS	Std. Dev	N	Mean MSS	Std. Dev	N	Mean MSS	Std. Dev	N
Barisal	119.6	12.6	1115	108.9	10.8	1253	114.4	14.0	1171	110.3	11.7	1497
Chittagong	117.2	12.4	3927	109.5	10.2	4163	110.3	12.0	6348	113.4	11.6	6065
Dhaka	114.4	11.9	5123	111.6	11.1	5706	112.5	12.7	6107	115.4	12.9	6451
Khulna	115.5	11.3	2030	110.8	11.0	1983	110.8	12.4	2553	111.4	12.1	2489
Mymensingh							112.4	11.9	1916	119.4	11.8	1893
Rajshahi	118.3	12.7	2171	111.9	11.6	2536	112.9	13.1	2378	112.5	11.8	2858
Rangpur	115.4	12.4	2054	110.5	10.9	2147	112.5	11.0	2124	112.7	10.5	2112
Sylhet	111.0	13.1	1386	104.4	9.5	1595	107.2	11.8	1502	108.1	10.8	2056
National Mean	116			110			112			113		
TOTAL			17806			19383			24099			25421

Table 33: Mathematics mean scale scores by division grouped by statistical significance (grade 5)

Division	N	Homogeneous Groups						
		1	2	3	4	5	6	7
Barisal	1497		110.3					
Chittagong	6065					113.4		
Dhaka	6451						115.4	
Khulna	2489			111.4				
Mymensingh	1893							119.4
Rajshahi	2858				112.5			
Rangpur	2112				112.7			
Sylhet	2056	108.1						
TOTAL	25421							

4.5. Mathematics scores by district

The figures below indicate a huge variation in performance of students in mathematics across districts. It is to be highlighted here that NSA samples were not necessarily representative at district level, so it is recommended not to draw any conclusion from the figure below. The intent is to provide an overview of the performances across the country. The district-wise value of mean scale score for mathematics is provided in Appendix 6.



4.6. Mathematics scores by school type

Table 34 and Table 36 below indicate the performance of students categorised by the school type in which they are studying. The basis of comparison is the mean scale score. In NSA 2022, 11 types of schools were included in the assessment. For reporting purpose, few groups were clubbed due to small sample sizes to form 7 groups. Others were no longer considered relevant and therefore, excluded.

The performance of different types of schools showed some differences. Only GPS was above the national mean in both grades with SKPS being above the national mean in grade 5.

GPS students showed the best performance in grade 3, while students in Madrasah and NGO schools showed the weakest performance across both grades 3 and 5.

Tests of significance were done to see if these differences are meaningful. The performance of students in Madrasah were significantly lower than other groups in both grades. In grade 3, KG, HSAPS and NNPS formed a homogenous group and GPS performed significantly better than all the other schools. In grade 5, the performance was less homogenous with Madrasah being significantly outperformed by other schools and NNPS performing significantly better than them. KG and HSAPS formed a homogenous group. GPS significantly outperformed all other school types.

⁸ School types that had less than 450 students have not been considered for the test of significance.

Table 34: Mathematics mean scale scores by school type in NSA 2022 (grade 3)

School Type	2013			2015			2017			2022		
	Mean MSS	Std. Dev	N	Mean MSS	Std. Dev	N	Mean MSS	Std. Dev	N	Mean MSS	Std. Dev	N
GPS	104	13.6	13454	98	11.4	13575	99	14.0	17831	105	13.9	16865
NNPS				99	11.2	4051	96	13.0	4803	103	12.7	5417
KG	105	9.9	1486	103	11.6	1729	100	13.2	2669	103	12.9	3325
HSAPS	103	11.4	891	98	9.7	632	98	12.0	940	103	12.2	1398
Madrasah	104	14.5	1078	96	11.4	1006	95	12.5	1341	99	14.4	1309
NGO										99	15.4	391
SKPS										100	10.0	40
ROSC	105	12.5	1079	95	10.3	1365	96	9.6	546			
BRAC	98	8.8	414	98	9.6	596	100	12.4	467			
RNGPS	102	12.0	4662									
National Mean	104			98			98			104		
TOTAL			23064			22954			28597			28745

Table 35: Mathematics mean scale scores by school type grouped by statistical significance (grade 3)

School Type	N	Homogeneous Groups	
		1	2
GPS	16865	105	
NNGPS	5417		103
KG	3325		104
HSAPS	1398		103
Madrasah	1309		99

Table 36: Mathematics mean scale scores by school type in NSA 2022 (grade 5)

School Type	2013			2015			2017			2022		
	Mean MSS	Std. Dev	N	Mean MSS	Std. Dev	N	Mean MSS	Std. Dev	N	Mean MSS	Std. Dev	N
GPS	117	13.1	10620	111	11.2	11513	113	12.7	14632	115	12.4	14484
NNPS				109	10.0	3363	109	11.6	3770	112	11.5	5076
KG	117	11.1	1187	114	11.1	1490	112	12.1	2138	113	11.1	2938
HSAPS	113	11.7	710	110	10.9	567	112	10.9	896	113	11.2	1223
Madrasah	113	11.2	932	104	10.6	939	104	11.3	1501	108	11.6	1373
NGO										106	11.7	298
SKPS										115	6.9	29
ROSC				107	8.8	443	107	10.0	499			
BRAC	110	7.8	944	108	8.5	1068	109	8.6	663			
RNGPS	114	11.3	3413									
National Mean	116			110			112			113		
TOTAL			17806			19383			24099			25421

Table 37: Mathematics scale scores by school type grouped by statistical significance (grade 5)

School Type	N	Homogeneous Groups			
		1	2	3	4
GPS	14,484	115			
NNGPS	5,076			112	
KG	2,938		113		
HSAPS	1,223		113		
Madrasah	1,373				108

Figure 25: Mathematics mean scale score by school type in NSA 2022 (grade 3)

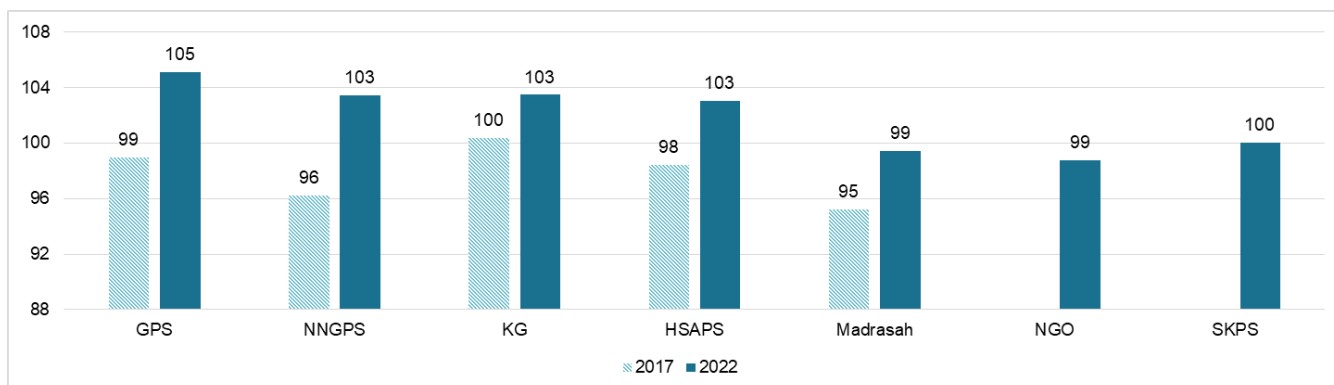
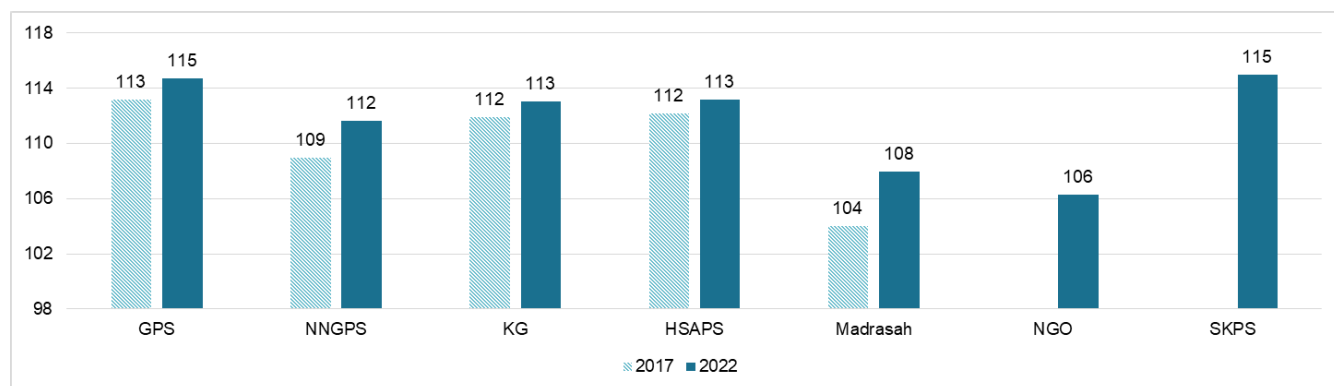


Figure 26: Mathematics mean scale score by school type in NSA 2022 (grade 5)



4.7. Mathematics scores by geographical location

The tables below indicate the performance of students categorised by the geographical location in which the school is located. The basis of comparison is the mean scale score. In NSA 2022, 10 types of geographical locations were included.

In grades 3 and 5, schools in riverside/erosion areas, plain lands and border areas scored above the national mean with schools in coastal areas scoring better than the national mean in grade 3. Schools in islands performed poorly in both grades 3 and 5, schools in wetland areas performed poorly in grade 3, and schools in remote areas performed poorly in grade 5.

Significance tests were done to see if these differences are meaningful. As the number of students were low (less than 450) in many areas, only 4 groups were included in these significance tests. The performance of students in grade 3 was quite homogenous with differences between coastal areas, lowlands and plain lands being non-significant. The performance of students in wetlands was significantly low than the former three groups. In grade 5, students in plain lands performed significantly better than others, with coastal area students performing significantly better than students in wetlands and lowlands, whose performance was similar to each other.

Table 38: Mathematics mean scale score by geo-location in NSA 2022 (grade 3)

Geographical Location Name	Mean MSS	Std. Dev	N
Haor (wetlands)	100.7	12.2	523
Hill Tracts	102.3	12.6	402
Coastal Area	104.4	12.7	1764
Char (lowlands)	103.8	14.2	633
Urban Slum Area	102.2	13.1	329
Riverside/erosion area	108.0	11.9	211
Plain Land	104.1	13.7	24735
Border Area (up to 5 km from border)	109.8	12.5	37
Island	101.1	12.0	82
Remote Area	102.8	4.8	21
National	104		
Total			28,737

Table 39: Mathematics mean scale scores by geo-location grouped by statistical significance (grade 3)

Geographical Location	N	Homogeneous Groups*	
		1	2
Haor (wetlands)	523	100.7	
Coastal Area	1764		104.4
Char (lowlands)	633		103.8
Plain Land	24735		104.1

* Location types with population size < 450 have been excluded from test of significance

Table 40: Mathematics mean scale scores by geo-location in NSA 2022 (grade 5)

Geographical Location Name	Mean MSS	Std. Dev	N
Haor (wetlands)	108.9	12.0	453
Hill Tracts	111.2	11.3	378
Coastal Area	112.3	11.2	1647
Char (lowlands)	108.0	11.8	568
Urban Slum Area	110.0	9.9	286
Riverside/erosion area	113.9	10.0	178
Plain Land	113.7	12.2	21787
Border Area (up to 5 km from border)	115.6	3.1	30
Island	107.7	9.7	74
Remote Area	106.8	3.0	20
National	113		
Total			25,421

Table 41: Mathematics scale scores by geo-location grouped by statistical significance (grade 5)

Geographical Location	N	Homogeneous Groups*		
		1	2	3
Haor (wetlands)	453	108.9		
Coastal Area	1647		112.3	
Char (lowlands)	568	108.0		
Plain Land	21787			113.7
* Location types with population size < 450 have been excluded from test of significance				

4.8. Mathematics proficiency bands

As discussed in Chapter 3, results are reported globally using proficiency scales as they provide many benefits, including the ability to compare student performance across years or assessment cycles. The bands and band descriptors for mathematics are presented below.

Table 42: Proficiency band descriptors and cut scale scores for mathematics

Mathematics Scale Score	BAND DESCRIPTORS FOR MATHEMATICS
124 and above	<p>Pupils working in Band 5</p> <ul style="list-style-type: none"> • apply strategies to simplify numerical expressions and solve word problems on percentages and unitary method • apply geometric properties and relations in solving simple problems on angles • calculate the perimeter of simple geometric shapes in the real context
113 – 123	<p>Pupils working in Band 4</p> <ul style="list-style-type: none"> • apply strategies to solve word problems including money transactions using skills of addition, subtraction, multiplication and division of whole numbers, add/ subtract and simplify decimals, find the Highest Common Factor of small numbers, identify and represent fractions, multiply and divide whole numbers by fractions, solve word problems related to addition and subtraction • set up a mathematical expression (equation) for a given situation, find the value of an unknown in a given simple mathematical expression • convert different units of length measure (cm/mm to cm/m, kg to gm) and area measure (square metres to hectares), calculate area of a triangle from given dimensions • identify the distinguishing properties of 2D objects • calculate averages from data presented pictorially

Mathematics Scale Score	BAND DESCRIPTORS FOR MATHEMATICS
101 – 112	<p>Pupils working in Band 3</p> <ul style="list-style-type: none"> • add and subtract 6-digit numbers (negative numbers excluded) identify the remainder on division by 100, find Lowest Common Multiple of given numbers, uses addition/subtraction and multiplication to solve 2 stage word problems, can convert fractions to mixed fractions percentages and decimals, add, subtract and multiply like fractions including decimal fractions by whole numbers, identify equivalent mathematical processes form simplification, find the unit price of an item using unitary method • calculate elapsed time and read a 24-hour clock format • measure the volume of a liquid shown in a graduated cylinder and calculate the area of a rectangle • identify 3D shapes and classify triangles • use tally charts and frequency tables
90 – 100	<p>Pupils working in Band 2</p> <ul style="list-style-type: none"> • identify place value in numbers up to 4-digit numbers, orders 2-digit numbers, compare two numerical expressions • add and subtract numbers up to 4-digits (without carry over) divide a 3-digit number by a 1-digit number, use addition, subtraction and multiplication to solve two stage problems, recognise, order and find equivalent simple fractions • recognise and name currency in words and figures • read time an analogue clock to the nearest quarter hour, convert hours to days • identify appropriate unit of measurement, convert metres and centimetres to metres, calculate area of a rectangle
below 90	<p>Pupils working in Band 1</p> <ul style="list-style-type: none"> • identify, count and compare numbers up to 3-digits, add and subtract numbers up to 4-digits (without carry over), identify even and odd numbers • read date and day on a calendar • read simple graphs • recognise and draw simple 2D shapes and identify types of surfaces (plane surface)

Comparability across the NSA cycles is enabled through the application of IRT-based horizontal equating procedures between different booklets for the same grade. By vertical scaling procedures, grade 3 and grade 5 NSA scores were placed on the same scale, so that comparison across grade levels is possible. Similarly, as the NSA 2022 items are placed on the historically developed scale, historical comparisons become possible

The figure below shows the proportion of students in each band across the NSA cycles. In grade 3, student

performance was best in NSA 2022, as the percentage of students was higher at higher bands compared to all other cycles. In grade 5, student performance in NSA 2022 was better compared to 2015 and 2017 though not as good as in NSA 2013

Figure 27: Distribution of students across mathematics proficiency bands (NSA 2013, 2017, 2017 and 2022)

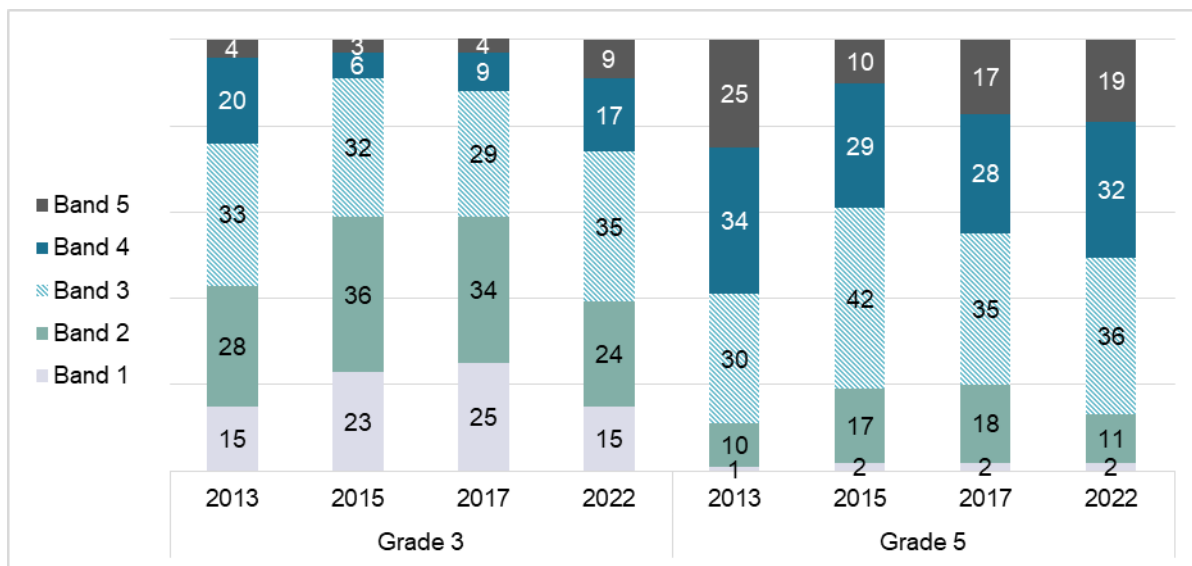


Figure 28 and Figure 29, shows that very similar percentages of boys and girls achieved bands 3 and higher across all NSA cycles. This evidence clearly indicates that there is gender parity in mathematics performance in Bangladesh.

Figure 28: Mathematics proficiency bands by gender (grade 3)

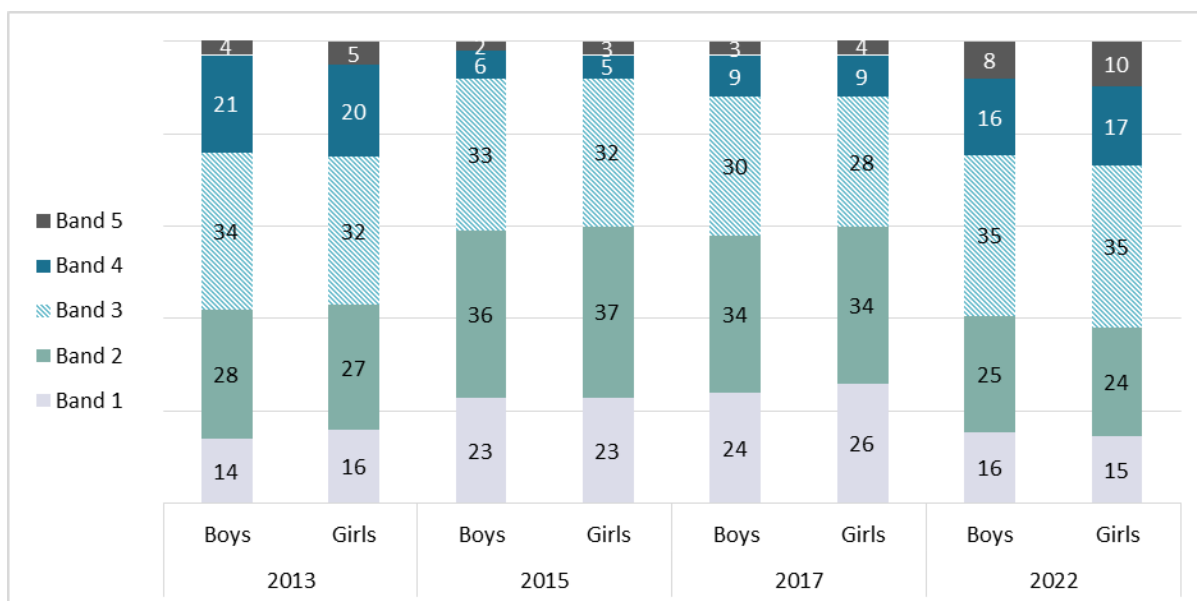
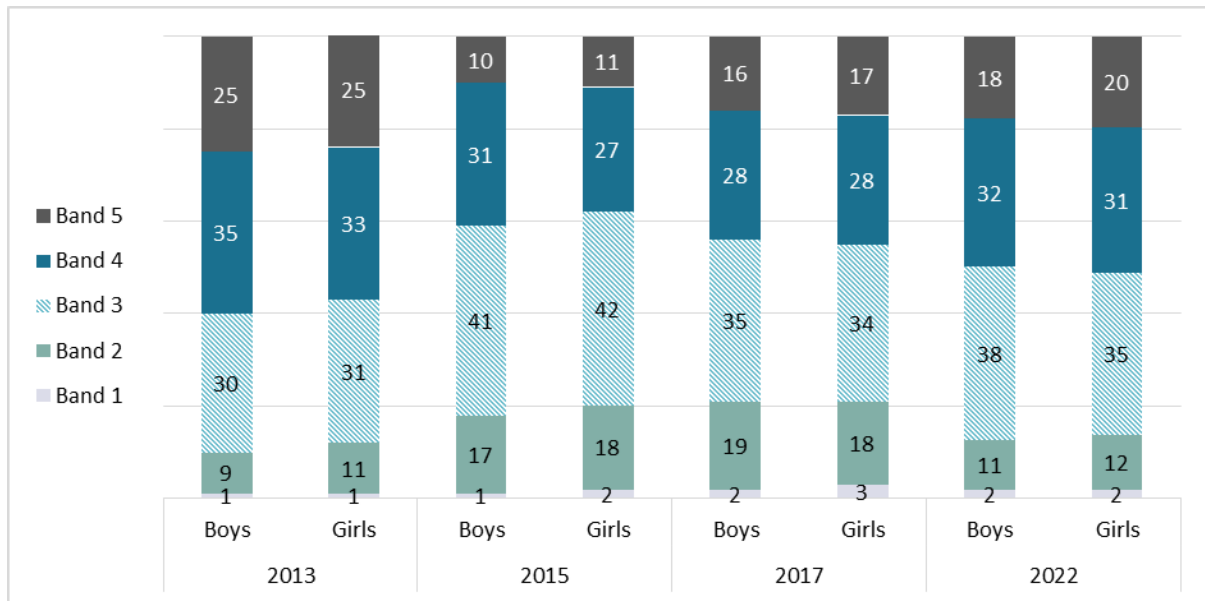


Figure 29: Mathematics proficiency bands by gender (grade 5)



4.9. Mathematics performance standards

As described in Chapter 3, setting performance standards is a process for defining a framework that links test scores to pre-defined criteria based on the national curriculum. The approach to report student achievement in mathematics against performance standards was similar to Bangla. The descriptors for performance standards for mathematics are provided in Appendix 4. The cut scores that were regenerated for NSA 2022 are provided below.

Table 43: Cut scores based on NSA 2022 raw scores in mathematics

Test	Max Score points	Basic	Proficient	Advanced
Mathematics grade 3 Set A	36	21	30	35
Mathematics grade 3 Set B	36	20	29	34
Mathematics grade 5 Set A	45	24	38	43
Mathematics grade 5 Set B	45	22	37	43

Table 44: Cut scores based on the NSA 2022 scale scores in Mathematics

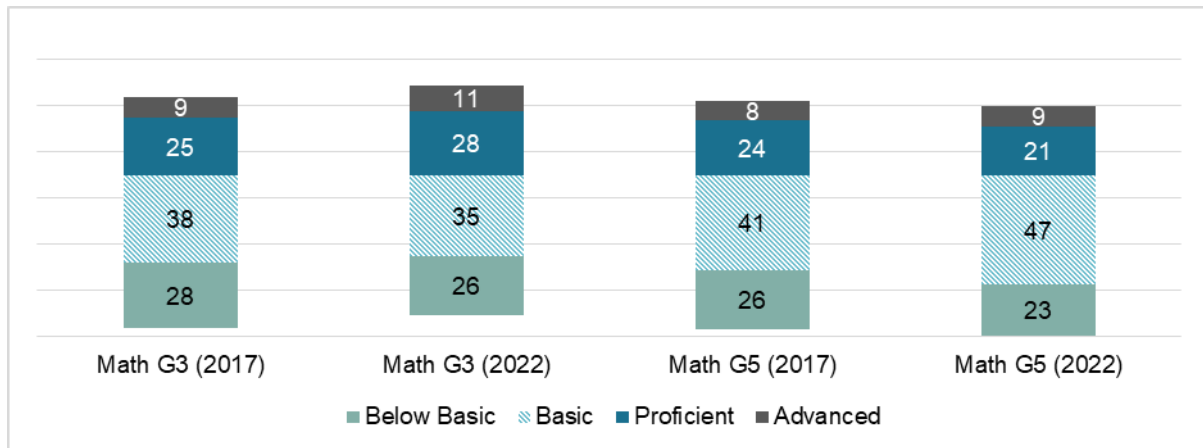
Test	Basic (MSS)	Proficient (MSS)	Advanced (MSS)
Mathematics grade 3	96	109	120
Mathematics grade 5	105	119	130

The figure below illustrates the proportion of students at each performance level in NSA 2017 and 2022 for mathematics.

- Thirty-nine percent (39%) grade 3 students demonstrated grade level performance in NSA 2022 as compared to thirty-four percent (34%) students in NSA 2017.
- Thirty percent (30%) grade 5 students demonstrated grade level performance in NSA 2022 as compared to thirty-two percent (32%) students in NSA 2017.

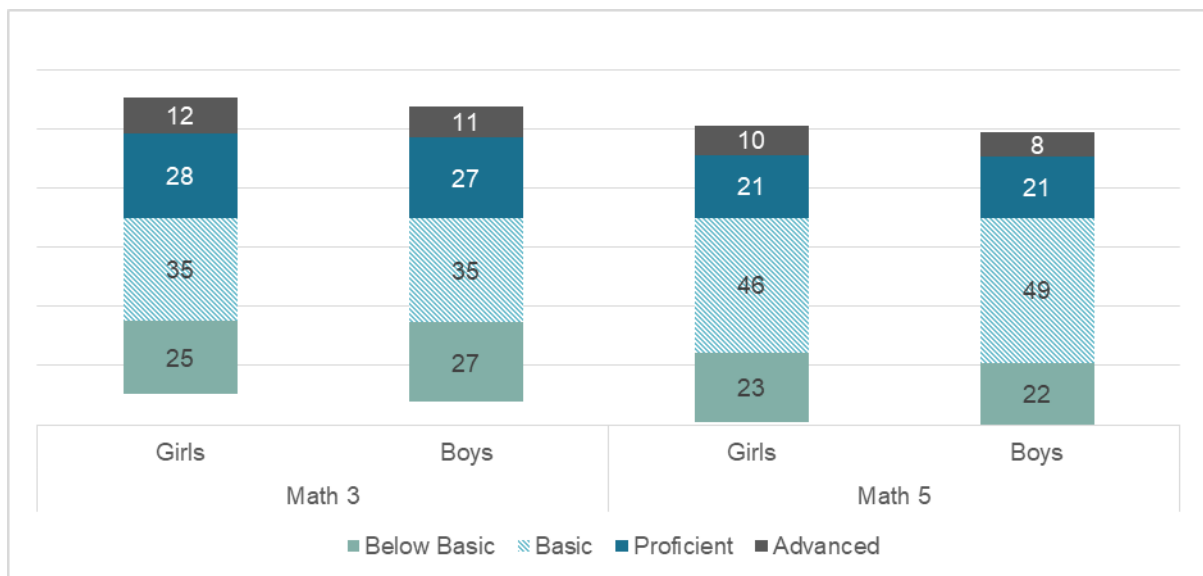
The data suggests that the percentage of students at the higher levels (Advanced and Proficient) in grade 3 has increased and has increased at the advanced and basic levels in grade 5, while decreasing at the proficient and below basic levels. On one hand, this indicates better performance compared to 2017, while on the other hand still about two third of students have not achieved grade level foundational skills, and the achievement gap has widened as students have moved to higher grades.

Figure 30: Percentage of students at each performance level in mathematics (2017, 2022)



NSA 2022 performance disaggregated by gender shows gender parity with girls performing slightly better than boys at the advanced level.

Figure 31: Mathematics performance by gender on performance standards in grade 3 and grade 5



The percentages of students achieving grade-level competencies in mathematics has increased in grade 3 but decreased in grade 5. In NSA 2022, girls have performed better than boys in both grades, whereas in NSA 2017, boys had done better in grade 3. However, disparities between boys and girls in terms of the achievement of grade-level competencies remained the same as NSA 2017

Table 45: Percentages of students achieving grade-level competencies in Bangla

	Grade 3		Grade 5	
	2017	2022	2017	2022
All	34%	39%	32%	30%
Boys	35%	38%	32%	29%
Girls	33%	40%	34%	31%

NSA 2022 performance by division (Figure 32 and Figure 33) showed large variations in the distribution of students attaining grade level standards. Mymensingh division showed the best performance with 61% grade 3 students and 49% grade 5 students being proficient and above. Sylhet showed the lowest performance in both the grades with 75% grade 3 students and 85% grade 5 students at basic or below basic level.

Figure 32: Grade 3 mathematics attainment on performance standards by division

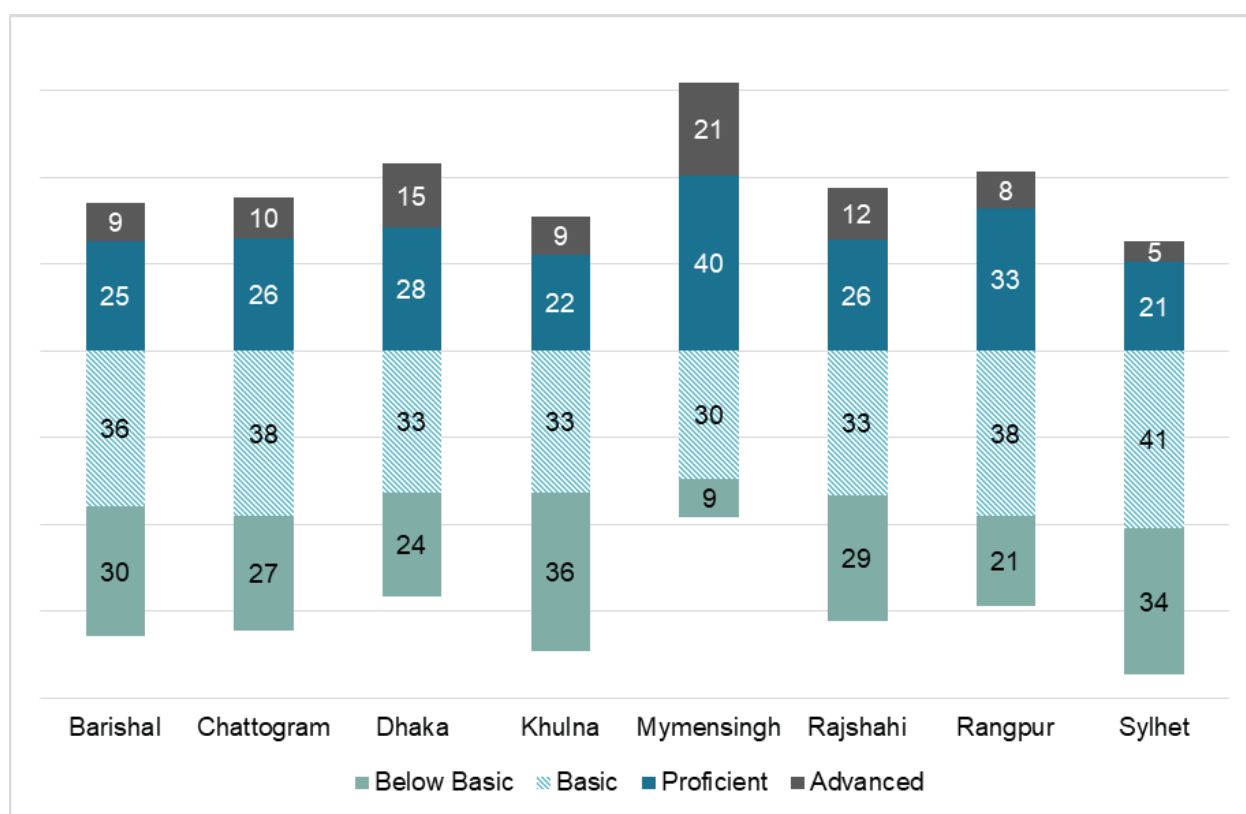
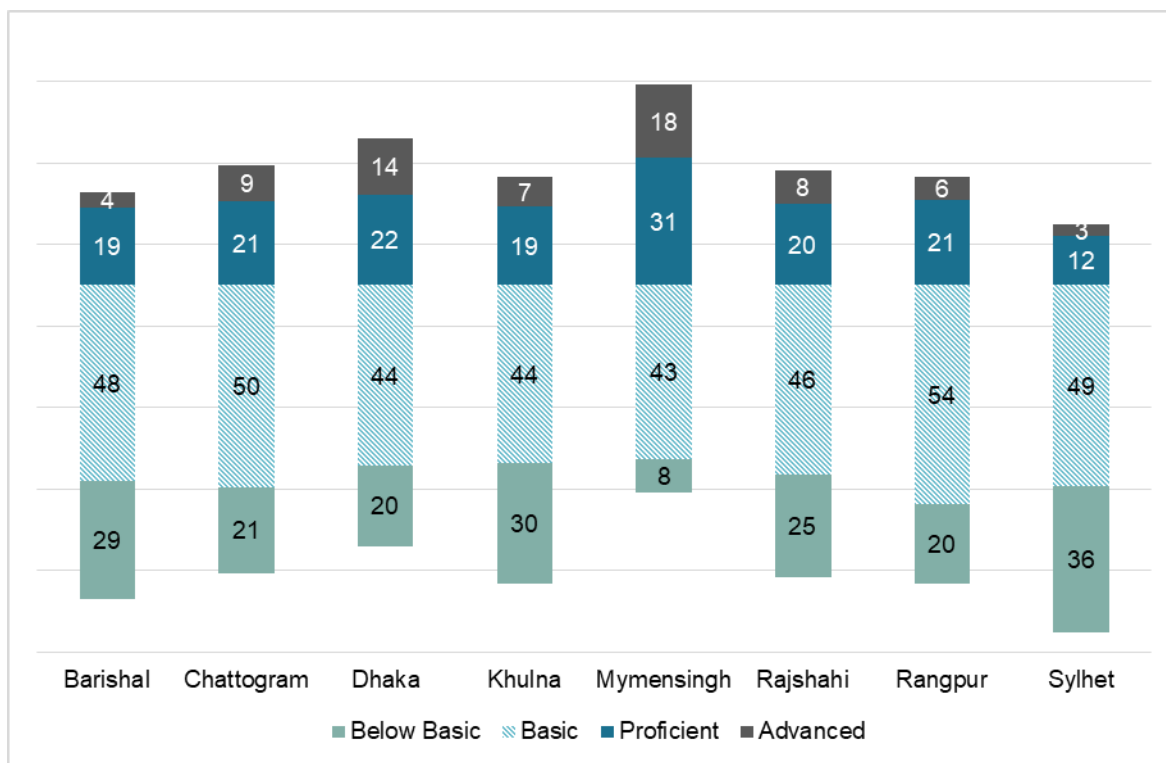


Figure 33: Grade 5 mathematics attainment on performance standards by division



NSA 2022 mathematics performance by school type is provided in Figure 34 and Figure 35. GPS students showed higher performance in both grades.

Figure 34: Mathematics performance by school type in grade 3

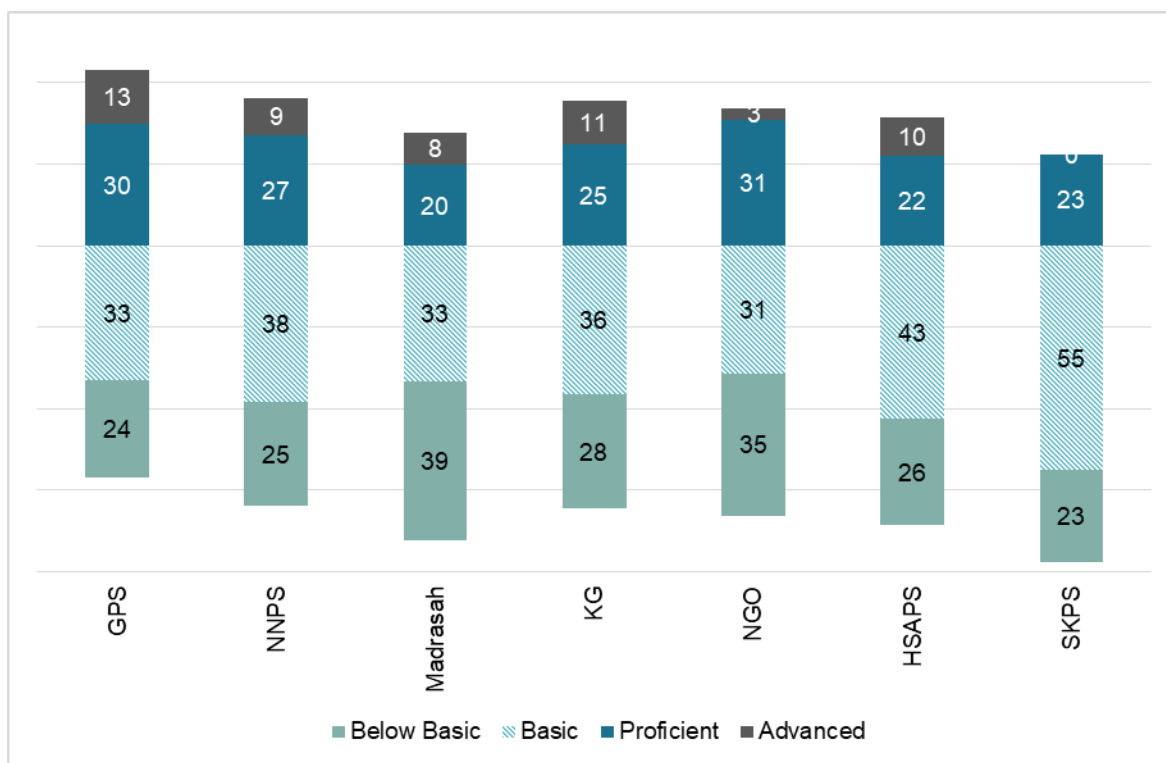
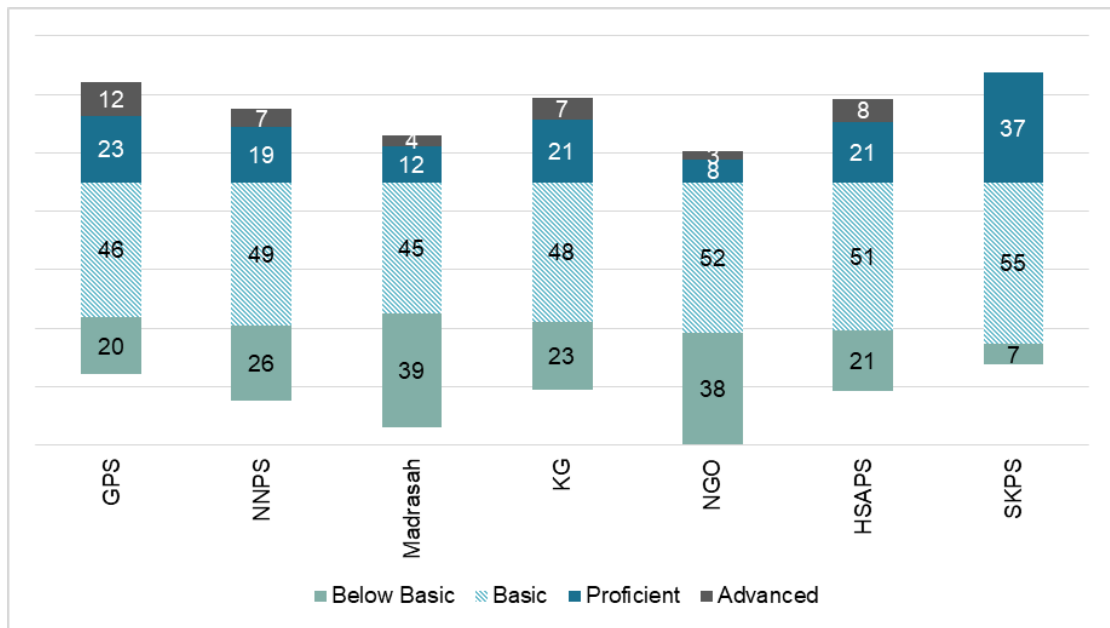


Figure 35: Mathematics performance by school type in grade 5



4.10. Mathematics performance by key content area

This section describes the performance of students in mathematics in different content areas that constituted the NSA 2022 mathematics assessment.

The 4 key content areas that were assessed in mathematics are:

1. number properties and operations
2. measurement and units of measurement
3. shape and space
4. data (only in grade 5)

The figures below show the mean performance of items by content area, in terms of the percentage of correct responses on all items assessing that area. The figures present the information disaggregated by gender. In grade 3, performance across the various strands was quite similar, and in grade 5, data was the most challenging strand and measurement was the easiest. Girls generally performed at par with or slightly better than boys across all strands.

Figure 36: Mathematics performance by key area (Grade 3)

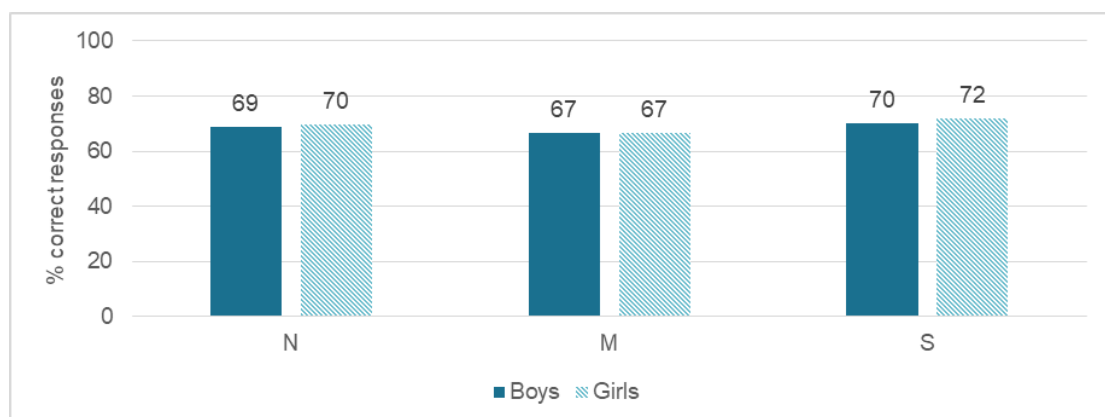
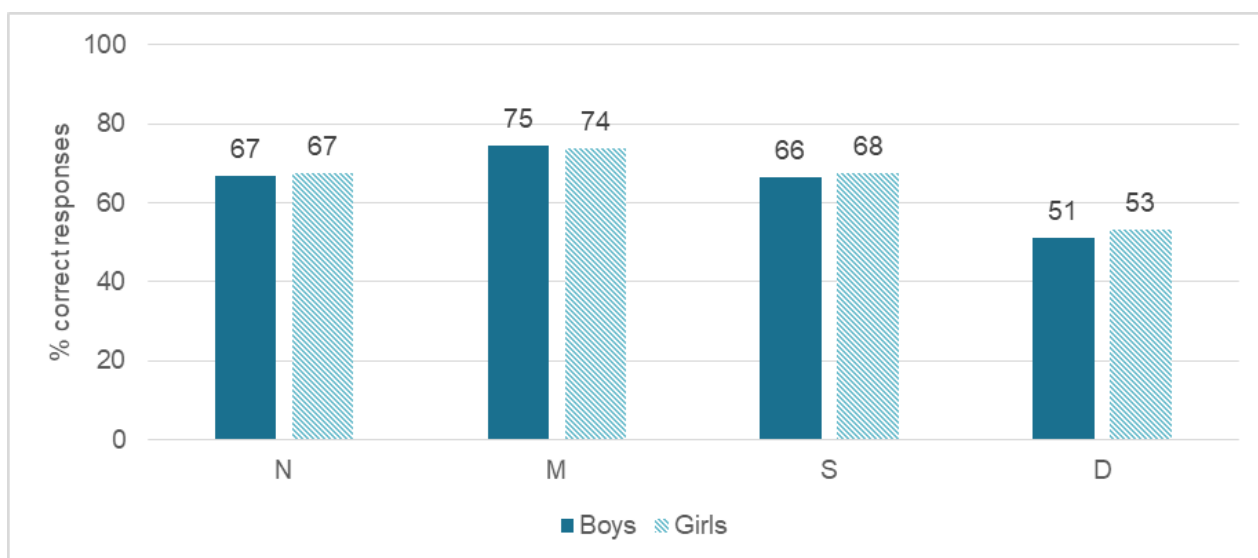


Figure 37: Mathematics performance by key area (Grade 5)



4.11. Mathematics performance by cognitive level

This section describes the performance of students in mathematics across different cognitive levels that were assessed in the NSA 2022.

As described above, the cognitive processing levels that were assessed in mathematics are:

1. knowledge
2. understanding
3. application

The figures below show the mean performance of students in the different cognitive processing levels disaggregated by gender. It is the percentage correct responses on all items assessing the cognitive process.

Grade 3 students seemed to perform similarly on items assessing knowledge and understanding, while items assessing application were the most difficult (had the least proportion correct responses). In grade 5, items assessing knowledge had the highest proportion of correct responses and were easiest, followed by items assessing understanding, while items assessing application had the least proportion of correct responses. Girls generally showed a slightly better performance across all cognitive processing levels.

Figure 38: Mathematics performance by cognitive level (grade 3)

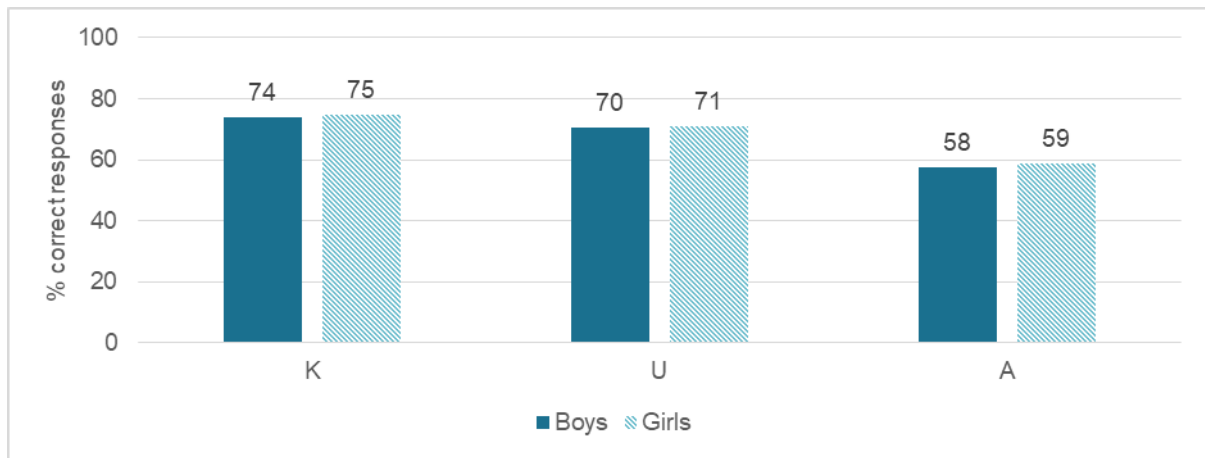
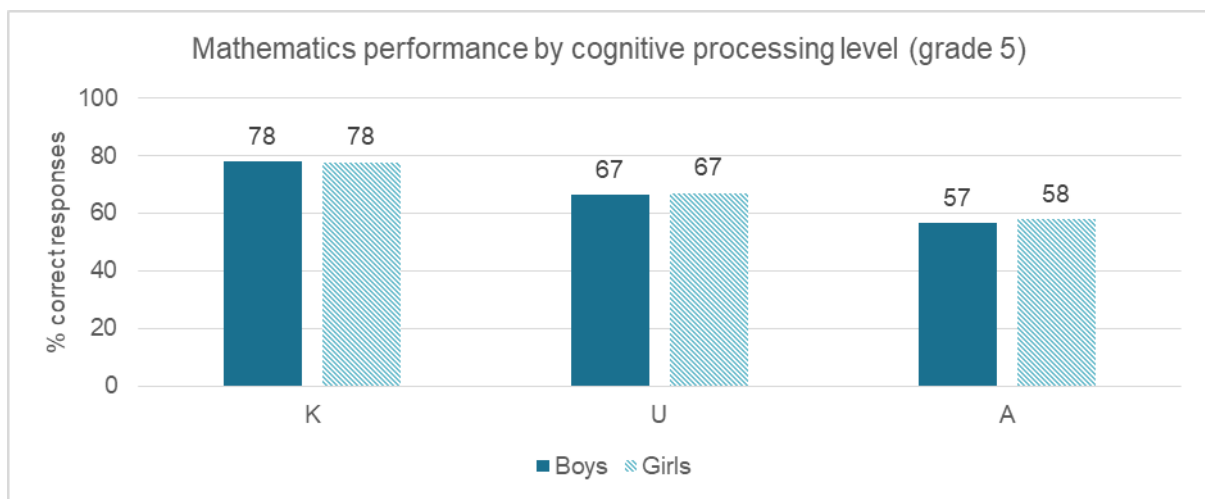


Figure 39: Mathematics performance by cognitive level (grade 5)



4.12. Mathematics performance on early numeracy

NSA 2022 incorporated early numeracy items focussed on the aspects of counting, place value, addition, and subtraction along with basic transactions and measurement involving non-standard units of measure for comparisons only.

In grade 3, the proportion of correct responses on early numeracy items was 85.5% and in grade 5 the correct responses were 87%.

- Among all early numeracy items, the item assessing the ability to read time by the hour on an analogue clock had the least per cent of correct responses (about 70% correct responses in grade 3 and 72% in grade 5).
- In grade 3, more than 90% correct responses were obtained for items that required counting small numbers, visually comparing numbers using objects, visually comparing quantities, and adding 2-digit numbers without regrouping.
- In grade 5, more than 90% correct responses were obtained for items that required counting forward using number patterns, adding 2-digit numbers and adding two small numbers in context.

4.13. Summary

NSA 2022 assessed the four key areas mentioned below in mathematics:

1. number properties and operations (including computation and understanding of number concepts)
2. measurement and units of measurement (scale of measurement; principles of measurement; metric system of measurement; application of processes and concepts of area; operations related to differentiate between and carry out)
3. shape and space (understand concepts and use instruments)
4. data (graphical representations, relationships, and central tendency of data)

Due to the disruptions caused by the COVID-19 pandemic, it was considered relevant to include concepts below particular year levels to identify where students are currently in their learning journey. Therefore, the mathematics assessment for NSA 2022 incorporated a component of early numeracy. Early numeracy concepts focus primarily on being able to count, compare, operate, and measure.

Further, each item was categorised each item by the following processing levels:

1. knowledge
2. understanding
3. application and higher order thinking skills

This classification follows the approach followed in earlier cycles of the NSA.

In order to ensure that the assessment consisted of a valid representation of the domain, the assessment framework proposed how the assessment should be organised with specific proposed distributions for some of the parameters. The assessment largely achieved these distributions ensuring a valid assessment. Further, all the booklets used in the mathematics NSA 2022 assessment were found to be reliable.

4.13.1. Findings by mean scale score

The mathematics mean scale scores in NSA 2022 were higher than 2017 across both the grades. It had reduced from NSA 2013 to NSA 2015, and from NSA 2015 onwards, the scores showed an increasing trend with NSA 2022 mean scale scores being similar to NSA 2013 levels, across both grades 3 and 5. An interesting finding is that the gap between grade 3 and grade 5 mean scale scores has reduced in 2022. The performance of girls and boys was very similar across all NSA cycles suggesting strong gender parity.

Mymensingh and Dhaka showed significantly better performance than other divisions, with Mymensingh better than even Dhaka. Both these divisions performed consistently better than the national average. Sylhet lagged behind other divisions with a significantly lower score like previous cycles.

Students in different types of schools showed differences, however in many cases, the significance was not calculated as the number of students were quite low. GPS students were better than national average in both grades. Madrasahs had the weakest performance across both grades 3 and 5.

In grades 3 and 5, schools in riverside/erosion areas, plain lands and border areas scored above the national mean with schools in coastal areas scoring better than the national mean in grade 3. As the number of

students were low, significance tests could only be conducted on the differences between 4 of the groups. However, the performance by coastal area students and plain lands students was significantly better than the other groups with large numbers (lowlands and wetlands students). Schools in islands performed poorly in both grade 3 and 5 and schools in wetland areas performed poorly in grade 3 and remote areas performed poorly in grade 5.

4.13.2. Findings based on performance on key areas and cognitive processing levels

In grade 3, students performed similarly across key content areas. In grade 5, data was the most challenging area for students and measurement was the easiest.

Application and higher-order thinking skills items were found to be the most difficult across grades. Students in grade 3 performed similarly on knowledge and understanding items.

Girls generally outperformed boys across grades on all categories (both by key areas and cognitive processing levels).

4.13.3. Findings based on proficiency bands

The proficiency scale suggests that there is improvement from grade 3 to grade 5 in NSA 2022 and performance was better in NSA 2022 than in 2017. The grade 3 performance was best in NSA 2022 across all cycles, while in grade 5 performance was better than 2015 and 2017 but not as good as 2013. Boys and girls performed in a similar manner.

4.13.4. Findings based on performance standards

There was improvement in the proportion of students at higher levels especially at grade 3 level. In grade 5, the percentage of students was higher at the advanced and basic levels. Overall, 39% grade 3 students and 30% grade 5 students showed grade level performance (proficient and above on performance standards), 5% higher for grade 3 and 3% lower for grade 5 as compared to NSA 2017. About two third of students have not achieved grade level foundational skills, and the achievement gap has widened as students have moved to higher grades.

4.14. Conclusion

The NSA mathematics 2022 assessment was found to be valid and reliable. In general, the performance of students was better than the NSA 2017. Similar to Bangla, girls performance was slightly better than boys.

Mymensingh and Dhaka division were consistently at the higher end of the spectrum and Sylhet continued to be a challenge. The performance of students in different school types showed large differences with GPS students performing well across grades and Madrasahs requiring a lot of support in the future.

Chapter – 5

Factors associated with student achievement in NSA 2022

CHAPTER 5. FACTORS ASSOCIATED WITH STUDENT ACHIEVEMENT IN NSA 2022

There are many contextual or environmental factors that affect student learning. Therefore, any large-scale assessment that aims to understand how to improve student performance must measure how various contextual factors affect student learning in that context. Keeping this objective in mind, a contextual questionnaire framework was developed for NSA 2022.

The framework specifies the areas on which questionnaires are developed according to the categorisation of the contextual factors. The development of NSA 2022 contextual questionnaire framework was guided by emerging priorities in the education system as well as challenges faced by the system during the COVID-19 pandemic. Like many other countries, Bangladesh has seen a prolonged school closure, one of the longest in the world, during the COVID-19 pandemic, causing massive disruptions in school attendance for nearly 38 million students.

In order to maintain continuity with previous cycles of the NSA, the NSA 2022 context questionnaires framework contained key framework elements from previous cycles. A few new constructs were also introduced, especially the context of the COVID-19 pandemic.

For the purpose of this assessment, six levels of contexts suggested by Ainley & Schulz (2020) were adapted. A summary of these contexts against the three types of NSA questionnaires has been given below.

Table 46: Mapping of contexts to questionnaire type in NSA 2022

Context of	Student questionnaire	Teacher questionnaire	School/ Headteacher questionnaire
Individual	✓		
Home and peer environments	✓		
Classrooms	✓	✓	
Schools	✓	✓	✓
Wider community			✓
Remote learning during COVID-19 period	✓	✓	✓

As a first step, the most important factors that are expected to influence student performance were identified based on reviewing questionnaires from the previous NSA cycles and questionnaires from other studies to follow international best practices. The factors were then broken down into variables that could be assessed through items. Finally, each variable was operationalised through items associated with the variable. The final set of items was reviewed thoroughly by ACER and then by DPE and UNICEF.

The analyses of background factors were carried out by comparing the scores in Bangla and mathematics and relating them to the respondents' answers to the questionnaire. For example, for the question in the head teacher questionnaire – 'Do children take books from the Library or Book corner and read?' – head teachers were divided into two groups, those who answered 'Yes' and those who answered 'No'. The mean scale scores on the Bangla and mathematics tests were computed for the schools corresponding to these two groups of head teachers. Finally, the difference between mean student scores for the two groups of schools was calculated, the statistical significance of this difference was tested, and the associated effect sizes were

calculated using Cohen's D measure.

A similar approach was used for questions that have more than two options, one of the responses was taken as a reference, typically the one representing the least desirable condition addressed by the question, and the rest of the options were compared against this reference. Bar charts for each analysed background question showed the difference in scores between the groups of respondents choosing different options, along with the corresponding statistical significances and effect sizes.

It is important to note that these analyses report the only significant differences and effect sizes in Bangla and mathematics scores for various contextual variables as an indicator of association. These associations do not provide sufficient information to attribute cause, and these contextual variables should not be viewed as factors that impact student achievement. Any causal inference shall require scrutiny and understanding of many circumstances that could contribute to associations between analysed variables, and specific analytics design.

In selecting significant associations, measures of both statistical significance ($p < 0.05$) and practical significance (Cohen's D greater than 0.20) for all three questionnaires were used.

This chapter reports the findings on the comparison of students' performance in NSA 2022 with reference to contextual factors assessed through the student, teacher, and head teacher background questionnaires.

5.1. Student questionnaire

The table below indicates the factors and variables that were included in the student questionnaire. Each variable under each factor was analysed based on the average performance of students under that condition. However, only the variables and factors with significant differences in mean scale scores are described under this section. It implies that the factors or variables that were studied but are not included in this section did not show significant differences.

Table 47: Factors and variables included in the student questionnaire

SN	Factors	Variables
1.	Students' background	Gender
		Social group
		Grade repetition
		Early childhood education programme
		The number of years studied in the present school
		Language of instruction at school
		Language spoken at home
2.	Socio-Economic Status (SES)	Parental background
		Resources at home
3.	Classroom environment	Physical environment
		Social environment
		Emotional environment

SN	Factors	Variables
4.	School environment	Physical environment
		Social environment
		Emotional environment
5.	Remote/distance/online learning during COVID-19 period	Device used at home for distant learning
		Parental support
6.	Students' attitude towards learning	Motivation to learn
		Attitude towards the subject
7.	Pedagogical practices	Teaching, learning, and assessment
8.	Additional help in studies	Family support
		School support
9.	Students' activities outside the school	Family activities
		Home environment
		Home activities
10.	Student's health	Health condition

Each variable and/or factor that had significant differences is reported below in a separate sub-section. Bars represent the difference in mean scale score between the reference group and comparison group, while numerical value of the corresponding effect size (Cohen's D) for the difference has been given in the cell next to bars.

5.1.1. Students' backgrounds and socio-economic status

Among the factors related to students' backgrounds and socio-economic status in study, only three variables showed a significant effect on student performance:

- class repetition (whether a student is repeating a class)
- parental background
- resources at home

When students were in the same class for another year, they generally showed poorer performance. The question arises whether this is because students who repeat a year are students at the lower end of the learning spectrum or repeating a year affects student motivation. Surprisingly, this effect was not significant among grade 3 students for mathematics.

The difference in student performance between the groups based on parents' backgrounds, parental education and parental occupation (only government employment and private employment in a few cases) was significant. Parents being educated at least till graduate level and being employed had a significant positive association with student performance. However, the difference in student performance was only significant only if either parent was educated till the graduate level. The performance of the students with lower levels of parental education was not significantly different from the wards of parents who have not received any formal education.

This holds true across subjects and grades and for both parents. The difference in performance increased as the grade level increased, and as the parent qualification increased. Interestingly, across comparisons, the

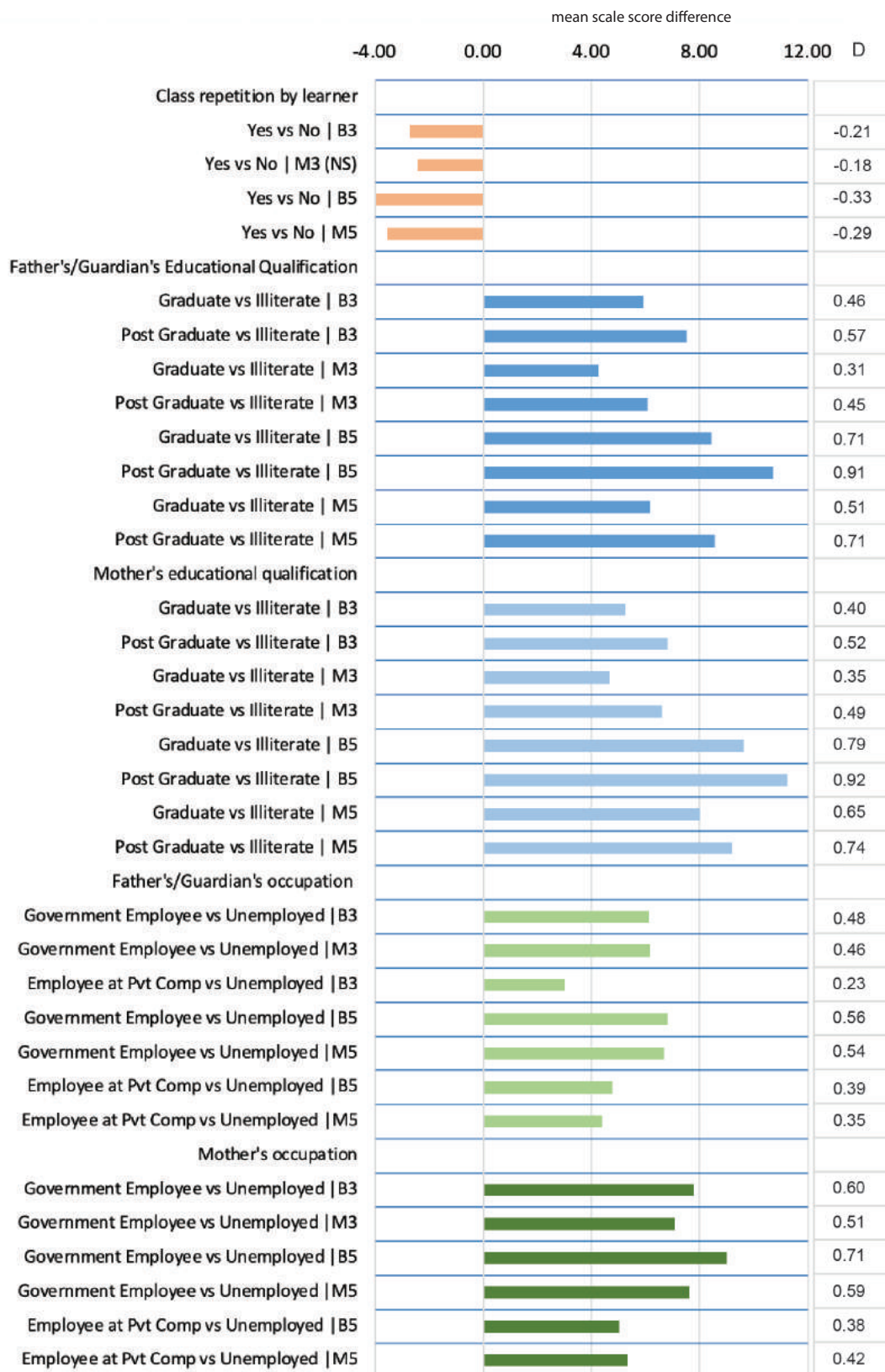
difference in mean scale scores was greater in Bangla than in mathematics, which implies that influence of such factors is more on language acquisition than numeracy. Importantly, mothers' level of education and their employment was associated with a had a higher difference at grade 5 level rather than at grade 3 level. Mothers being employed as government employees had a higher difference than fathers at both grade levels. The performance difference was higher for mothers' education level as compared to fathers' education in grade 5.

Students whose parents are employed by the government, showed highly significant difference in performance over the performance of wards of unemployed parents with the effect size being large (>0.5) in grade 5. The difference was again greater for Bangla than mathematics, especially in grade 5. Similarly, parent's employment in the private sector showed a greater association with learning over unemployed status in grade 5 across subjects and for both fathers and mothers, but in grade 3, the effect was only significant for fathers and on Bangla performance.

Details have been presented in the figure below. Bars represent the difference in mean scale score between the reference group and comparison group, while numerical value of the corresponding effect size (Cohen's D) for the difference has been given in the cell next to bars.



Figure 40: Difference in NSA 2022 scale scores by student background and parental background

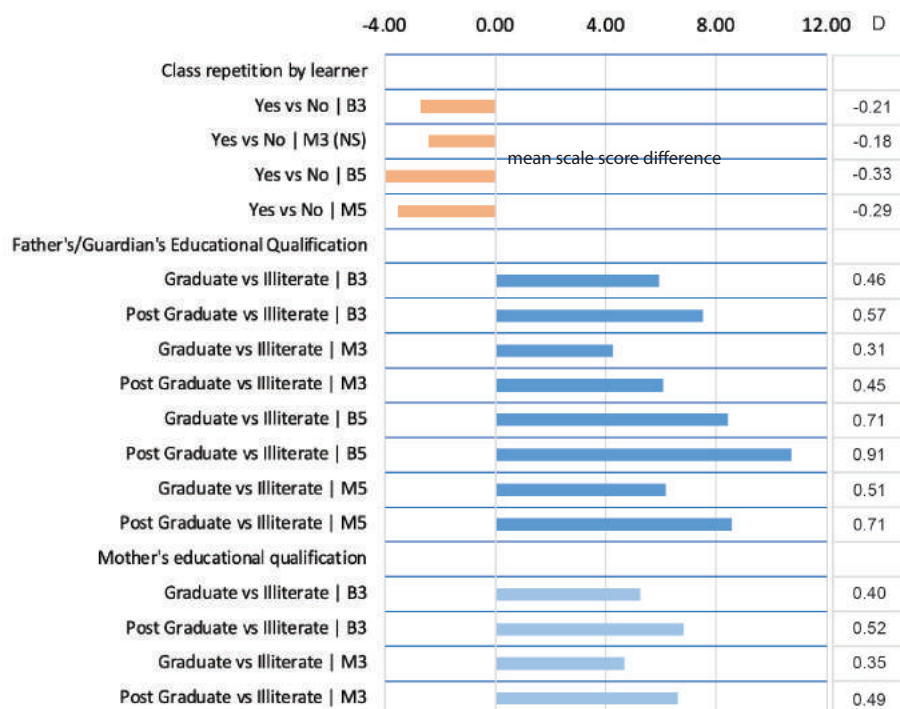


NS- Effect size small and mean difference not significant

Home environment showed higher effect on student performance in grade 5 than in grade 3. Grade 3 students who had access to clean water at home showed better performance in mathematics.

In grade 5, Bangla performance increased significantly with the reported availability of electricity, television, mobiles and motorcycles but better performance in mathematics was observed for students with the availability of electricity and televisions. Joint family or the presence of other relatives (for example sister-in-law) in the family was associated with a significant gain in mean scale score with large effect size in mathematics performance. It was also found that students living in brick houses performed better than student living in mud houses.

Figure 41: Difference in NSA 2022 scale scores by resources available at home



5.1.2. Classroom and School Environment

The physical, social and emotional environments in the classroom and the school had an effect on student achievement. Interestingly, in grade 3, more variables from the classroom environment were associated with Bangla performance than from the school environment.

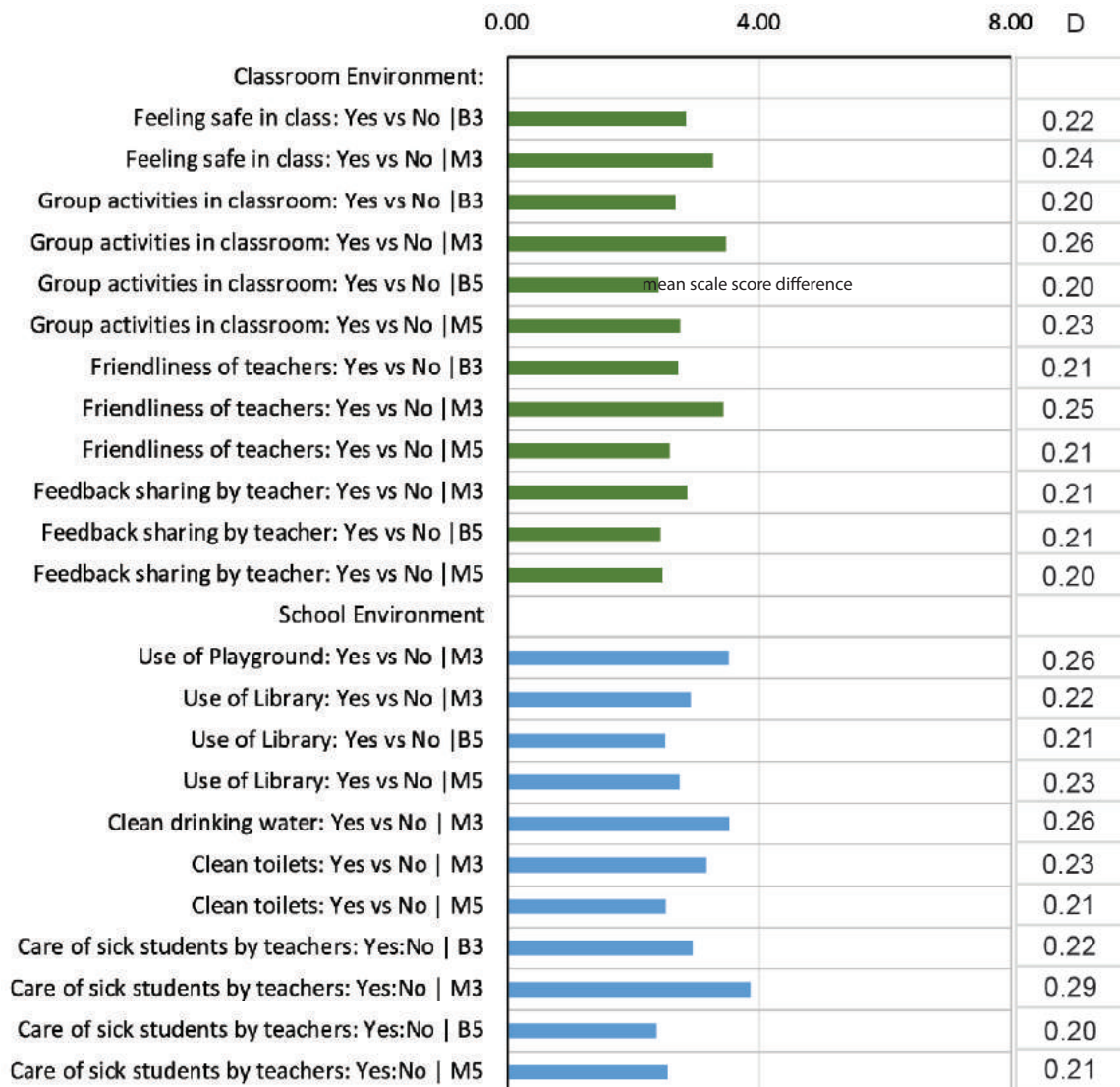
Doing classroom activities together invariably had a significant effect on performance across grades and subjects. Other variables from the classroom environment that had a significant effect include how friendly teachers are and whether they provide feedback for improvement. Interestingly, whether students feel safe in the classroom only had a significant effect in grade 3. Surprisingly, there was no significant difference in performance between students who say they are punished often and those who say they are not punished often. This is supported by the finding that fear of teachers or head teachers (school environment) also was not significantly associated with performance. Further, whether students get to ask questions also did not have a significant association.

The only variable that had a significantly different performance in Bangla in grade 3 from the school environment is whether teachers take care of sick students. Teachers taking care of sick students had a positive effect on performance irrespective of grade and subject. The additional variable that showed an association with Bangla performance in grade 5 is unsurprisingly whether students use the library.

In mathematics, the availability of clean toilets and using the library were positively associated with performance in both grades. Using the playground and the availability of clean drinking water was linked with

higher performance in grade 3.

Figure 42: Difference in NSA 2022 scale scores by classroom and school environment



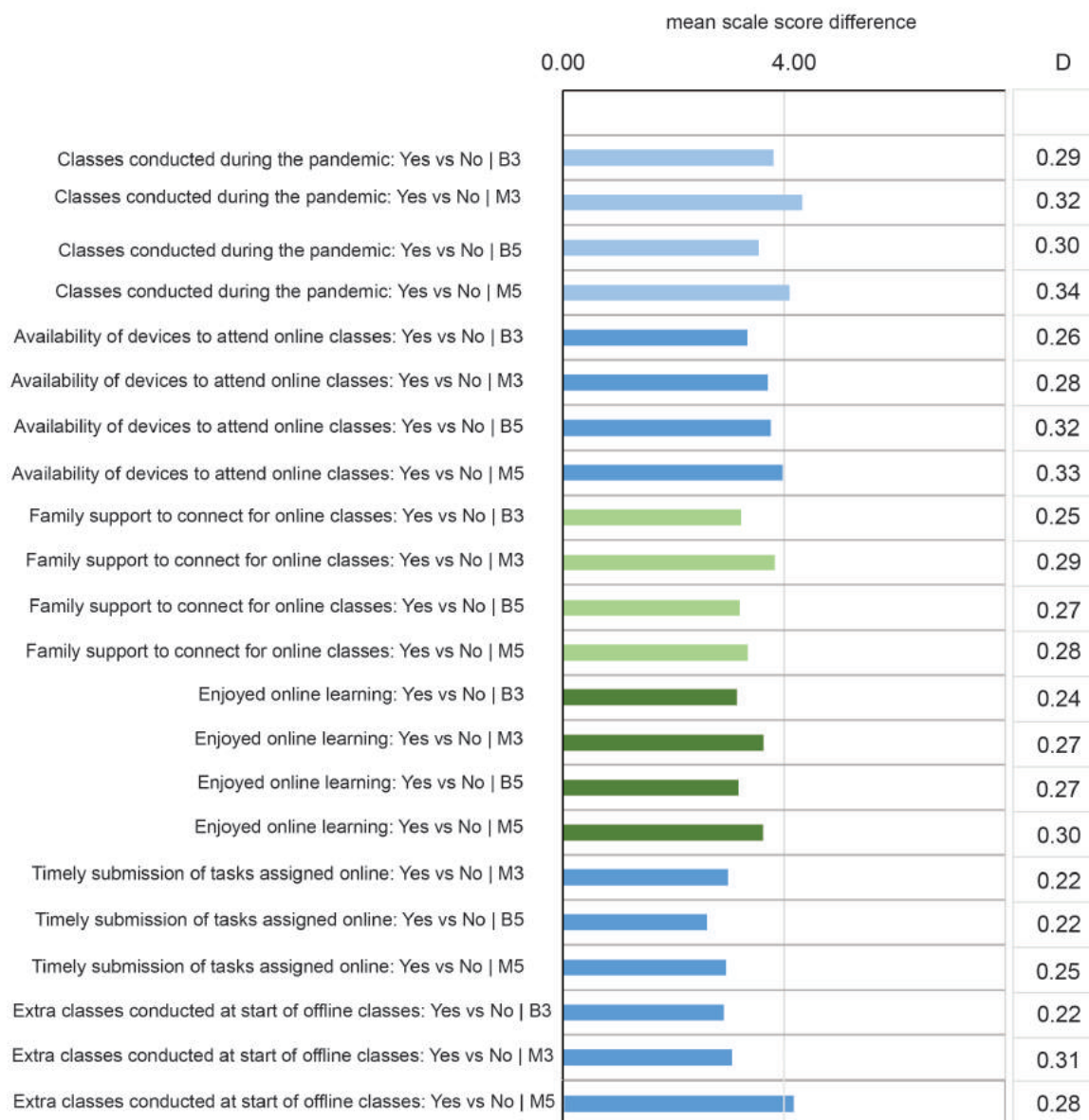
5.1.3. Remote/distance/online learning during COVID-19 period

The COVID-19 pandemic has had a severe disruption on school functioning across the world and therefore, a new factor centred on COVID-19 was introduced in NSA 2022. Interestingly, every variable included in the student questionnaire was found to be associated with a significant increase in learning. The variables included were:

- classes conducted during the pandemic;
- availability of devices to attend online classes at home;
- family support to connect for online classes;
- enjoyment of online learning;
- timely submission of tasks assigned online; and
- extra classes conducted at the start of offline classes.

In Bangla grade 3, the timely submission of assigned tasks did not have a significant association with learning, and similarly, extra classes conducted when students came back to school were only positively related to grade 3 students' Bangla performance. In mathematics, all the interventions or variables were associated with a significant gain in learning in both grades.

Figure 43: Difference in NSA 2022 scale scores by remote/distance/online learning during COVID-19 school closures

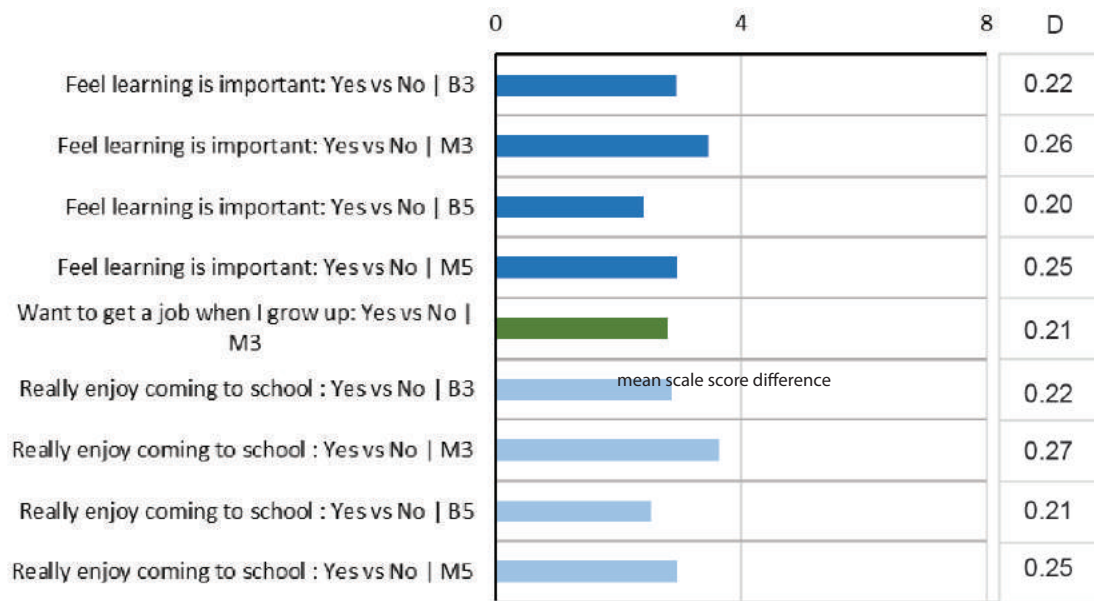


5.1.4. Student attitude towards learning

Two variables were included under this factor – motivation to learn and attitude towards the subject. Only motivation to learn was found to be associated with a significant difference in performance. Across grades and subjects, students who felt learning is important and those who enjoyed coming to school performed significantly better than those who did not. Wanting to get a job when they grew up correlated with better performance only in mathematics in grade 3.

Students' performance was not significantly different for attitude towards the subject, irrespective of grade or subject.

Figure 44: Difference in NSA 2022 scale scores by student attitude towards learning



5.1.5. Additional help in studies and student activities outside the school

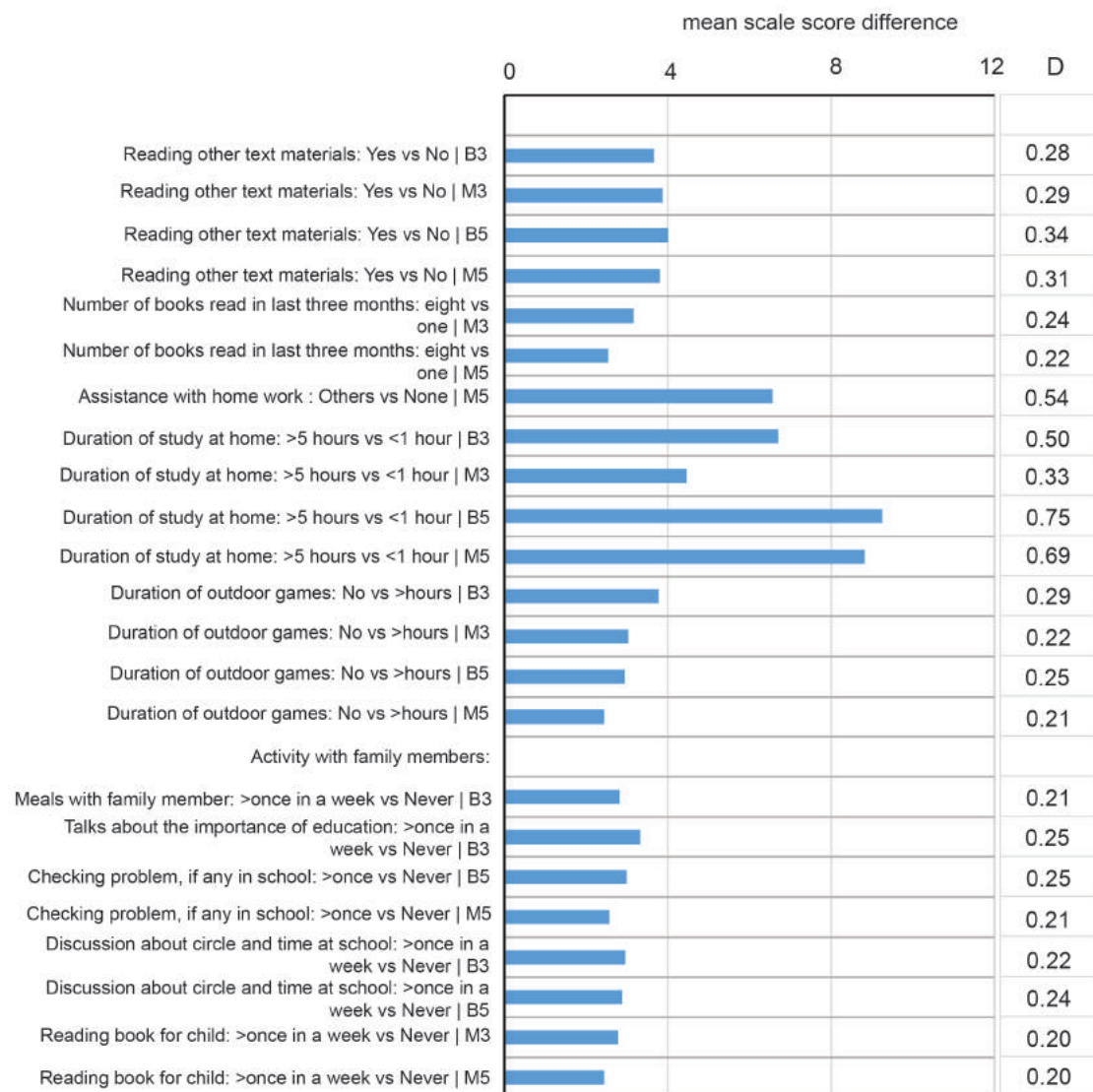
Significant improvement in student performance for additional help in studies was seen only in grade 5 mathematics. Surprisingly, help from family members other than parents and siblings is associated with better student performance and the effect size is large. This correlates with the finding that the presence of nephews at home was positively associated with student performance.

Studying for more than 5 hours at home compared to less than one hour, unsurprisingly, was linked with the biggest difference among all student activities at home, irrespective of grade or subject and the effect size was large. Similarly, not playing outdoor games was better than playing for more than 3 hours and reading texts other than books from school also had a positive association with performance across subjects and grades, though the magnitude of the difference was lesser than studying for more than 5 hours. However, the data suggested that in order for reading to impact performance, students need to read more than 8 books in three months and even that did not make a significant difference in Bangla performance in either grade. In grade 5, for both subjects, having someone at home to discuss the problems faced at school made a significant difference.

Performance in Bangla increased significantly in both grades, when someone at home checked whether students have a social circle and are enjoying their time at school more than once a week. In grade 3, Bangla performance was also significantly related with having meals with family more often than once a week and having discussions about the importance of education more often than once a week.

Other than the variables mentioned above, mathematics performance was significantly related with a family member reading to the learner more than once a week, only. This was applicable in both grades. Interestingly, this variable did not show a significant association with Bangla performance.

Figure 45: Difference in NSA 2022 scale scores by student activities outside the school



5.2. Teacher questionnaire

This section describes the findings from the responses to the teacher questionnaire. The table below indicates the factors and variables that were included in the teacher questionnaire. Every variable under every factor was analysed based on the average performance of students under the condition, as described above. In this section, only the variables and factors with significant differences are described. Factors or variables that are not included in this section did not show significant differences.

No variable classified under the factors, professional enhancement and support from education officials, were found to have a significant association with student performance.

Table 48: Factors and variables included in the teacher questionnaire

SN	Factors	Variables
1.	Teachers' background	Gender
		Social group
		Highest academic qualifications
		Highest professional qualification
		Teaching experience
		Subject and grade level taught in the school
		Instructional hours
2.	Teaching practices	Emphasising learning intentions
		Learner-centered strategies
		Reflective practices
		Integration of ICT in the teaching and learning process
		Resources used
3.	Remote/distance/online learning during COVID-19 period	Percentage of children who attended Remote/ Distance/ online learning during school closure
		Resources used at home
		Teachers' perceptions on whether the closure, hampered children's education
4.	Assessment practices	Understanding the importance of assessment
		Continuous formative assessment
		Summative assessment
5.	Classroom environment	Physical environment
		Social environment
		Emotional environment
6.	School environment	Physical environment
		Social environment
		Emotional environment
7.	Professional enhancement	Content knowledge
		Teaching methods
		Assessment strategies
		Research
		Student behaviour management
		Use of Information and Communications Technology

SN	Factors	Variables
8.	Motivation to teach	Students' interest
		Management support
		Peer support
		Stakeholders' support
		Remuneration
9.	Support from education officials	Monitoring and support

Each variable and/or factor that had significant differences is reported below in a separate sub-section. The findings are described and the difference in mean scale scores as well as the significance and the effect size (Cohen's D) are shown using a table. The mean difference is also illustrated through a figure.

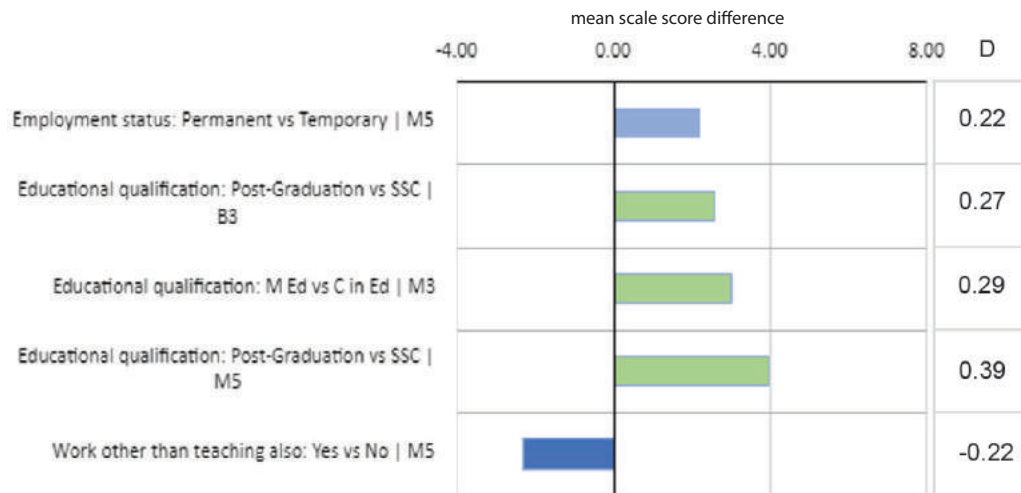
5.2.1. Teacher background

Teacher background had almost no significant difference in student performance in Bangla. Among the variables studied, only extreme difference in qualification – post-graduate vs SSC had a significant association in grade 3. No other variable was related with performance in either grade, significantly.

In mathematics, in grade 3, the only variable associated with performance was whether a teacher had an M. Ed. or a C-in-Ed., with teachers with an M. Ed. having a significant association with difference in scores. In grade 5, the three factors that had an association were whether a teacher was permanent, had a post-graduate degree (compared to an SSC) and if the teacher engaged in work other than teaching. Difference in scores were significant for permanent teachers, post-graduates and those who did not indulge in other work.

No other variable, including teacher experience, had a significant association irrespective of grade or subject.

Figure 46: Difference in NSA 2022 scale scores by teachers' background (TQ)



5.2.2. Teaching and assessment practices

Higher number of variables under this factor had a significant association with performance in grade 5 than in grade 3. The most significant practice was the involvement of the head teacher either through discussions on teaching-learning practices or through classroom observations, though classroom observations may be undertaken by colleagues. This difference was seen in both subjects in grade 3 and in Bangla in grade 5, with a large effect size.

In grade 3, in Bangla, the integration of Information and Communication Technology (ICT) and access to Teaching-Learning Material (TLM) had a significant association with performance. Though, it must be noted that only the extreme differences (always vs never) were significant. In mathematics, only discussing teaching and learning strategies with the head teacher had a significant association.

In grade 5, in Bangla, access to TLM had a significant association with the performance in addition to the variables based on the involvement of the head teacher. In mathematics, observing peer's classes and integrating ICT with the teaching-learning process were both correlated with better performance. As in grade 3, it must be noted that only the extreme differences (always vs never) were significant.

Teachers who believe that content memorisation is not important, and that lecturing is not the most important method of teaching had a significant positive association with student performance in mathematics in grade 5.

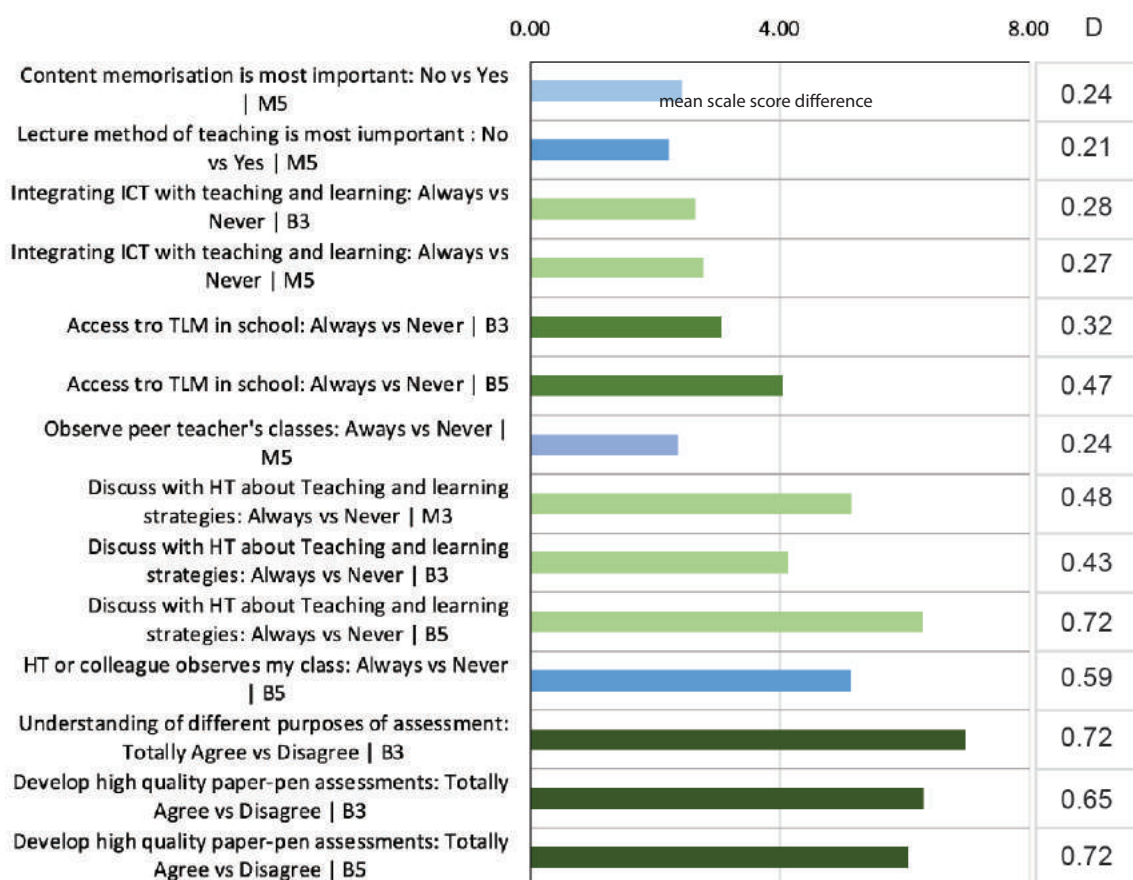
The amount of homework given or how teachers verified whether students completed their homework had no significant association with performance irrespective of grade or subject.

Teachers' understanding about assessment made a difference in student performance only in Bangla. Irrespective of grade, this factor did not show a significant association with student performance in mathematics.

The most important variable was teachers' confidence in their own assessments. Those who believed that they developed high quality assessments had a large association with student performance in Bangla across grades. Similarly, in grade 3, teachers who believed that they had a good understanding of the different purposes of assessment had a large positive association with student performance in Bangla.

This points to the importance of teachers having confidence in their practices and how much it impacts student performance.

Figure 47: Difference in NSA 2022 scale scores by teaching and assessment practices (TQ)



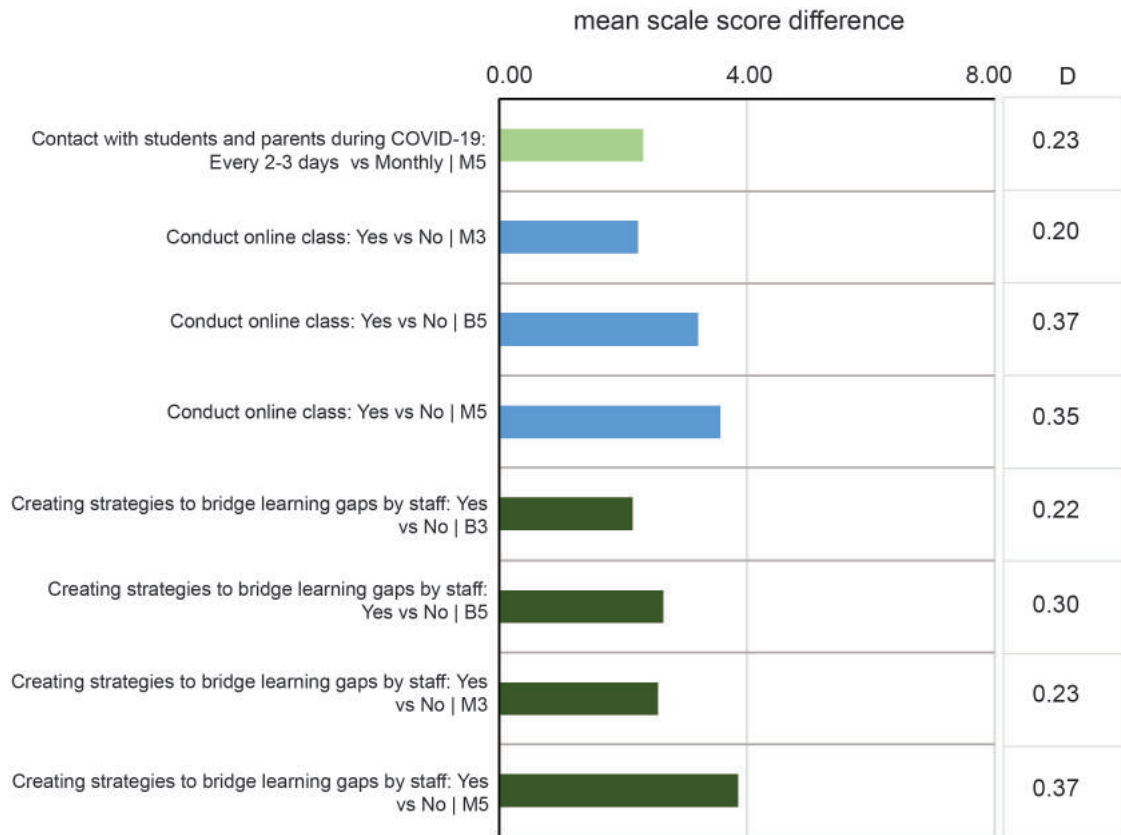
5.2.3. Remote/distance/online learning during COVID-19 period

The two most important strategies that had a positive association with learning were the creation of bridge courses by staff and the actual delivery of online classes during the COVID-19 pandemic. Surprisingly, whether online classes were conducted had no significant association with student performance in grade 3.

The only other strategy that had an association was frequent contact with parents (every 2-3 days as against monthly), though the effect was only significantly different in grade 5 mathematics performance.

The type of devices used for online classes and support received from the school did not make any significant difference to student performance.

Figure 48: Difference in NSA 2022 scale scores by Association of remote/distance/online learning during COVID-19 period (TQ)



5.2.4. School and classroom environment

Only the physical environment or the infrastructure of the class had significant association with student performance.

In grade 3, teachers who did not believe that the lighting in the classroom was adequate had a positive association with mathematics performance. None of the variables made a difference in performance in Bangla in grade 3. In grade 5, adequate ventilation (in the classrooms had a positive association with both Bangla and mathematics performance.

The physical environment seemed to play a more significant role in student performance based on teacher perception. The social and emotional environment variables mostly were not significantly associated with performance irrespective of grade or subject. The only exception is teachers' perception of whether the head teacher is friendly with staff, with friendly head teachers having a positive association with Bangla performance in grade 3.

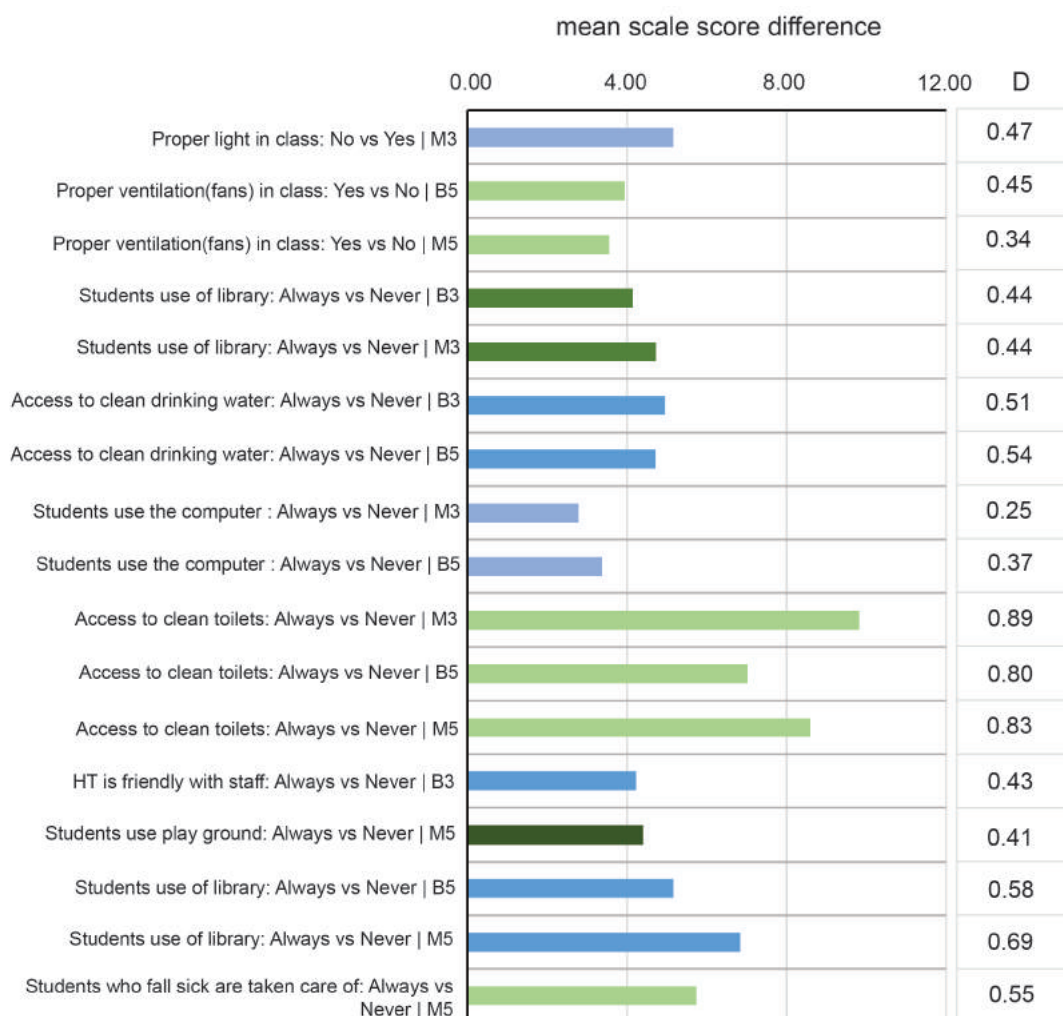
Students' use of library had a positive association across grades and subjects (only the extreme difference of always versus never is significant). The effect size becomes large in grade 5. Access to clean toilets made a large difference in performance across grades and subjects with the exception of grade 3 Bangla, where the difference was not significant.

Bangla performance benefits from access to clean drinking water in both grades, though the effect was absent for mathematics. Students using the computer (again always compared to never) performed significantly better in mathematics in grade 3 and Bangla in grade 5.

Mathematics performance in grade 5 was positively associated with teachers' belief that students use the playground and that students who fall sick are taken care of.

The effect sizes are mostly large in grade 5.

Figure 49: Difference in NSA 2022 scale scores by Association of school and class environment (TQ)



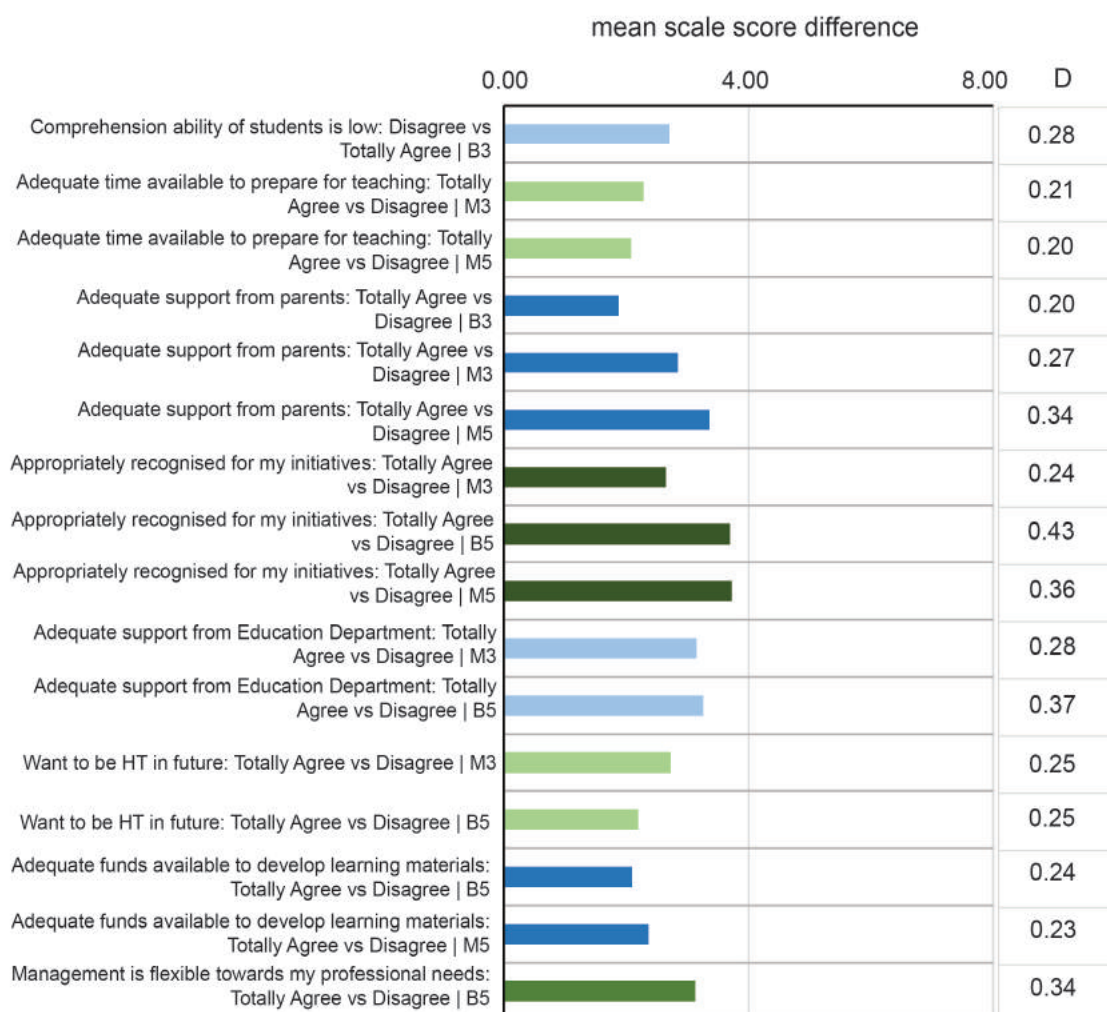
5.2.5. Teacher motivation

Whether teachers get adequate support from parents and whether they are recognised for their efforts made the most difference across subjects and grades. Teachers' satisfaction levels with their salaries and other benefits and whether the school management committees cooperate with them made no significant difference irrespective of grade or subject.

In Bangla, teachers who do not believe that their students' comprehension ability is low, unsurprisingly, were associated with significant improvement in student performance in grade 3. Further, teachers who believe that management is flexible towards their professional needs made a difference in student performance in grade 5 positively. In grade 5, teachers who want to be head teachers in the future and those who believe they have adequate support from the Education Department also had a positive association with performance. Interestingly, these aspects were associated with better performance in mathematics in grade 3 but not in grade 5.

Mathematics performance was positively associated with teachers' belief that adequate time is provided to prepare for teaching in both grades. In grade 5, adequate funds being available to develop teaching materials was positively associated with performance in both subjects. Figure 50: Association of teacher motivation with NSA 2022 scores

Figure 50: Difference in NSA 2022 scale scores by Association of teacher motivation (TQ)



5.3. Head teacher questionnaire

This section describes the findings from the responses to the head teacher questionnaire. The table below indicates the factors and variables that were included in the questionnaire. Every variable under every factor was analysed based on the average performance of students under the condition, like other two questionnaires. In this section, only the variables and factors with significant differences are described.

Table 49: Factors and variables included in the head teacher questionnaire

SN	Factors	Variables
1.	Headteachers background	Gender
		Social group
		Highest academic qualification
		Highest professional qualification
		Leadership experience

SN	Factors	Variables
2.	School background	School strength
		School management board
		Community support
		Instructional hours
		School culture
3.	Remote/Distance/online learning during COVID-19 period	Systems/ resources in place to facilitate online teaching and learning
4.	Headteacher's attitude towards the profession	Students' interest
		Management efficacy
		Stakeholders' support
		Remuneration
5.	Students' characteristics	Socio-economic status
		SEN students
		School readiness (pre-schooling)
		Students' disciplinary issues
6.	Teachers' efficacy	Motivation of teacher
		Pedagogical practices
		Resources
		Information and Communications Technology
7.	School environment	Physical environment
		Social environment
8.	Support from education officials	Monitoring and support

Each variable and/or factor that had significant differences is reported below in a separate sub-section. The findings based on the difference in mean scale scores significance have been described and illustrated through a figure, while the corresponding effect size (Cohen's D) is shown using a table.

5.3.1. Head teacher background and attitude and school background

Across both grades and subjects, head teachers' perceptions of the seriousness of the problem of student-teacher ratio had a significant association with student performance. Student performance improved significantly in schools where head teachers believe that the problem is not serious compared to the schools where head teachers believe that the problem is very serious.

Student performance improved significantly when head teachers monitored classroom activities as supported by the findings from the teacher questionnaire. The only exception is mathematics in grade 5. Parent participation in school activities also made a positive difference in performance except in mathematics in grade 3.

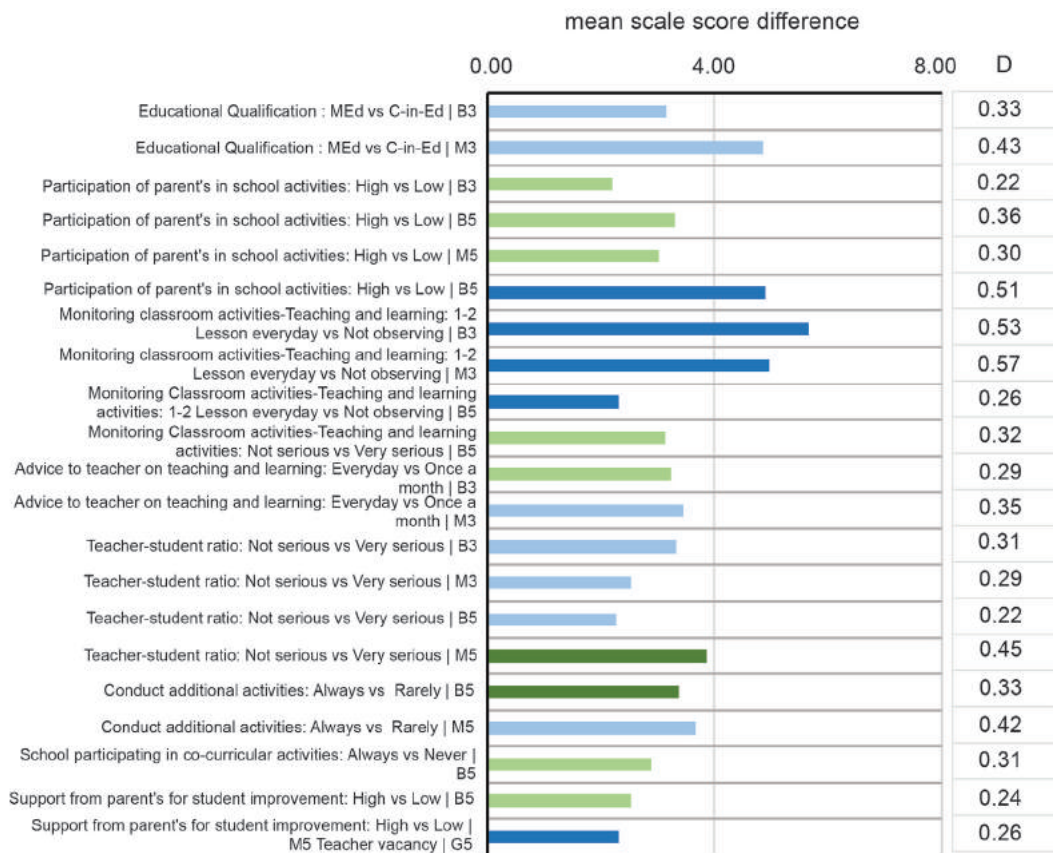
In grade 3, regular (everyday vs once a month) advice from head teachers on teaching and learning to teachers resulted in a positive association change student performance in both subjects. Similarly, whether

head teachers have completed an M. Ed. Or only a C-in-Ed. Made a difference in performance in both subjects.

In grade 5, conducting additional activities frequently and sufficient support from parents to improve student learning were significantly related with performance in both subjects. Additionally, performance in Bangla was higher when schools participated frequently in co-curricular activities and head teachers did not believe teacher vacancy to be a serious problem.

The only large effect size (Cohen's $D > 0.50$) was observed for how frequently head teachers monitored classroom activities related to teaching and learning.

Figure 51: Difference in NSA 2022 scale scores by head teacher and school background (HTQ)



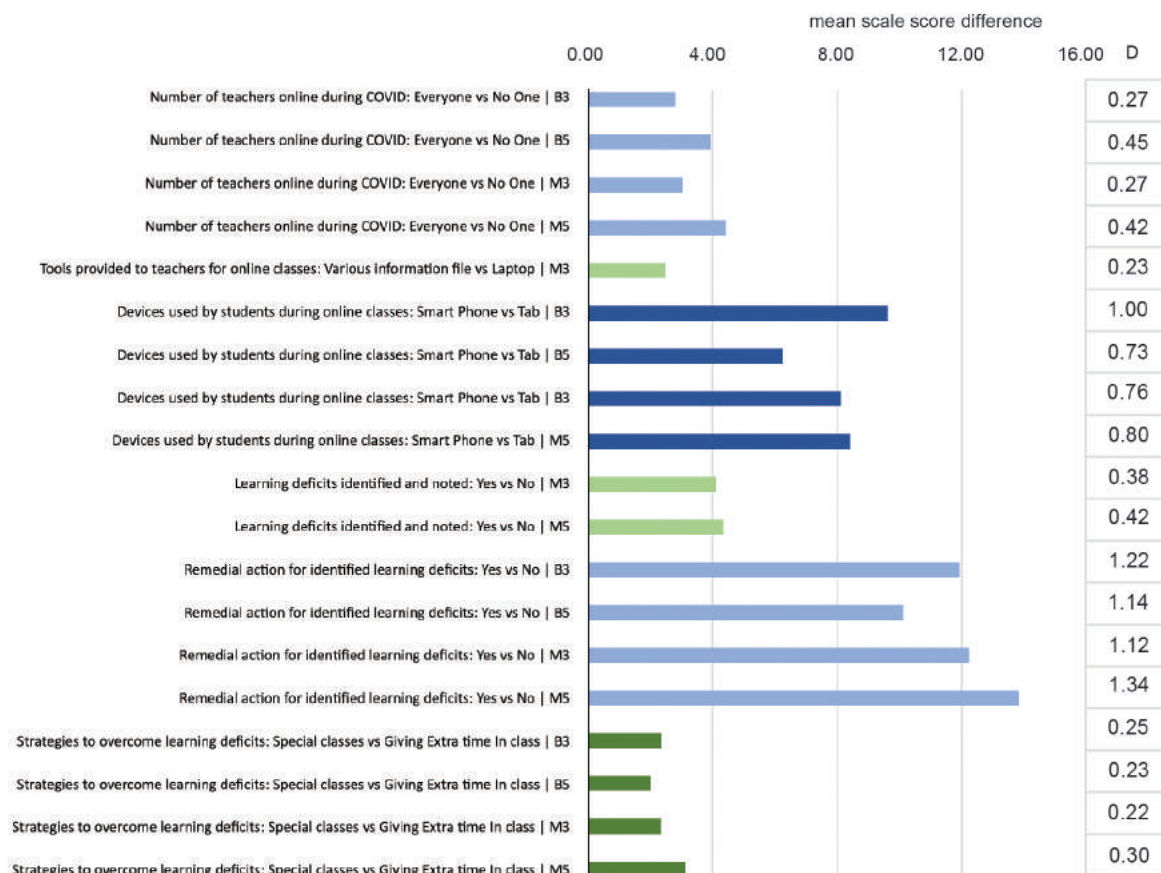
5.3.2. Remote/distance/online learning during COVID-19 period

Whether remedial action was taken to address identified learning deficits had the largest association with performance across grades and subjects. A surprising finding is that students who used smart phones to attend online classes performed significantly better than those who used a tab across grades and subjects. The difference was quite substantial.

The performance across grades and subjects was positively associated with when every teacher was involved in online classes compared to none of the teachers being involved. Similarly, performance in both grades and subjects benefitted from special classes being conducted to address learning deficits as opposed to providing extra time in class.

Mathematics performance in both grades improved significantly when learning deficits were identified and noted. In grade 3, mathematics performance was significantly and positively related with teachers who were provided with different tools rather than just laptops.

Figure 52: Difference in NSA 2022 scale scores by remote/distance/online learning during COVID-19 period (HTQ)



5.3.3. Teacher efficacy

The main finding from the responses to items under the teacher efficacy factor is that the motivation of the teacher was associated with gains in performance across grades and subjects. For instance, teachers' willingness to work beyond the requirements and their professional satisfaction can be linked to better performance in both subjects and both grades.

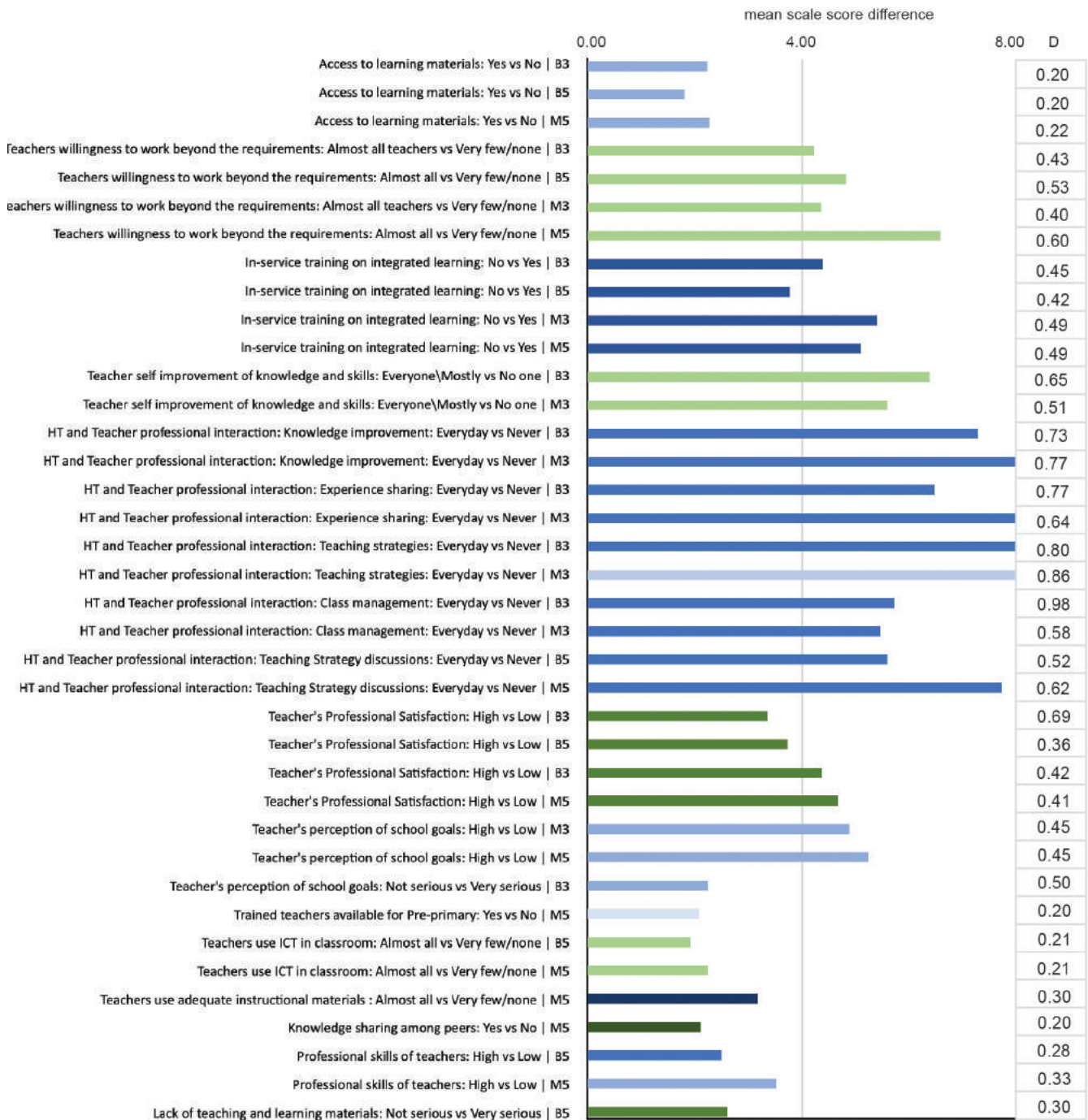
The highest effect sizes were seen when there is frequent professional interaction between head teachers and teachers. This effect is seen irrespective of grade or class. Training on integrated learning and access to learning materials could also be associated with significant gains in student performance across grades and subjects. Though, access to learning materials was not associated with a significant gain in Bangla in grade 3.

Across grades, gain in mathematics performance was seen when teachers' perception of school goals is clear and in Bangla when teachers believe that lack of TLM is not a serious problem.

In grade 3, when all teachers focused on self-improvement in terms of knowledge and skills (compared to almost none of the teachers), there was an associated benefit in terms of student performance in both subjects.

In grade 5, the use of ICT by most teachers and a high level of professional skill could be associated with significant improvement in performance across subjects. Additionally, significant improvement in mathematics was associated with whether trained teachers are available at the pre-primary level and whether all teachers use adequate TLM.

Figure 53: Difference in NSA 2022 scale scores by Teacher efficacy (HTQ)



5.4. Summary

NSA 2022 retained many of the factors that were measured in previous cycles to ensure continuity. However, as the context in which learning takes place has changed, particularly in light of the COVID-19 pandemic, additional factors were introduced in this cycle of the NSA.

Three contextual questionnaires were used to measure the contextual factors in NSA 2022:

- student questionnaire

- assistant teacher questionnaire
- head teacher questionnaire

This section presents a summary of the most important findings from the three questionnaires, discussed in detail in the chapter above.

5.4.1. Student background and socio-economic status

When students spent more than one year in a class, they generally showed poorer performance. For instance, in grade 5 the difference in performance was 3.95 scale score points for Bangla and 3.55 for mathematics, between those who have repeated at least one grade or more and those who have never done so.

For parents' background, higher parental education and parental occupation (only government employment and private employment in a few cases) both had significant association with effect on student performance. Students' performance was significantly high for parents being educated at least till the graduate level and being employed (only government employment and private employment in a few cases). had a significant positive association with student performance. However, the association of parental education with student performance was only significant if either parent is educated till the graduate level. For lower levels of parental education or other kinds of employment, the performance was not significantly different with from an illiterate and unemployed status of parents.

The effects were more pronounced at grade 5 level, and mothers' education level and occupation were also associated with increased gains at grade 5 level. For instance, in mathematics, students with graduate fathers showed a gain of 6.61 scale score points on average (large effect size, $D=0.51$) and those with graduate mothers showed a gain of 8.02 scale score points on average (large effect size, $D=0.65$).

Interestingly, the benefit of having better educated or government employed parents was higher in Bangla than mathematics across grades. For instance, in grade 3, having a graduate father was linked to an improvement of 5.93 scale score points in Bangla compared to a gain of 4.26 in mathematics. Similarly, in grade 5, mothers being government employees was associated with a gain of 9.65 scale score points on average against those with unemployed mothers. This is compared to a gain of 8.02 in mathematics.

Only the availability of electricity and television were associated with significant difference in performance across subjects and only in grade 5 based on the socio-economic status.

5.4.2. Classroom and school environment

Based on the student questionnaire, teachers being friendly and providing feedback were associated with significant improvement along with being able to do classroom activities together.

The use of libraries was associated with better performance across grades in mathematics but only in grade 5 in Bangla. However, the teachers' perception suggested that use of libraries is important across grades and subjects. The difference was only significant when there was highly frequent use of the library versus no use of the library. Based on teacher responses, in grade 3, there was an improvement of 4.15 scale score points in Bangla and an increase of 4.72 in mathematics. In grade 5, the effect increased with a gain of 5.16 in Bangla (large effect size of 0.58) and 6.83 in mathematics (large effect size of 0.69). The effect was consistently higher in mathematics.

The data from the teacher questionnaire also suggested that the physical environment plays a more significant role in student performance. The social and emotional environment variables mostly did not make

a significant difference in performance irrespective of the grade or subject. The only exception was teachers' perception of whether the head teacher is friendly with staff, with friendly head teachers having a positive association with Bangla performance in grade 3.

The school environment factor was not associated with any significant gain based on the head teacher questionnaire data.

5.4.3. Remote/distance/online learning during COVID-19 period

The most important factors associated with significant differences in learning were whether students attended online classes regularly, whether any learning gaps were addressed and surprisingly, a large effect was noted on whether students used mobile phones or tabs. Using a mobile phone was associated with significantly better performance across grades and subjects, based on the head teacher questionnaire data.

The effect of using a mobile phone compared to a tab was greater in grade 3 for both Bangla (9.62, effect size of 1.00) and mathematics (8.12, effect size of 0.76) than in grade 5. Though the effect in grade 5 was also large for both subjects for those using mobile phones – in Bangla a higher mean scale score of 6.23 (effect size of 0.73) was observed and in mathematics the mean scale score was 8.41 scale score points higher (effect size of 0.80).

5.4.4. Student motivation

The performance across subjects and grades showed improvement when students enjoyed going to school and felt it was important to learn. The gains were not very substantial (between 2.4 to 3.6 scale score points) and the effect sizes were medium (0.2 to 0.3) across grades and subjects.

Surprisingly, students' attitude towards the subject, positive or negative had no significant effect on performance, irrespective of subject or grade.

5.4.5. Students' activities outside school

The largest difference in performance under this factor was seen for students who studied for more than 5 hours compared to those who studied for less than an hour. The difference in mean scale score was 6.70 for Bangla and 4.45 for mathematics with medium size effects, in grade 3 and 9.25 (effect size of 0.75) in Bangla and 8.81 (effect size of 0.69) in mathematics.

Reading texts other than school material was also linked to gains in performance in both subjects and grades.

5.4.6. Teacher background

Teacher background in general had no consistent effect on student performance across grades. The most notable aspect was the comparison between post-graduate and SSC qualified teachers, though it was only significant for Bangla in grade 3 (difference of 2.59 scale score points) and for mathematics in grade 5 (difference of 3.96 scale score points).

5.4.7. Teacher practices

Data from both the teacher questionnaire and head teacher questionnaire suggested that significant improvement in performance is associated with frequent professional interactions between teachers and head teachers as shown in the table below.

Table 50: Effect of professional interaction between teachers and head teachers

Teacher questionnaire: Discussion between teacher and HT about teaching and learning strategies		Scores	Sig	D
Grade 3	Bangla: Always vs Never	4.13	0.04	0.43
	Mathematics: Always vs Never	5.15	0.04	0.48
Grade 5	Bangla: Always vs Never	6.29	0.03	0.72
Head teacher questionnaire: HT and Teacher professional interaction				
Grade 3	Bangla: Knowledge improvement: Everyday vs Never	7.29	0.01	0.73
	Mathematics: Knowledge improvement: Everyday vs Never	8.36	0.01	0.77
	Bangla: Experience sharing: Everyday vs Never	6.47	0.04	0.64
	Mathematics: Experience sharing: Everyday vs Never	9.04	0.01	0.80
	Bangla: Teaching strategies: Everyday vs Never	8.58	0.00	0.86
	Mathematics: Teaching strategies: Everyday vs Never	10.42	0.00	0.98
	Bangla: Class management: Everyday vs Never	5.73	0.01	0.58
	Mathematics: Class management: Everyday vs Never	5.46	0.02	0.52
Grade 5	Bangla: Teaching Strategy discussions: Everyday vs Never	5.59	0.02	0.62
	Mathematics: Teaching Strategy discussions: Everyday vs Never	7.74	0.01	0.69

Other teacher practices such as the use of ICT or access to TLM showed some effect without the effect being consistent across grades and subjects. For instance, in grade 3, in Bangla, the integration of ICT in teaching and learning and access to TLM had a significant association with performance. Though, it must be noted that only the extreme differences (always vs never) were significant. However, this effect was not seen for mathematics in grade 3. In grade 5, the use of ICT was only associated with a significant gain in mathematics and access to TLM was again associated with a significant improvement in Bangla.

This inconsistency was also seen in the data from the head teacher questionnaire.

5.4.8. Teachers' assessment practices

Teachers' assessment practices only had a significant effect on performance in Bangla, though the effect was quite large. Teachers' confidence in the assessments developed by them was associated with substantial gains in both grades – 6.30 in grade 3 and 6.05 in grade 5 and the effect sizes were large in both cases, 0.65 and 0.72, respectively.

Teachers who were confident that they understood the different purposes of assessment also had a large effect (0.72) on grade 3 Bangla performance (6.99 average difference in scale scores).

5.4.9. Teacher motivation

The teacher questionnaire suggested that adequate support from parents and their recognition for

the efforts of teachers made the most difference across subjects and grades.

The data from the head teacher questionnaire also indicated that teacher motivation is associated with substantial gains in student performance across grades and subjects. For instance, the willingness to work beyond requirements had a significant effect on performance in both Bangla (grade 3 – 4.23 and grade 5 – 4.83) and mathematics (grade 3 – 4.37 and grade 5 – 6.59). The effect size was large in grade 5 at 0.53 in Bangla and 0.60 in mathematics.

Though teacher's satisfaction levels with their salaries and other benefits made no significant difference irrespective of grade or subject, data from the head teacher questionnaire suggested that their professional satisfaction is linked to better performance in both grades and subjects. In grade 3, when professional satisfaction of teachers was high, Bangla performance improved by 3.36 and mathematics performance by 4.37. Similarly, in grade 5, it increased by 3.73 and 4.68, respectively.

5.4.10. Head Teacher background and attitude

Head teachers' perception of the seriousness of the problem of student-teacher ratio had a significant association with student performance. Student performance improved significantly in schools where head teachers believe that the problem is not serious compared to the schools where head teachers believe that the problem is very serious.

Student performance also benefitted significantly when head teachers monitored classroom activities daily as supported by the findings from the teacher questionnaire. The effect size was large especially in Bangla (between 0.51 and 0.57). The improvement in mean scale score was 4.91 and 4.97, for Bangla, in grade 3 and 5, respectively. For mathematics, it was 5.65 in grade 3 and not significant in grade 5.

Parent's participation in school activities also made a positive difference in performance in general.

Chapter – 6

Findings and recommendations

CHAPTER 6. FINDINGS AND RECOMMENDATIONS

NSA 2022 data is a valuable indicator of the learning levels of students in Bangladesh and also an indicator of whether and to what extent the level of students' learning achievements have changed in comparison with the previous rounds. The findings from NSA 2022 study are aligned with the stated objectives of NSA to identify the extent of learning, groups that are at risk of falling behind, and factors that may be inhibiting or promoting learning. This chapter focusses on recommendations based on findings from NSA 2022 and also provides suggestions based on the management of the project and its implementation.

6.1. Learning and equity

6.1.1. Performance of NSA 2022 is similar or better than NSA 2017

NSA 2022 findings indicate that students have performed similar to or better than the 2017 cycle across subjects and grades. These findings are supported by multiple analyses. The comparison of mean scale across cycles, comparison of students at various proficiency levels and also, comparison of students at various performance levels all point to the same conclusion.

In Bangla, the grade 3 mean scale scores (103) were very similar, in both NSA 2022 and 2017, while the national mean scale scores for grade 5 were 110 and 109 in NSA 2022 and 2017 respectively. In mathematics, the national mean scale score in grade 3 was 104 (NSA 2022) and 98 (NSA 2017) and in grade 5, was 113 (NSA 2022) and 112 (NSA 2017). The performance on items assessing application skills was further lower across the subjects and grades.

The percentage of students at the higher performance levels (Advanced and Proficient) increased up to 51% (NSA 2022) from 47% (NSA 2017) in grade 3 and up to 50% (NSA 2022) from 44% (NSA 2017) in grade 5, in Bangla. In mathematics, the percentage of grade 3 students at higher performance levels rose to 39% in NSA 2022 from 34% in 2017. In grade 5, it was 30% and 32%, respectively. The only exception was the decline in the proportion of high performers in grade 5 mathematics. However, grade 5 mathematics showed a higher percentage of students at the advanced level in NSA 2022 (9%) compared to NSA 2017 (8%). Flip side is that half of the students have still not achieved grade level foundation skills in Bangla and about two third students have not achieved grade level mathematics foundational skills. Achievement gaps widen as students move to higher grades.

The findings are encouraging, however, it is important to note that students at low achievement levels are often the first to drop out of schools and thus, may not be represented in the sample. Therefore, it is crucial to identify the extent of school drop-outs and their characteristics.

Recommendation

1. Further research, with a particular focus on school drop-outs, may help corroborate and further validate the findings before concluding that COVID-19 has not affected students' learning in Bangladesh.
2. The approach from previous cycles of NSA was used for the categorisation of skills which is a traditional approach. However, the traditional approach is more suitable to domains other than reading comprehension. For future cycles, it is recommended that a framework that is more reading focussed is adopted. For instance, the approach followed by the Programme for International Student Assessment (PISA) which focusses on the sub-skills of reading could be adopted (OECD, 2019).

3. Professional development programmes for teachers may be undertaken to enable them to link the learning in school with the experiences in real life. In turn, it will give an opportunity to their students to acquire skills to apply in real life as an integral part of learning.
4. A systematic policy and implementation research followed by an action plan may be helpful to narrow the achievement gaps.

6.1.2. Grade 5 has performed better than grade 3

Looking at the distribution of students on the NSA scale for both Bangla and mathematics, there was a clear improvement in the performance in Bangla and mathematics from grade 3 to grade 5 as the percentage of students was higher in the higher bands for grade 5.

In Bangla, the grade 5 mean was 7 scale score points higher than grade 3. This is similar to the performance in NSA 2017 where the difference was 6 scale score points. In mathematics, grade 3 students performed better than was expected. The difference between grade 3 and grade 5 was 9 scale score points as against 12 scale score points or more historically.

While performance is better compared to 2017, there are multiple indicators of widening achievement gaps with students moving up to higher grades without mastering grade level skills at lower levels.

Recommendation

A systematic policy and implementation research followed by an action plan may be helpful to narrow the achievement gaps by enabling students to master grade appropriate foundational skills from very early grades.

6.1.3. Students from Madrasah are falling behind

There are some clear trends in how different types of schools performed. GPS schools performed better than the national average across both grades in both subjects. In Bangla, GPS schools had a mean scale score of 103.7 and 110.8 in grades 3 and 5, respectively, and in mathematics, they had a mean scale score of 105.2 and 114.6 in grades 3 and 5, respectively. Madrasah performed significantly below all other types of schools across grades and subjects with mean scale scores of 95.6 and 107.8 in mathematics for grades 3 and 5, respectively, and mean scale scores of 97.6 and 104 in Bangla for grades 3 and 5, respectively. Recommendation

Interventions, including policy measures, may be required to improve performance in Madrasah. A proper understanding of the context under which these schools function would help to design interventions for identifying and planning appropriate measures. Some of the factors that need to be understood include student background, resources available with the institutions, curriculum followed, and pedagogical practices in such institutions.

6.1.4. Performance of Mymensingh division is best and Sylhet poor

The mean scale score was used to assess student performance across different divisions. Mymensingh showed substantial improvement from the 2017 cycle in both Bangla (grade 3 103.4 to 109.3 in NSA 2022, grade 5 – 108.5 to 114.3) and mathematics (grade 3 – 101.1 to 111.1 in NSA 2022, grade 5 – 112.4 to 119.4) and performed significantly better than other divisions.

Mymensingh and Dhaka (Bangla grade 3 – 105.9 and grade 5 – 112.6 and mathematics grade 3 – 105.6 and grade 5 – 115.4) are the only divisions that consistently performed above the national average across grades

and subjects. Sylhet division has been lagging behind the other divisions across subjects, over the years.

There is a massive variation in the performance level of students across divisions and districts. For example, in Sylhet, 75% of grade 3 students and 85% of grade 5 students were below at basic or below basic levels in mathematics.

Recommendation

1. One size fits all approach may not work and a differentiated approach may be required to ensure that all regions grow at their own pace. Improvement in performance could be enhanced with a targeted approach to identify low performing regions, especially Sylhet and their ground challenges and accordingly build strategies on the basis of such information.
2. Further research might be undertaken for the identification of best practices in better performing districts or school types and promoting them in schools with similar contexts.

6.1.5. Students from plain land and coastal region have performed better

Schools in plain lands and border areas have performed better than the national average across languages and subjects. Border areas performed the best with an average scale score of 104.2 (Bangla) and 109.8 (mathematics) in grade 3 and 114.4 (Bangla) and 115.6 (mathematics) in grade 5, though the numbers were too few to include in significance tests. Students from plain lands had a mean scale score of 103.4 (Bangla) and 104.1 (mathematics) in grade 3 and 110.5 (Bangla) and 113.7 (mathematics) in grade 5.

The performance of students from plain lands was significantly better than most other groups with large enough numbers (at least 450 students) to be included in significance tests. Interestingly, in grade 3, students from coastal areas performed significantly better than students in plain lands in Bangla (104.6 mean scale score) and similar to them in mathematics (104.4). Their performance was below the national mean in grade 5. In mathematics, students in riverside/erosion prone areas performed better than the national average in both grade 3 (mean scale score – 108) and grade 5 (113.9), though the numbers were too low for significance tests. Schools in remote areas, islands and wetlands are the ones that require the most support across subjects and grades.

Recommendation

As the NSA 2022 was trying to achieve a sample that was representative of the national population, the number of students taking part in the assessment from some of the geographical locations was small. Therefore, it is important to further investigate the relative performance of students from different geographical locations based on larger samples from each geographical location before planning interventions.

6.1.6. There is evidence of gender parity

Data from NSA 2013 to NSA 2022 shows that the performance between boys and girls is consistently similar with girls performing slightly better in both grades. In 2022, in Bangla, grade 3, the boys mean scale score was 102 and girls mean scale score was 104, and in grade 5, the boys mean scale score was 109 and girls mean scale score was 111. In mathematics, the mean scale scores were similar (grade 3: boys mean scale score – 103.6 and girls mean scale score – 104.4) (grade 5: boys mean scale score - 113.1 and girls mean scale score – 113.6). This suggests that there is gender parity in this context in Bangladesh.

Recommendation

Gender parity is not easy to achieve particularly in South Asia. Therefore, this accomplishment must be highlighted and celebrated. Further, it would be worth studying what factors have helped Bangladesh in accomplishing this feat, so that it may be replicated in other low- and middle-income countries with similar contexts.

6.1.7. Teachers influence learning

Based on the student questionnaire data, teachers being friendly and providing feedback were associated with significant improvement along with being able to do classroom activities together.

Data from both the teacher questionnaire and head teacher questionnaire suggested that a large difference in performance was associated with frequent professional interactions between teachers and head teacher. Teachers' confidence in the assessments developed by them was associated with substantial gains in both grades (6.30 points on scale score in grade 3 and 6.05 points in grade 5 with large effect sizes 0.65 and 0.72 respectively).

Teachers who were confident that they understood the different purposes of assessment also had a large effect (0.72) on grade 3 Bangla performance (average difference in scale scores 6.99 points).

Adequate support from parents and their recognition of the efforts of teachers made the most difference across subjects and grades. Teacher motivation was another factor associated with substantial gains in student performance across grades and subjects. As an example, willingness to work beyond requirements had a significant effect on performance in both Bangla (mean scale score difference of 4.23 in grade 3 and 4.83 in grade 5) and mathematics (mean scale score difference of 4.37 in grade 3 and 6.59 in grade 5). The effect size was large in grade 5 (Cohen's $D = 0.53$ in Bangla and 0.60 in mathematics).

Student performance benefitted significantly when head teachers monitored classroom activities daily as supported by the findings from the teacher questionnaire. The effect size was large especially in Bangla (Cohen's $D > 0.50$). The improvement in mean scale score was 4.91 and 4.97, for Bangla, in grades 3 and 5, respectively. For mathematics, it was 5.65 in grade 3 and not significant in grade 5.

In general, parents' participation in school activities also made a positive difference in performance.

Recommendation

1. It is widely acknowledged that teachers have one of the largest impacts on learning. The findings suggest that it is important for teachers to be motivated and confident in their own abilities, particularly when it comes to assessment. There is also an indication that directed guidance at the local level from head teachers is extremely effective. Therefore, it is essential that teachers' motivation and professional development are paid adequate attention by policymakers.
2. In addition, undertaking policy measures that not only train head teachers to provide

adequate support and leadership to teachers but also enable them to consider this as a crucial component of their job.

6.1.8. Learning outside the classroom and access to resources influence performance

The largest improvement in performance under this factor was found for students who studied for more than 5 hours compared to those who studied for less than an hour per week. The difference in mean scale score was 6.70 for Bangla and 4.45 for mathematics in grade 3 and 9.25 (effect size – 0.75) in Bangla and 8.81 (effect size – 0.69) in mathematics in grade 5.

Reading texts other than the school material was also linked to gains in performance in both subjects and grades.

Recommendation

Providing students with tasks that are engaging and those that can be independently completed after school could boost their academic performance. The education department could develop a repository of such high-quality tasks that could be made available to teachers for use. It will provide teachers access to high quality learning materials and simultaneously reduce their workload to develop them.

6.1.9. Online learning during COVID-19 was useful

The highly important factors associated with significant differences in learning were regular attendance in online classes, addressing of learning gaps and surprisingly, a large effect was noted on using mobile phones or tabs for learning. Using a mobile phone was associated with significantly better performance across grades and subjects, based on the head teacher questionnaire data. The effect size of using a mobile phone compared to a tablet was very large (Cohen's $D = 0.73$ to 1.00).

Recommendation

The findings suggest that online learning was effective for students, especially, those using mobile phones. There might be scope to explore whether such an approach is effective in other contexts such as education in remote areas. The effectiveness of the response to COVID-19 also suggests that the overall approach and various measures taken to tackle the unusual situation must be documented rigorously and examined for use in other disaster situations, particularly, given Bangladesh's propensity for flooding.

6.2. Recommendations on the project management of NSA

Recommendation 1

The time allotted to the design phase will definitely need to be extended to ensure the quality of the assessment is not compromised and new items can be developed for both subjects and both grades for the subsequently cycles. A minimum period of eight months prior to the test administration needs to be allotted to ensure that the processes are carried out smoothly. In particular, the next round will require expanded timelines as the new curriculum needs to be

reviewed and the assessment framework updated. Further, the new items developed need to be piloted as they have not been embedded in NSA 2022.

Recommendation 2

More time is required between the test administration and finalisation of the NSA report in order to minimise the errors in test marking, data entry and cleaning, and to ensure technical soundness of the data analysis process. The NSA 2022 was conducted as a part of the achievement of two disbursement linked indicators (DLIs), which had a deadline of 30 June 2023. Therefore, all the processes after test administration had to be completed by 30 June 2023, which seemed to be extremely difficult. These processes included test marking, data entry, data cleaning, data analysis, preparation of two comprehensive reports – main report and technical report. In the process, several rounds of consultations to take certain decisions for reporting were completed. The first draft of the NSA main report and technical was completed by the first week of April 2023. After that, a comprehensive review by the DPs and DPE technical team was done, following a national review workshop. Once the final draft was prepared addressing all the comments and suggestions, an action plan was prepared based on NSA results. To effectively and efficiently complete all these steps, at least eight months are required.

Recommendation 3

A process for storing and maintaining documents and data files essential for comparability of NSA with previous rounds needs to be set up. The process should include storage guidelines for hard copy as well as soft copy versions and clear file structures so that documents can be accessed quickly and easily. This is because essential documents including administrator and process manuals, rubrics, reports, and raw data files from previous rounds are necessary to ensure comparability with previous rounds. Unfortunately, these were unavailable or difficult to locate for NSA 2022. For instance, data was culled out from the technical report, where possible.

It is recommended to build the capacity of concerned officials at NAC/DPE in various aspects of large-scale assessments so that they can ensure continuity through different cycles of NSA.

Recommendation 4

A process needs to be set up that includes guidelines on who can develop assessment items, the training that will be provided to them and the steps to be taken to ensure quality. It should be noted that item development is a difficult process that directly impacts the quality of the entire learning assessment. Therefore, more care needs to be taken in ensuring that the items included in the assessment are of appropriate quality. The quality assurance steps should include language review and proofreading for all subjects. An additional consideration will be the time provided for items development. Planning is essential to ensure that sufficient time is provided for item development.

Recommendation 5

In future rounds, government partners need to verify and rectify any gaps or errors in the data source, working with other government bodies where necessary. An error-free sampling frame is essential to ensure that the sample is truly representative. Further, a set of guidelines issued to schools on the requirements of the dataset and an orientation session on filling student data would be useful.

This recommendation arises from the fact that the sampling frame of NSA 2022 contained errors,

posing challenges in effectively drawing a school sample. For example, gaps in APSC database used as reference, inconsistencies in district names, school names, missing student details, etc. Post sampling of schools, student data was often not shared in the recommended format.



References

REFERENCES

ACER. (2012). 2011 National Student Assessment Grades 3 & 5. Revised Report. June 2012. The Australian Council for Educational Research. ACER: Melbourne.

Ainley, J., & Schulz, W. (2020). Framework development in international large-scale assessment studies. In *Reliability and Validity of International Large-Scale Assessment* (pp. 23-36). Springer, Cham.

Cohen, J. (1977). *Statistical Power Analysis for Behavioral Sciences* (revised ed.). New York: Academic Press.

DPE. (2018). *The National Student Assessment 2017 Grades 3 and 5. Monitoring and Evaluation Division. Directorate of Primary Education. Ministry of Primary and Mass Education. Government of People's Republic of Bangladesh.*

APPENDICES

Appendix 1 – Bangla key areas, strands and learning outcomes

Key Bangla skills that students are expected to demonstrate in grade 3 and grade 5 in the areas assessed have been listed in the tables below.

Key areas	Strands	Learning outcomes
Pre-reading	Sound discrimination (decoding)	Correctly identify a missing sound (phoneme/grapheme) in a known word (grade 3 only)
	Syllable discrimination (decoding)	Correctly identify a missing syllable (phoneme/grapheme) in a known word
	Word discrimination (decoding)	Correctly identify a word (group of phonemes/graphemes) in a set of known words
	Sentence discrimination (decoding)	Correctly identify a sentence (group of phonemes/graphemes segmented by words) in a set of known words (grade 5 only)
Reading comprehension	Read for meaning in grade-level appropriate imaginative texts	Understand the main ideas and secondary ideas (explicitly expressed), and global and inferential ideas (implicitly expressed) of grade-level appropriate imaginative texts
	Read for meaning in grade-level appropriate informational texts	Understand the main ideas and secondary ideas (explicitly expressed), and global and inferential ideas (implicitly expressed) of grade-level appropriate imaginative texts
	Reading for meaning in grade-level appropriate persuasive texts	Understand the main ideas and secondary ideas (explicitly expressed), and global and inferential ideas (implicitly expressed) of grade-level appropriate imaginative texts
Grammar	Word grammar	Identify key elements in the construction of a word in Bangla language to support comprehension
	Sentence grammar	Identify key elements in the construction of a sentence in Bangla language to support comprehension
Vocabulary	Known words	Identify the meaning of words in Bangla that should be known and are grade appropriate
	New (i.e. above grade-level) words	Identify the meaning of new words in Bangla (appropriate for a maximum of 2 grades above the targeted grade) through the use of grammatical and semantic contextual information

The table below provides the list of skills assessed in the area of pre-reading skills in NSA 2022.

Strands	Learning Outcomes
Recognising letters	Correctly distinguishing letters from other shapes
Phonemic awareness	Correctly recognising letters that begin words presented in the form of images
Vocabulary knowledge	Correctly matching words/phrases and images
Sentence comprehension	Correctly matching sentences and images

Appendix 2 – Mathematics key areas, strands and learning outcomes

Key mathematics skills that students are expected to demonstrate in grade 3 and grade 5 have been listed in the tables below. Please note that foundational skills are shown in colour.

Grade 3

Key areas	Strands	Learning outcomes
Numeracy	Numerals	Use a one-to-one correspondence to link numbers to their amounts (less than 10)
	Counting	Count forwards and backwards (including zero) up to 2-digit numbers
	Place value	Expand a number in ones and tens up to 2-digit numbers
	Quantity	Recognise a quantity amount, size, and number of objects to compare them visually
	Money	Identify coins and notes of Bangladesh
Measurement	Comparison of size and amount	Compare size to a range of situations and contexts with non-standard units
	Time	Organise familiar events and activities sequentially by time up to four events at most
	Time	Use informal vocabulary to describe a duration of events
Numbers and operations	Counting and ordering numbers	Count, read, write and order numbers up to 10,000
	Basic operations	Add and subtract numbers without and with carry over, multiply by 2-digit numbers and divide by 1-digit numbers using place value
	Problem solving using basic operations	Solve 2-stage problems on addition or subtraction and multiplication or division involving 2-digit numbers (multiplier to be 2-digit number at most and in case of division the divisor to be 1-digit number)
	Fractions	Identify fractions, equivalent fractions, and compare fractions, add and subtract like fractions (denominator being 1-digit number only)
Measurement and units	Currency	Identify, read, and write Bangladeshi currency, convert Taka to paisa and vice versa, and solve problems on money transactions
	Length	Use measurements of length (m, cm, mm) to measure and draw line segments of given length Convert units of length Solve problems using units of length
	Weight	Convert between different units of measurement of weight and capacity Solve problems using units of weight and capacity
	Time	Read time to the minutes Convert units of time Solve problems using units of time and duration of activities

Key areas	Strands	Learning outcomes
Shape and space	Lines, points, and planes	Differentiate between a point, line, and plane
	Angles	Identify and draw acute angle, right angle, and obtuse angle
	Quadrilaterals	Identify quadrilaterals and differentiate between square and rectangle
	Circles	Identify and draw a circle

Grade 5

Key areas	Strands	Learning outcomes
Numeracy	Counting	Count forwards and backwards (including zero) up to 2-digit numbers
	Place value	Expand a number in ones and tens up to 3-digit numbers
	Quantity	Compare 2-digit numbers
	Addition and subtraction	Add and subtract 2-digit numbers
	Money	Transact with money addition and subtraction only
Measurement	Comparison of size and amount	Compare size to a range of situations and contexts with non-standard units
	Time	Read time by the hour
	Time	Find time duration of activities not involving unit conversion
Numbers and operations	Operations	Do operations of addition, subtraction, multiplication and division and apply to solve three-stage problems
	Brackets and expressions	Simplify numerical expressions involving brackets
	Averages	Find averages and apply in daily life situations
	GCD and LCM	Find the GCD and LCM of numbers and apply them
	Literals	Use literals for unknown quantities and find the value of a literal from given information
	Fractions	Find equivalent fractions, compare proper fractions, convert between improper and mixed fractions
		Add, subtract, multiply, and divide fractions and apply them
	Decimals	Add, subtract, multiply, and divide decimals and apply them
Percentages	Convert between fractions and percentages and apply percentages to solve problems	

Key areas	Strands	Learning outcomes
Measurement and units	Length, weight and capacity	Use metric system of measurement to add and subtract length, weight, and capacity Solve problems using measurements of length, weight, and capacity
	Conversion of units of measurement	Convert between different units of measurement
	Area	Calculate the area of a square, rectangle, triangle Solve problems using measurements of area
	Time	Convert between different units of time and convert time from 12-hour format to 24-hour format and vice versa Solve problems using measurements of time
Data	Data use	Understand data, read, draw, and interpret from bar graphs and apply to situations involving different populations
Shape and space	Quadrilaterals	Differentiate between different types of quadrilaterals (parallelogram, rhombus, square and rectangle) and draw them
	Circles	Identify parts of a circle and draw a circle
Calculator and computer	Technology	Understand the usage of basic calculator and computer peripherals in daily life

Appendix 3 – Bangla Language performance level descriptions

Bangla Specific Performance Level Descriptors					
	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5
Performance Level	<p>1 Identify (read) letters and syllables, words, short sentences, and punctuation marks (EGRA)</p> <p>2 Read simple texts with fluency (EGRA)</p>	<p>1 Identify (read) letters and syllables, words, short sentences, and punctuation marks (EGRA)</p> <p>2 Read simple texts with fluency and comprehension. (EGRA and NSA)</p>	<p>1 Identify (read) letters and syllables, words, sentences, and punctuation marks. (EGRA)</p> <p>2 Read texts with fluency and comprehension. (EGRA and NSA)</p>	<p>1 Read words and sentences taking into consideration punctuation marks. (EGRA)</p> <p>2 Read texts with fluency and comprehension. (EGRA and NSA)</p>	<p>1 Read words and sentences taking into consideration punctuation marks. (EGRA)</p> <p>2 Read texts with fluency and comprehension. (EGRA and NSA)</p>
Advanced	<p>1.1-1.3 ...can read (identify) all of the letters, vowel signs and selected compound consonants of Bangla correctly and with automaticity.</p> <p>1.4 ...can read common words, new words and sentences fluently, automatically and with standard pronunciation.</p> <p>1.5 ...can recognise the full stop, reading with appropriate pauses and intonation.</p> <p>2.4 ...can read aloud a grade appropriate text and also above grade level fluently, with standard pronunciation, and appropriate intonation and stress.</p>	<p>1.3 ...can read (identify) all of the compound consonants of Bangla correctly and with automaticity.</p> <p>1.4 ...can read common words, new words and sentences fluently, automatically and with standard pronunciation.</p> <p>1.5 ...can recognise full stop, question mark, and comma, reading with appropriate pauses and intonation.</p> <p>2.4 ...can read aloud a text at grade level and also above grade level fluently, with standard pronunciation, and appropriate intonation and stress.</p> <p>2.5 ...can understand all of the main ideas, secondary ideas and most of the inferences of grade appropriate texts.</p> <p>2.6-2.8 ...can identify the meaning of all grade appropriate vocabulary items as well as some of those of higher grades.</p>	<p>1.3 ...can read (identify) all of the compound consonants of Bangla correctly and with fluently.</p> <p>1.4 ...can read words, new words and sentences texts fluently, automatically and with standard pronunciation.</p> <p>1.5 ...can recognise punctuation marks, reading with appropriate intonation.</p> <p>2.4 ...can read aloud a text at grade level and also above grade level fluently, with standard pronunciation, and appropriate intonation and stress.</p> <p>2.5 ...can understand all of the main ideas, secondary ideas and most of the inferences of grade appropriate texts.</p> <p>2.6-2.8 ...can identify the meaning of all grade appropriate vocabulary items as well as some of those of higher grades.</p>	<p>1.3 ...can read words, new words and sentences fluently, automatically and with standard pronunciation.</p> <p>1.5 ...can recognise punctuation marks, reading with appropriate pauses and intonation.</p> <p>2.4 ...can read aloud a text at grade level and also above grade level fluently, with standard pronunciation, and appropriate intonation and stress.</p> <p>2.5 ...can understand all of the main ideas, secondary ideas and most of the inferences of grade appropriate texts.</p> <p>2.6-2.8 ...can identify the meaning of all grade appropriate vocabulary items as well as some of those of higher grades.</p>	<p>1.3 ...can read words, new words and sentences fluently, automatically and with standard pronunciation.</p> <p>1.5 ...can recognise punctuation marks, reading with appropriate pauses and intonation.</p> <p>2.4 ...can read aloud a text at grade level and also above grade level fluently, with standard pronunciation, and appropriate intonation and stress.</p> <p>2.5 ...can understand all of the main ideas, secondary ideas and most of the inferences of grade appropriate texts.</p> <p>2.6-2.8 ...can identify the meaning of all grade appropriate vocabulary items as well as some of those of higher grades.</p>

Bangla Specific Performance Level Descriptors					
	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5
Performance Level	<p>1 Identify (read) letters and syllables, words, short sentences, and punctuation marks (EGRA)</p> <p>2 Read simple texts with fluency (EGRA)</p>	<p>1 Identify (read) letters and syllables, words, short sentences, and punctuation marks (EGRA)</p> <p>2 Read simple texts with fluency and comprehension. (EGRA and NSA)</p>	<p>1 Identify (read) letters and syllables, words, sentences, and punctuation marks. (EGRA)</p> <p>2 Read texts with fluency and comprehension. (EGRA and NSA)</p>	<p>1 Read words and sentences taking into consideration punctuation marks. (EGRA)</p> <p>2 Read texts with fluency and comprehension. (EGRA and NSA)</p>	<p>1 Read words and sentences taking into consideration punctuation marks. (EGRA)</p> <p>2 Read texts with fluency and comprehension. (EGRA and NSA)</p>
Proficient	<p>1.1-1.3 ...can read (identify) most of the letters, vowel signs and selected compound consonants of Bangla correctly.</p> <p>1.4 ...can read grade appropriate common words and short sentences mostly fluently and with standard pronunciation.</p> <p>1.5 ...can recognise the full stop, reading with appropriate pauses and intonation.</p> <p>2.4 ...can read aloud a grade appropriate short text mostly fluently and with standard</p>	<p>1.3 ...can read (identify) most of the compound consonants of Bangla correctly.</p> <p>1.4 ...can read grade appropriate common words and short sentences mostly fluently and with standard pronunciation.</p> <p>1.5 ...can recognise full stop, question mark, and comma, reading with appropriate pauses and intonation.</p> <p>2.4 ...can read aloud a grade appropriate short text mostly fluently and with standard pronunciation.</p> <p>2.5 ...can understand many of the main ideas and secondary ideas and some of the inferences of grade appropriate texts.</p> <p>2.6-2.8 ...can identify the meaning of many grade appropriate vocabulary</p>	<p>1.3 ...can read (identify) most of the compound consonants of Bangla correctly and fluently.</p> <p>1.4 ...can read grade appropriate words and sentences mostly fluently and with standard pronunciation.</p> <p>1.5 ...can recognise common punctuation marks, reading with appropriate pauses and intonation.</p> <p>2.4 ...can read aloud a grade appropriate text mostly fluently and with standard pronunciation.</p> <p>2.5 ...can understand many of the main ideas and secondary ideas and some of the inferences of grade appropriate texts.</p> <p>2.6-2.8 ...can identify the meaning of many grade appropriate vocabulary items.</p>	<p>1.3 ...can read grade appropriate words and sentences mostly fluently and with standard pronunciation.</p> <p>1.5 ...can recognise common punctuation marks, reading with appropriate pauses and intonation.</p> <p>2.4 ...can read aloud a grade appropriate text mostly fluently and with standard pronunciation.</p> <p>2.5 ...can understand many of the main ideas and secondary ideas and some of the inferences of grade appropriate texts.</p> <p>2.6-2.8 ...can identify the meaning of many grade appropriate vocabulary items.</p>	<p>1.3 ...can read grade appropriate words and sentences mostly fluently and with standard pronunciation.</p> <p>1.5 ...can recognise common punctuation marks, reading with appropriate pauses and intonation.</p> <p>2.4 ...can read aloud a grade appropriate text mostly fluently and with standard pronunciation.</p> <p>2.5 ...can understand many of the main ideas and secondary ideas and some of the inferences of grade appropriate texts.</p> <p>2.6-2.8 ...can identify the meaning of many grade appropriate vocabulary items.</p>

Bangla Specific Performance Level Descriptors					
	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5
Performance Level	<p>1 Identify (read) letters and syllables, words, short sentences, and punctuation marks (EGRA)</p> <p>2 Read simple texts with fluency (EGRA)</p>	<p>1 Identify (read) letters and syllables, words, short sentences, and punctuation marks (EGRA)</p> <p>2 Read simple texts with fluency and comprehension. (EGRA and NSA)</p>	<p>1 Identify (read) letters and syllables, words, sentences, and punctuation marks. (EGRA)</p> <p>2 Read texts with fluency and comprehension. (EGRA and NSA)</p>	<p>1 Read words and sentences taking into consideration punctuation marks. (EGRA)</p> <p>2 Read texts with fluency and comprehension. (EGRA and NSA)</p>	<p>1 Read words and sentences taking into consideration punctuation marks. (EGRA)</p> <p>2 Read texts with fluency and comprehension. (EGRA and NSA)</p>
Basic	<p>1.1-1.3 ...can read (identify) some of the letters, vowel signs and selected compound consonants of Bangla, with hesitation and often making errors.</p> <p>1.4 ...can read some grade appropriate common words, and short easy sentences, with a lot of hesitation and many errors.</p> <p>1.5 ...can recognise a full stop, although often reading without a pause and appropriate intonation.</p> <p>2.4 ...can read aloud a grade appropriate short text slowly and with many errors.</p>	<p>1.3 ...can read (identify) some compound consonants of Bangla, with a lot of hesitation and many errors.</p> <p>1.4 ...can read some grade appropriate common words, and short easy sentences, with a lot of hesitation and many errors.</p> <p>1.5 ...can recognise full stop, question mark, and comma, although often reading without pauses and appropriate intonation.</p> <p>2.4 ...can read aloud a grade appropriate short text slowly and with many errors.</p> <p>2.5 ...can understand some of the main ideas and secondary ideas but cannot understand the inferences of grade appropriate texts.</p> <p>2.6-2.8 ...can identify the meaning of some grade appropriate vocabulary.</p>	<p>1.3 ...can read (identify) some of the compound consonants of Bangla, with hesitation and errors.</p> <p>1.4 ...can read some grade appropriate common words, and short easy sentences, with a lot of hesitation and many errors.</p> <p>1.5 ...can recognise some common punctuation marks, although sometimes reading without pauses and appropriate intonation.</p> <p>2.4 ...can read aloud a grade appropriate short text slowly and with many errors.</p> <p>2.5 ...can understand reading without pauses and appropriate intonation.</p> <p>2.4 ...can read aloud a grade appropriate short text slowly and with many errors.</p> <p>2.5 ...can understand some of the main ideas and secondary ideas but cannot understand the inferences of grade appropriate texts.</p> <p>2.6-2.8 ...can identify the meaning of some grade appropriate vocabulary.</p>	<p>1.3 ...can read some grade appropriate words, and short easy sentences, with hesitation and errors.</p> <p>1.5 ...can recognise most common punctuation marks, although sometimes reading without pauses and appropriate intonation.</p> <p>2.4 ...can read aloud a grade appropriate short text slowly and with errors.</p> <p>2.5 ...can understand some of the main ideas and secondary ideas but cannot understand the inferences of grade appropriate texts.</p> <p>2.6-2.8 ...can identify the meaning of some grade appropriate vocabulary.</p>	<p>1.3 ...can read some grade appropriate words, and short easy sentences, with hesitation and errors.</p> <p>1.5 ...can recognise most common punctuation marks, although sometimes reading without pauses and appropriate intonation.</p> <p>2.4 ...can read aloud a grade appropriate short text slowly and with errors.</p> <p>2.5 ...can understand some of the main ideas and secondary ideas but cannot understand the inferences of grade appropriate texts.</p> <p>2.6-2.8 ...can identify the meaning of some grade appropriate vocabulary.</p>

Bangla Specific Performance Level Descriptors					
	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5
Performance Level	<p>1 Identify (read) letters and syllables, words, short sentences, and punctuation marks (EGRA)</p> <p>2 Read simple texts with fluency (EGRA)</p>	<p>1 Identify (read) letters and syllables, words, short sentences, and punctuation marks (EGRA)</p> <p>2 Read simple texts with fluency and comprehension. (EGRA and NSA)</p>	<p>1 Identify (read) letters and syllables, words, sentences, and punctuation marks. (EGRA)</p> <p>2 Read texts with fluency and comprehension. (EGRA and NSA)</p>	<p>1 Read words and sentences taking into consideration punctuation marks. (EGRA)</p> <p>2 Read texts with fluency and comprehension. (EGRA and NSA)</p>	<p>1 Read words and sentences taking into consideration punctuation marks. (EGRA)</p> <p>2 Read texts with fluency and comprehension. (EGRA and NSA)</p>
Below Basic	<p>1.1-1.3 ...can read (identify) few of the letters, vowel signs and selected compound consonants of Bangla, with a lot of hesitation and many errors.</p> <p>1.4 ...can read very few common words, with a lot of hesitation and many errors.</p> <p>1.5 ...can mostly not recognise a full stop and its function.</p> <p>2.4 ...can read aloud only a few words and phrases from a short text, slowly and with many errors.</p>	<p>1.3 ...can read (identify) few compound consonants of Bangla, with a lot of hesitation and many errors.</p> <p>1.4 ...can read very few common words, with a lot of hesitation and many errors.</p> <p>1.5 ...can mostly not recognise full stops, question marks, and commas and their function.</p> <p>2.4 ...can read aloud only a few words and phrases from a short text, slowly and with many errors.</p> <p>2.5 ...cannot understand any of the main ideas of grade appropriate texts.</p> <p>2.6-2.8 ...cannot identify the meaning of most grade appropriate vocabulary.</p>	<p>1.3 ...can read (identify) only a few of the compound consonants of Bangla, with a lot of hesitation and many errors.</p> <p>1.4 ...can read few common words, with a lot of hesitation and many errors.</p> <p>1.5 ...can mostly not recognise common punctuation marks and their function.</p> <p>2.4 ...can read aloud only a few words and phrases from a short text, slowly and with many errors.</p> <p>2.5 ...cannot understand any of the main ideas of grade appropriate texts.</p> <p>2.6-2.8 ...cannot identify the meaning of most grade appropriate vocabulary.</p>	<p>1.3 ...can read some common words, with a lot of hesitation and many errors.</p> <p>1.5 ...can recognise some common punctuation marks and their function.</p> <p>2.4 ...can read aloud a few words and phrases from a short text, slowly and with errors.</p> <p>2.5 ...can understand a few of the main ideas and some secondary ideas of grade appropriate texts.</p> <p>2.6-2.8 ...can identify the meaning of some grade appropriate vocabulary.</p>	<p>1.3 ...can read common words with some hesitation and errors.</p> <p>1.5 ...can recognise some common punctuation marks and their function.</p> <p>2.4 ...can read aloud a few words and phrases from a text, slowly and with errors.</p> <p>2.5 ...can understand a few of the main ideas and some secondary ideas of grade appropriate texts.</p> <p>2.6-2.8 ...can identify the meaning of some grade appropriate vocabulary.</p>

Appendix 4 – Mathematics performance level descriptions

Mathematics Specific Performance Level Descriptors					
Performance Level	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5
Advanced	<p>Able to count the numbers from 1 to 50 in groups of ten or any ways & write in digits and able to write in words up to 20.</p> <p>Able to identify symbols 1 to 9 from their names.</p> <p>Able to compare any two numbers from 1 to 19 and say and write which number is smaller and which is larger and able to arrange and write them in order.</p> <p>Able to read, write and use the ordinal numbers from the first to the fifth.</p> <p>Able to add & subtract two numbers without carrying and able to solve problems by using the methods of adding and subtracting (will use numbers no larger than 50 and the result will not exceed 50)</p> <p>Able to recognise the coins and the currency notes of Bangladesh and use them in day to day exchange of money (up take 50.)</p> <p>Able to recognise and say which of the surrounding objects are round, triangular and quadrilateral in shape</p>	<p>Able to count & write numbers as two's, three's, four's, five's and tens & arrange them in order of magnitude.</p> <p>Able to tell, determine & write the place values of the digits used in numbers up to 100.</p> <p>Able to use the ordinal numbers up to tenth.</p> <p>Able to add & subtract two numbers having not more than two digits in each by placing one below the other or side by side with carrying.</p> <p>Able to solve problems in real life involving multiplication and division by using multiplication table up to 10.</p> <p>Able to solve problems by using coins and notes in day to day transactions.</p> <p>Will tell & write one-digit denominator and numerator of a fraction.</p> <p>Able to use the different units of measurement (length, weight, area and land).</p> <p>Able to use the units of measures time in day to day life.</p> <p>Able to arrange different shapes (like cubes, spheres, cones, cylinders etc) separately according to their shapes and identify the shapes from the surroundings.</p>	<p>Able to count up to the number 10,000 correctly in any ways (tens, hundreds and thousands etc.)</p> <p>Able to solve two step problems by using the method of addition and subtraction of numbers not exceeding four digits.</p> <p>Able to solve two step problems by using either addition or subtraction and either multiplication or division (at all the stages of operation the numbers used should not have more than two digits, but in case of division, the divisor should be one-digit number).</p> <p>Able to solve simple problems involving four basic methods.</p> <p>Able to exchange coins and notes and will be able to solve problems related to the use of coins and notes in day to day transaction.</p> <p>Able to add & subtract fractional numbers (the denominators will be of one digits).</p> <p>Able to solve problems involving addition and subtraction of time correctly.</p> <p>Able to draw diagrams using different geometric shapes.</p>	<p>Able to count numbers up to a crore correctly in any ways (tens, hundreds, thousands and lac...)</p> <p>Able to read any number up to a crore.</p> <p>Able to write any numbers in words which are written in digits.</p> <p>Able to tell and determine the place values of the different digits used in writing numbers up to one crore correctly.</p> <p>Will be able to add two or more numbers (with or without carrying) by putting them one below the another or side by side.</p> <p>Able to subtract a smaller number with not more than five digits from a number of five digits (with or without carrying) by putting them one below the another or side by side.</p> <p>Able to multiply a number by a number in any method & able to multiply by inter changing the multiplicand and the multiplier.</p> <p>Able to divide one number by another number (the dividend having not more than 5 digits and divisor having not more than 3 digits.</p>	<p>Able to multiply one number by another number using different methods (the multiplicand will be of not more than four digits and the multiplier will be of not more than three digits).</p> <p>Able to divide a number by another number using different methods (the dividend will be of not more than five-digit a number and the divisor will be of not more than three digits.)</p> <p>Able to divide by 10 or 100 a number of not more than five digits using the easy method.</p> <p>Able to solve problems by using a maximum three processes of adding, subtraction, multiplying and dividing in different ways.</p> <p>Able to solve any problems related to average.</p> <p>Able to solve problems using H. C. F and L. C. M. by different ways.</p> <p>Able to construct mathematical sentences by using letter symbols, the information contained in words & pictures. and solve problems.</p>

Mathematics Specific Performance Level Descriptors					
Performance Level	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5
		To be able to classify the different geometrical shapes and name them (triangle, quadrangle, and circle) and draw their pictures.		<p>Able to solve problems of three steps by using two or three of the processes of adding, subtracting, multiplying and dividing in the whole process, the numbers used will be of no more than four digits.</p> <p>Will get the idea of prime numbers and compound numbers and will be able to identify the prime numbers and the compound numbers within 100.</p> <p>Able to determine the prime factors.</p> <p>Able to find out L.C.M & H.C.F of maximum three numbers by using the prime factors.</p> <p>Understand arithmetical quantities and mathematical sentences and will be able to use symbols in mathematical sentences.</p> <p>Able to tell which fraction is larger or smaller by comparing them and will be able to express them in writing using mathematical symbols</p>	<p>Able to solve mathematical and day to day problems by using addition, subtraction, multiplication, of, division and brackets related to fraction.</p> <p>Able to carry out addition, subtraction, multiplication and division of decimal fractions and be able to use them in solving problems.</p> <p>Able to convert common fractions into percentage and percentage to fractions</p> <p>Able to use percentage to solve real problems of day to day life involving population, profit or loss etc.</p> <p>Able to solve all problems using different units of time, length, weight, volume of liquids area and land measures.</p> <p>Able to draw parallelogram, rhombus, rectangle and square and able to identify the difference between them. Also get the idea of arc, chord, diameter and radius of a circle and will be able to identify them.</p> <p>Able to collect different data of the environment and arrange them and to be able to show the different information about population through graphs.</p>

Mathematics Specific Performance Level Descriptors					
Performance Level	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5
				<p>To be able to add and subtract common fractional numbers and to solve problems related to them.</p> <p>Able to tell which of the two decimal fractions is larger or smaller and will be able to express it by symbols.</p> <p>Able to convert common fractions into decimal fractions correctly. Able to convert decimal fractions into common fractions correctly.</p> <p>To be able to add, subtract, multiply and divide decimal fractions and use them to solve problems correctly.</p> <p>Have clear idea on units of length, weight, volume of liquids and land measurements & able to convert one unit to another unit and use them.</p> <p>Know the units of area measures and will be able to use them.</p> <p>Able to draw different triangles as formed by the differences in the sides of a triangle and draw different triangles based on differences in their angles.</p>	

Mathematics Specific Performance Level Descriptors					
Performance Level	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5
Proficient	<p>Get the clear idea of less and more, small and large, light and heavy, near and far, short and tall.</p> <p>Able to count & write in digits the numbers from 1 to 50 and able to write most of the numbers in words from 1 to 20.</p> <p>Will be able to recognise the number symbols from 0 to 9 and will be able to identify each of them according to their names.</p> <p>Able to compare any two numbers within 1 to 0 to find out which is smaller & which is larger and arrange them in order of their values</p> <p>Able to read, write and most of the cases rightly use the ordinal numbers from the first to the fifth.</p> <p>Able to add & subtract two numbers without carrying and able to solve simple problems by using the methods of adding and subtracting (the result will not exceed 50)</p> <p>Able to recognise the Bangladesh coins and notes up take 50.</p> <p>Able to recognise and say the name of circular, triangular, quadrilateral objects</p>	<p>Able to write the numbers up to 100 in words & identify even and odd numbers.</p> <p>Most of the cases able to tell and determine the place values of the different digits used in the of the numbers up to 100.</p> <p>Most of the cases able to use the ordinal numbers from sixth to tenth.</p> <p>Most of the cases able to add & subtract two numbers having not more than two digits in each by placing one below the other or side by side with carrying.</p> <p>Able to use multiplication table up to 10 in carrying out multiplication and division.</p> <p>Able to interchange coins and notes.</p> <p>Able to read, write and compare the two fractions $\frac{1}{2}$ and $\frac{1}{4}$.</p> <p>Able to recognise the different units of measurement (length, weight, area and land)</p> <p>Able to determine the relations between the different units of time measure.</p>	<p>Most of the cases able to count up to the number 10,000 correctly in tens, hundreds and thousands etc.</p> <p>Able to solve two step problems in most of the cases by using the method of addition and subtraction of numbers not exceeding four digits.</p> <p>Able to solve two step problems involving multiplication and division (the numbers will not be of more than two digits, however, in the case of division divisor will be of one digit.</p> <p>Able to exchange coins and notes and will be able to solve problems related to the use of coins and notes.</p> <p>Able to determine equivalent fractions & able to add & subtract of proper fractions (denominators will be of one digit).</p> <p>Know the different units of length & weight. Know the units of time & able to solve simple problems involving addition and subtraction of time.</p> <p>Able to identify surface, line, point, different angle, Rectangle, square & circle and able to draw.</p>	<p>Able to read any number up to a crore</p> <p>Able to write any numbers up to crore in words which are written in digits</p> <p>Able to identify the place values of the different digits used in writing numbers up to one crore.</p> <p>Able to express the concept of bigger or smaller number by using symbols ($>$, $<$)</p> <p>Able to add two or more numbers (with or without carrying) by putting them one below the another or side by side.</p> <p>Able to subtract a four-digit number from a five digits number (with or without carrying) by putting them one below the another or side by side.</p> <p>Able to multiply a four-digit number by a three-digit number in any method & able to multiply by inter changing the multiplicand and the multiplier.</p> <p>Almost able to divide one number by another number (the dividend having not more than 5 digits and divisor having not more than 3 digits.</p>	<p>Able to multiply a number of not more than four digits by a number of not more than three digits (the product will not be more than one crore) & able to multiply by inter changing the multiplicand and the multiplier.</p> <p>Able to divide a number of maximum five digits by a three-digit number.</p> <p>Able to divide by 10 or 100 a number of five digits using the easy method.</p> <p>Able to solve problems by using a maximum three processes of adding, subtraction, multiplying and dividing.</p> <p>Able to solve simple problems related to average.</p> <p>Able to determine H.C.F and L.C.M by the prime factors. & able to solve simple problems using H.C.F and L.C.M</p> <p>Able to determine the values of the letter symbols mathematically from the sentences containing letter symbols.</p> <p>Able to add, subtract, multiply and divide fractions and solve simple mathematical problems involving brackets.</p>

Mathematics Specific Performance Level Descriptors					
Performance Level	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5
		<p>Able to identify different shapes (like cubes, spheres, cones, cylinders etc) arrange separately according to their shapes.</p> <p>Able to recognise the different geometrical shapes (triangle, quadrangle, and circle) and draw their pictures.</p>		<p>Almost able to solve problems of three steps by using two or three of the processes of adding, subtracting, multiplying and dividing in the whole process, the numbers used will be of no more than four digits.</p> <p>Will get the idea of prime numbers and compound numbers and will be able to identify the prime numbers and the compound numbers within 100.</p> <p>Almost able to determine the prime factors.</p> <p>Get the idea of L.C.M & H.C.F and most of cases able to find out L.C.M & H.C.F of maximum three numbers by using the prime factors.</p> <p>Almost able to tell which fraction is larger or smaller by comparing them and will be able to express them in writing using mathematical symbols.</p> <p>Able to add and subtract common fractional numbers and to solve problems related to them (denominators of the fractions will not be of more than two digits).</p>	<p>Able to solve three step decimal fraction problems involving addition, subtraction, multiplication and division.</p> <p>Able to convert common fractions into percentage and percentage to fractions</p> <p>Able to use percentage to solve real problems of day to day life involving population, profit or loss etc.</p> <p>Able to solve all problems using different units of time, length, weight, volume of liquids area and land measures.</p> <p>Able to draw parallelogram, rhombus, rectangle and square and able to identify the difference between them.</p> <p>Also get the idea of arc, chord, diameter and radius of a circle and will be able to identify them</p> <p>Able to draw population-based data and identify different information from the graphical pictures.</p>

Mathematics Specific Performance Level Descriptors				
Performance Level	Grade 1	Grade 2	Grade 3	Grade 4
				<p>Grade 4</p> <p>Will get the clear concept of decimal fractions and able to express it by using decimal points.</p> <p>Able to convert common fractions into decimal fractions.</p> <p>Able to convert simple decimal fractions into common fractions</p> <p>Able to compare larger and smaller decimal fractions using symbols.</p> <p>Able to add, subtract, multiply and divide decimal fractions and all most use them to solve problems.</p> <p>Know the units of length, weight, volume of liquids and land measurements & in most of the cases able to convert one unit to another unit and use them.</p> <p>Get the idea about units of area measures and most of the cases able to use them.</p> <p>Most of the cases able to draw different triangles as formed by the differences in the sides of a triangle and draw different triangles based on differences in their angles.</p>
				<p>Grade 5</p>

Mathematics Specific Performance Level Descriptors					
	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5
Basic	<p>Will get the idea of less and more, small and large, light and heavy, near and far, short and tall.</p> <p>Able to count real objects from 1 to 50.</p> <p>Able to identify the number symbols from 0 to 9.</p> <p>Able to compare any two numbers within 1 to 10 to find out which is smaller & which is larger</p> <p>Able to read and write the ordinal numbers from the first to the fifth.</p> <p>Will be able to add & subtract two numbers without carrying (the result will not exceed 50)</p> <p>Able to recognise the Bangladeshi coins and notes up to take 50</p> <p>Able to recognise the circular, triangular, quadrilateral objects</p>	<p>Able to read & write in digits any numbers up to 100</p> <p>Get the idea of the place values of digits (ones, tens), in some cases able to tell & determine the place values of the different digits used in the numbers up to 100.</p> <p>Able to tell, read & write the ordinal numbers from sixth to tenth.</p> <p>Able to add & subtract two numbers having not more than two digits in each by placing one below the other or side by side without carrying.</p> <p>Able to say & write multiplication table up to 10.</p> <p>Able to multiply & divide using objects and multiply a number by zero or multiply zero by a number.</p> <p>Able to recognise and tell the notes up to 100 Taka.</p> <p>Able to recognise $\frac{1}{2}$ as the half and $\frac{1}{4}$ as the one-fourth of a full object.</p> <p>Able to say the different units of measurement (length, weight, area and land)</p> <p>Know second, minute and hour as units of time measure.</p> <p>Able to identify and name different shapes (like cubes, spheres, cones, cylinders etc) separately according to their shapes.</p> <p>Able to recognise the different geometrical shapes (triangle, quadrangle, and circle).</p>	<p>Able to count up to the number 10,000.</p> <p>Able to solve one step problems by using the method of addition/ subtraction of numbers not exceeding four digits.</p> <p>Able to solve one step problems involving multiplication/ division (the numbers will not be of more than two digits, however, will be of one-digit.)</p> <p>Able to identify & exchange coins and notes.</p> <p>Able to determine equivalent fractions (denominators will be of one-digit).</p> <p>Know the units of length & weight</p> <p>Know the units of time & able to tell the time by looking at a clock.</p> <p>Able to identify surface, line, point, different angle, rectangle, square & circle.</p>	<p>Able to read any number up to a crore but some problem in ten thousandth & millionth.</p> <p>Most of the cases able to write any numbers up to crore in words which are written in digits.</p> <p>Have some ideas of the place values of the different digits used in writing numbers up to one crore.</p> <p>Most of the cases able to express the concept of bigger or smaller number by using symbols (>, <)</p> <p>Able to add two numbers (with carrying).</p> <p>Able to subtract a four-digit number from a four digits number (with or without carrying) by putting them one below the another or side by side.</p> <p>Able to multiply a four-digit number by a three-digit number.</p> <p>Able to divide one number by another number (the dividend having not more than 4 digits and divisor having not more than 2 digits.</p> <p>Almost able to solve problems of two steps by using two of the processes of adding, subtracting, multiplying and dividing in the whole process, the numbers used will be of no more than four digits.</p> <p>Will get the idea of prime numbers and compound numbers and most of the cases able to identify the prime numbers and the compound numbers.</p> <p>Majority cases able to determine the prime factors.</p>	<p>Able to multiply a three-digit number by a three/two-digit number.</p> <p>Able to divide a number of maximum four digits by a two-digit number.</p> <p>Able to divide by 10 or 100 a number of five digits using the easy method.</p> <p>Able to solve problems by using a maximum two processes of adding, subtraction, multiplying and dividing.</p> <p>Get the idea of average & able to find out the average.</p> <p>Able to determine H.C.F and L.C.M by the prime factors.</p> <p>Able to express in mathematical sentences formed by letter symbols, the information contained in words.</p> <p>Able to solve mathematical simple problems by using addition, subtraction, multiplication, and division in related to fraction.</p> <p>Able to perform addition, subtraction multiplication and division of decimal fractions.</p> <p>Get the idea of percentage and able to convert common fractions into percentage and percentage to fractions</p> <p>Able to use percentage to determine population pattern, profit- loss etc.</p> <p>Able to use & convert different units of time, length, weight, volume of liquids area and land measures.</p>

Mathematics Specific Performance Level Descriptors				
Grade 1	Grade 2	Grade 3	Grade 4	Grade 5
			<p>Get the idea of L.C.M & H.C.F and many cases able to find out L.C.M & H.C.F of maximum three numbers by using the prime factors.</p> <p>In many cases able to tell which fraction is larger or smaller by comparing them and will be able to express them in writing using mathematical symbols.</p> <p>Able to add and subtract common fractional numbers and in some cases able to solve problems related to them (denominators of the fractions will not be of more than two digits).</p> <p>Will get the concept of decimal fractions and most of the cases able to express it by using decimal points.</p> <p>Able to convert simple common fractions into decimal fractions.</p> <p>Most of the cases able to convert decimal fractions into common fractions.</p> <p>Most of the cases able to compare larger and smaller decimal fractions using symbols.</p> <p>Able to add, subtract, multiply and divide decimal fractions and in some cases use them to solve simple problems.</p> <p>Know the units of length, weight, volume of liquids and land measurements & in some cases able to convert one unit to another unit.</p> <p>Get the idea about units of area measures and in some cases able to use them.</p> <p>Know the different angles and in some cases able to draw different triangles.</p>	<p>Get the concept of parallelogram, rhombus, rectangle, square and circle and get the idea of arc, chord, diameter and radius of a circle and will be able to identify them.</p> <p>Able to organize the data which are in disorder and tell different information from the given graphical pictures.</p> <p>Able to determine the smaller or the larger of the given fractions by comparing and arrange them in order from small to large or from large to small, using symbols.</p>

Appendix 5 – NSA 2022 – District wise performance in Bangla

Sr No	District Name	Grade 3		District Name	Grade 5	
		P- value	Mean Scale Score		P- value	Mean Scale Score
1	Gazipur	0	114	Kishoreganj	0	118
2	Munshigonj	0	113	Gazipur	0	117
3	Gopalganj	0	112	Mymensingh	0	117
4	Mymensingh	0	112	Gopalganj	0	116
5	Kishoreganj	0	111	Narsingdi	0	116
6	Madaripur	0	110	Brahmanbaria	0	115
7	Lalmonirhat	0	109	Madaripur	0	115
8	Narsingdi	0	109	Khulna	0	114
9	Khulna	0	108	Netrokona	0	114
10	Lakshmipur	0	108	Pabna	0	114
11	Netrokona	0	108	Satkhira	0	114
12	Sirajgonj	0	108	Bagerhat	0	113
13	Bagerhat	0	107	Feni	0.28	113
14	Brahmanbaria	0	107	Munshigonj	0	113
15	Gaibandha	0	107	Nilphamari	0.01	113
16	Jamalpur	0	107	Chandpur	0	112
17	Pabna	0	107	Panchagarh	0	112
18	Pirojpur	0	107	Rangpur	0.06	112
19	Satkhira	0	107	Sherpur	0.39	112
20	Chandpur	0	106	Sirajgonj	0	112
21	Chapainawabganj	0.09	106	Dhaka	0	111
22	Feni	0.04	106	Gaibandha	0.99	111
23	Khagrachhari	0.01	106	Kushtia	0.81	111
24	Panchagarh	0	106	Lalmonirhat	0	111
25	Jhalokathi	0.36	105	Narayangonj	0.05	111
26	Moulvibazar	0.17	105	Rajshahi	0	111
27	Sherpur	0.77	105	Tangail	0.34	111
28	Tangail	0.1	105	National		110.2
29	Faridpur	0.75	104	Chapainawabganj	0.03	110
30	Nilphamari	0.36	104	Cox's bazar	0.05	110
31	Rangpur	0.05	104	Dinajpur	0.27	110
	National		103.3	Faridpur	0.65	110
32	Cumilla	0.1	103	Lakshmipur	0.38	110
33	Dhaka	0.77	103	Pirojpur	0.59	110
34	Narayangonj	0	103	Thakurgaon	0.68	110
35	Natore	0.99	103	Barishal	0.12	109
36	Patuakhali	0.93	103	Chattogram	0	109

Sr No	District Name	Grade 3		District Name	Grade 5	
		P- value	Mean Scale Score		P- value	Mean Scale Score
37	Dinajpur	0.18	102	Cumilla	0.3	109
38	Manikganj	0.07	102	Meherpur	0.04	109
39	Rajshahi	0.06	102	Shariatpur	0.45	109
40	Chuadanga	0	101	Bhola	0	108
41	Cox's bazar	0	101	Jamalpur	0	108
42	Kushtia	0.04	101	Khagrachhari	0.15	108
43	Bhola	0	100	Natore	0	108
44	Barishal	0.01	100	Noakhali	0	108
45	Chattogram	0	100	Patuakhali	0	108
46	Thakurgaon	0	100	Bogura	0	107
47	Hobigonj	0	99	Jhalokathi	0.41	107
48	Magura	0	99	Magura	0	107
49	Meherpur	0	99	Moulvibazar	0	107
50	Naogaon	0	99	Manikganj	0	107
51	Shariatpur	0.02	99	Barguna	0	106
52	Barguna	0	98	Chuadanga	0	106
53	Rangamati	0	98	Hobigonj	0	105
54	Jaipurhat	0	97	Naogaon	0	105
55	Noakhali	0	97	Jhenaidah	0	104
56	Sunamgonj	0	97	Sylhet	0	104
57	Bogura	0	96	Jashore	0	103
58	Sylhet	0	96	Narail	0	103
59	Jhenaidah	0	95	Rajbari	0	103
60	Narail	0	95	Sunamgonj	0	103
61	Jashore	0	94	Jaipurhat	0	101
62	Rajbari	0	94	Rangamati	0	100
63	Kurigram	0	93	Bandarban	0	99
64	Bandarban	0	88	Kurigram*		

* Data from the district could not be located at the time of the data entry.

Appendix 5 – NSA 2022 – District wise performance in Mathematics

Sr No	District Name	Grade 3		District Name	Grade 5	
		P- value	Mean Scale Score		P- value	Mean Scale Score
1	Gazipur	0	115	Madaripur	0	126
2	Mymensingh	0	115	Narsingdi	0	125
3	Bagerhat	0	113	Mymensingh	0	124
4	Kishoreganj	0	113	Gazipur	0	123
5	Gaibandha	0	112	Munshigonj	0	121
6	Gopalganj	0	112	Netrokona	0	121
7	Munshigonj	0	112	Chandpur	0	120
8	Brahmanbaria	0	110	Gopalganj	0	120
9	Madaripur	0	110	Pabna	0	120
10	Moulvibazar	0	110	Brahmanbaria	0	119
11	Pabna	0	110	Kishoreganj	0	119
12	Sirajgonj	0	110	Bagerhat	0	118
13	Chapainawabganj	0	109	Lalmonirhat	0	118
14	Narsingdi	0	109	Satkhira	0	118
15	Jamalpur	0	108	Feni	0.31	117
16	Lalmonirhat	0	108	Panchagarh	0	117
17	Netrokona	0	108	Sirajgonj	0	117
18	Chandpur	0	107	Chapainawabganj	0	115
19	Tangail	0	107	Cox's bazar	0.14	115
20	Chuadanga	0	106	Faridpur	0.13	115
21	Jhalokathi	0.33	106	Gaibandha	0	115
22	Khulna	0	106	Tangail	0.01	115
23	Panchagarh	0.06	106	National		113.3
24	Rangpur	0	106	Chuadanga	0.18	113
25	Sherpur	0.22	106	Cumilla	0	113
26	Cox's bazar	0.02	105	Dinajpur	0.62	113
27	Feni	0.07	105	Meherpur	0.64	113
28	Patuakhali	0.62	105	Moulvibazar	0.25	113
29	Pirojpur	0.09	105	Rangpur	0.3	113
	National		104.1	Jamalpur	0	112
30	Cumilla	0.04	104	Kushtia	0.06	112
31	Kushtia	0.62	104	Lakshmipur	0.33	112
32	Lakshmipur	0.12	104	Narayangonj	0	112
33	Dinajpur	0.95	103	Natore	0.19	112
34	Khagrachhari	0.02	103	Pirojpur	0.31	112
35	Nilphamari	0.37	103	Sherpur	0.01	112
36	Satkhira	0.2	103	Thakurgaon	0.06	112

Sr No	District Name	Grade 3		District Name	Grade 5	
		P- value	Mean Scale Score		P- value	Mean Scale Score
37	Thakurgaon	0.43	103	Barishal	0.01	111
38	Barishal	0.04	102	Chattogram	0	111
39	Dhaka	0	102	Dhaka	0	111
40	Manikganj	0	102	Magura	0	111
41	Narayangonj	0	102	Nilphamari	0.55	111
42	Natore	0.21	102	Patuakhali	0	111
43	Naogaon	0.04	102	Shariatpur	0.34	111
44	Bhola	0	101	Khulna	0.01	110
45	Hobigonj	0	101	Noakhali	0	110
46	Rangamati	0	101	Rajshahi	0.24	110
47	Chattogram	0	100	Bhola	0	109
48	Faridpur	0	100	Hobigonj	0	109
49	Meherpur	0	100	Khagrachhari	0	109
50	Magura	0	99	Manikganj	0	109
51	Rajshahi	0	99	Naogaon	0	109
52	Barguna	0	98	Bogura	0	108
53	Noakhali	0	98	Kurigram	0	108
54	Jaipurhat	0	97	Rangamati	0	108
55	Kurigram	0	97	Barguna	0	107
56	Narail	0	97	Jaipurhat	0	107
57	Shariatpur	0	97	Jhalokathi	0	107
58	Sunamgonj	0	97	Jhenaidah	0	107
59	Bogura	0	96	Jashore	0	107
60	Sylhet	0	96	Sylhet	0	107
61	Jhenaidah	0	95	Rajbari	0	106
62	Rajbari	0	95	Sunamgonj	0	106
63	Jashore	0	92	Narail	0	104
64	Bandarban	0	89	Bandarban	0	101

Appendix 7 – NSA 2022 Team

Directorate of Primary Education (DPE)	
Ms. Shaheenur Shaheen Khan	Director, M&E
Ms. Rasheda Begum	Deputy Director, M&E
Mr. Md. Anwar Hossain Siddiqui	Asst. Director, M&E
Mr. Md. Abdul Mukit Molla	Research Officer, M&E
Mr. Md. Muzibor Rahman	Education Officer, M&E
Ms. Jinat Jahan Saju	Asst. Research Officer, M&E
Ms. Nasrin Akter	Asst. Education Officer, M&E
Ms. Jahanara Khondokar	Education Officer, M&E
Mr. Shah Md. Mamun-or-Rashid	Asst. Education Officer, M&E

United Nations Children’s Fund (UNICEF)	
Ms. Deepa Sankar	Chief of Education
Ms. Laila Farhana Apanan Banu	Education Specialist
Mr. Md. Yasin Arafat	Education Officer
Mr. Mohammad Tanvirul Islam	Education Officer

Australian Council for Educational Research (ACER)	
Priyanka Sharma	Director Research & Assessment
Sanjay Tripathi	Director International Development and Monitoring & Evaluation
Martin Murphy	Director Sampling, Methodology and Measurement
Mark Zelman	Consultant - Chief Psychometrician (Till Nov’2022)
Nathan Zoanetti	Research Director, Methodology and Measurement Large-Scale Assessments (Since Nov’2022)
Luc Le	Senior Research Fellow, Methodology and Measurement
Neelam Kumar Yadav	Senior Research Fellow, Psychometrics Research
Zhou Xiaoliang	Research Fellow, Assessment Data and Analytics
Ashtamurthy Killimangalam	Research Fellow, Research and Assessment
Anu Radha Sharma	Research Fellow, Research and Assessment
Suraj Kumar	Research Officer, Assessment Analytics
Sohini Chaudhuri	Communications Coordinator
Jagbeer Kaur	Research Associate

Associates for Development Services Limited (ADSL)	
Jacob Kumar Sarker	Consultant, and Dashboard Expert
Khodadad Hossain Sarker	Director, and Field Operations Coordinator
Md. Zakir Hossain Chowdhury	Associate Consultant, and Data Manager
Bashir Uddin Ahmed	Associate Consultant, and Report Writer



Monitoring and Evaluation Division

Directorate of Primary Education

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