



# Remedial Education Piloting Program: Assessment of Student Learning Progress

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## Executive Summary

### Background of the Assessment

"The Learning Loss Study-2022" found that primary school students in Bangladesh suffered learning loss as a result of school closures during the Covid-19 pandemic. In order to mitigate the learning loss, a three-month remedial education package was devised and implemented in 508 schools under four Upazilas. The package includes three major subjects: Bangla, English, and Mathematics. This package seeks to achieve the grade-specific foundational competencies that are necessary for a primary school student. The European Union provided Technical Assistance for this assessment.

### Purpose of the Assessment

The purpose of this assessment is to measure the effectiveness of the remedial education package in recovering the learning loss that occurred due to the school closure during Covid-19 pandemic.

### Methodology and Approach

A screening test was administered to the students prior to remedial package implementation. The results of that test are utilized as a baseline value, which is then compared to the endline value or post-test results. There was no sampling during the pre-test. Data was gathered from all 508 schools selected for remedial package and its operation and considered all children participated pre-test in setting the baseline value. For the post-test, a multi-stage stratified cluster sampling approach was used to collect data from 50 schools. The endline value was set based on children's performance on post-test. The test items for both tests were developed by specialists, and these were found highly reliable as Cronbach's Alpha of these tests were found 0.70 and above. The collected data was analyzed using both descriptive and inferential statistical approaches. Scores were scaled using the 'Graded Response Model' of Item Response Theory. Scaled scores were then used to categorize students into three categories: Poor, Average and Proficient. Moreover, the extent of influence of remedial package on children's foundational learning progress was also measured utilizing Cohen's *d*.

### Major Findings

#### *Grade-wise Learning Progress*

- Among Grade-3 students, the average score of all subjects increased significantly. A notable rise can also be detected in the percentage of "Proficient" students for all subjects. For Bangla, the percentage rose to 28.8% to 60.7%, for English it climbed

to 43.5% from 12.8% and for Math, it increased to 35.4% from 9.2%. The effect of remedial package is very large for all subjects of this grade.

- Grade-4 students demonstrated an increased average score across all subjects in the post-test. The difference between the averages score of pre-tests and post-tests are statistically significant. The percentage of students' proficiency also increased in all subjects. The percentage of "Proficient" student in Bangla was 34.1%, which rose to 67.8%. Similarly in English the percentage climbed to 43.5% from 12.8% and for math 32.5% from just 4%. The results of Bangla and Math subject improved more than English.
- Grade-5 students indicated similar growth in compared to Class 3 and 4. However, the average score improved significantly in the post-test. The percentage of "Proficient" students also climbed up in the post-test for all subjects. For Bangla, the percentage increased from 36.6% to 65.3%, for English it increased to 40.5% from 8.5% and for math it increased from 9.7% to 46.2%. The result improved mostly for English and Math subject.

### ***Subject-wise Learning Progress***

- In Bangla, the average score improved significantly for all grades. The percentage of "Proficient" student increased across all grades, whereas the percentage of "Poor" category students decreased. In Grade 3 and 4, the effect of remedial program for this subject was more than the Grade-5.
- The average score in English improved across all grades. The improvement is statistically significant in all cases. The percentage of "Proficient" students increased across all grades, while the percentage of "Poor" students fell. The remedial program had a greater impact on this subject in Grade 3 and 4, compared to Grade 5.
- For Math, the average scores increased significantly in the post-test among all grades. The percentage of "Proficient" students increased, and the proportion of "Poor" and "Average" students decreased just like other subjects. The scores in the post-test are mostly improved in Grade-4 and Grade-5, compared to Grade-3.

### ***Learning Domain-wise Learning Progress***

- The Average scores in knowledge improved in all subjects of all grades. It Improved mostly in three cases: Grade-3 Math, Grade-4 Math and Grade-5 Bangla, compared to other subjects of the grades. Though the percentage of "Proficient" student increased significantly in knowledge for all classes.
- For understanding, the average score increased in the post-test significantly in all subjects for all grades. The most improvement were found in Grade-3 English and in Grade-5 Math, compared to other subjects of the grades.

- The scores in the Application improved significantly. In all cases, the percentage of “Proficient” student increased, and the percentage of “Poor” category students decreased. The average increases mostly occurred in five cases: Grade-3 Bangla, Grade-3 Math, Grade-4 Math, Grade-5 Math, and Grade-5 English.

### ***Upazila-wise Learning Progress***

- In Goalanda upazila, the average scores increased significantly in all subjects of all grades. The percentage of “Proficient” category increased very largely in this upazila. On the other hand, the percentage of “Poor” category students decreased almost to null. In all considerations, Goalanda upazila yielded better results than other upazilas.
- In Chhatok Upazila, the average score and percentage of proficient student increased although the progression is not as much as other upazilas. For instance, in English subject of Grade-3, the percentage of proficient student increased from 14.3% to 29.3%. And for Bangla subject of Grade-4, it increased to 52.5% from 29.6%.
- Nageshwari upazila also demonstrated improvement in all subjects of all grades. The average score increased significantly in all cases. The percentage of “Proficient” student also increased.
- Bandarban Sadar Upazila demonstrated better results than Nageshwari and Chhatok. The average score and the percentage of “Proficient” student increased significantly, whereas the percentage of “Average” and “Poor” category student decreased in all cases. In some cases, the percentage of “Poor” category students dropped to null.

### ***Gender-wise Learning Progress***

- Post-test scores show significant improvement for both boys and girls. The girl students had higher average scores in both the pre-test and post-test than the boys. Despite having better pre-test scores, in some cases, girls obtained lower average scores than the boys. Though no significant difference could be found between the progression of boys and girls.

### **Recommendations**

DPE, NCTB, and NAPE must collaborate to develop a Remedial Education Implementation Framework that includes several strategies to remedy the learning gaps. Also, teacher training must be ensured and administered properly by expanding the duration and involving experts. Furthermore, meetings and workshops must be organized with additional empirical research to guarantee that stakeholders are up to date.

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## Acronyms

ADPEO	Assistant District Primary Education Officer
ANOVA	Analysis of Variance
AT	Assistant Teacher
AUEO	Assistant Upazila Education Officer
DP	Development Partner
DPE	Directorate of Primary Education
DPEO	District Primary Education Officer
EU	European Union
FGD	Focus Group Discussion
GPS	Government Primary School
HT	Head Teacher
IRT	Item Response Theory
MCQ	Multiple Choice Question
MoPME	Ministry of Primary and Mass Education
NAPE	National Academy for Primary Education
NCTB	National Curriculum and Textbook Board
NSA	National Student Assessment
PEDP4	Fourth Primary Education Development Program
PSU	Primary Sampling Unit
PTI	Primary Teachers' Training Institute
RA	Research Associate
RDPP	Revised Development Project Proposal
SSQ	Short-Structured Question
TLM	Teaching Learning Materials
ToT	Training of Trainers
UEO	Upazila Education Officer
URCI	Upazila Resource Center Instructor

# Chapter One: Introduction

## 1.1 Background and Context

Covid-19 has created an unprecedented challenge for education systems not only in Bangladesh but worldwide. The Learning Loss Study 2022 on primary education of Bangladesh supported by European Union (EU) has identified that learning loss due to school closure during the Covid-19 pandemic in all grades and subjects at the primary level. Students have diversified learning losses and gaps across the subjects and grades with a variation of their degree. Considering the cognitive abilities, students have learning loss in all cognitive domains and higher learning loss was observed at the higher-level cognitive areas. Notably, the study identified that students have significant learning gaps not only in their current grade competencies but also have severe gaps in their previous grade competencies. Moreover, the disparity among students' learning levels became higher in all subjects and all grades which clearly showed the learning divide.

Generally, learning deficiencies in a subject lead the students to suffer in achieving other competencies planned in the curriculum. Moreover, learning deficiencies in earlier grades make the competencies of upper grades more difficult to achieve. Therefore, these losses and gaps are essentially needed to be addressed as immediately as possible; otherwise, these gaps threaten the academic progression of the students and will create a generation with a lack of skills.

Remedial education programs are such types of educational interventions intended to address the learning needs of a targeted group of children who are lagging academically or not mastering specific competencies, starting in the early grades<sup>1</sup>. Remedial program refers to specific additional support concurrent with regular classes for students who, in order to succeed in formal courses, require short-term help in the acquisition of content or skills<sup>2</sup>. These are educational interventions aimed at addressing the learning needs of a specific group of children who lag academically in the incorporation of knowledge or the mastery of certain skills. Generally, these programs target students who attend formal learning programs and have comparatively more difficulties than their peers<sup>3</sup>.

## 1.2 Development of Recovery Action Plan

Studies indicate that there are several ways of introducing remedial interventions to minimize learning gaps, accelerating learning, and ensuring mastery of each child for a particular grade. However, the remedial programs should be explicit, systematic, and focused to get the

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<sup>1</sup> Schwartz, A. C. (2012). *Remedial Education Programs to Accelerate Learning for All*. GPE Working Paper Series on Learning, No. 11.

<sup>2</sup> Schwartz, A. (2012). *Remedial Education Programs to Accelerate Learning for All* (Working Paper N.° 11). Global Partnership for Education.

<sup>3</sup> World Bank (2018). World Development Report 2018: Learning to Realize Education's Promise. <https://doi.org/10.1596/978-1-4648-1096-1>

intended outcomes. Evidence showed that children who fail to learn how to read in the first grade as expected can significantly improve reading and spelling from explicit, systematic, and focused remediation<sup>4</sup>. A review of the literature shows that learning recovery initiatives have been designed and implemented in a wide variety of ways. In some cases, they are developed independently either during or outside school hours while in others, they form part of a more comprehensive educational program or project. Second, learning recovery programs often have several simultaneous objectives: achieving learning in general; improving reading and math skills; avoiding grade repetition or dropout, and preparing students to continue their educational path<sup>5</sup>.

According to Mancebo and Vaillant (2022), learning recovery interventions tend to use a wide range of tools. While some programs focus on extending teaching time and changing pedagogical approaches, others rely on tutoring and the distribution of materials, while yet others focus on the use of technological devices. Considering the context and extended coverage of the primary education system of Bangladesh, a detailed plan of action is designed to reduce primary students' learning gaps in three major subjects: Bangla, Mathematics and English of grades 3, 4 and 5. Initially, it is designed for three months to ensure foundational competencies of the primary level children. This design specified subject-wise remedial sessions in general.

This recovery plan identified the foundational competencies that a primary level student must achieve. In this process, we have designed a complete list of learning outcomes of the above mentioned three subjects based on the national primary curriculum. In designing the sessions, this plan clustered the subject-specific learning outcomes for each session and suggested required supplementary materials along with strategies to use. (Annex A)

### **1.3 Development of Remedial Education Package**

A remedial education package including grade and subject-specific TLMs and Teacher Instructions have been developed in collaboration with DPE, NCTB, NAPE and Development Partners to ensure children's fundamental competencies of three major subjects: Bangla, English and Mathematics. The whole program designed to be completed through a minimum of 60 sessions within three months from its commencement.

#### **1.3.1 Basic feature of the remedial program**

**Competency Coverage:** This remedial package aims to facilitate students in achieving all the foundational competencies of primary education. It also expects that all the foundational competencies will be achieved by all primary level students.

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<sup>4</sup> Houtveen, T., & van de Grift, W. (2007). *Reading Instruction for Struggling Learners*. Journal of Education for Students Placed at Risk, 12(4), 405.

<sup>5</sup> Mancebo, M. E. & Vaillant, D. (2022). *Learning Recovery Programs: Assessing the Evidence and Potential for Latin America*. Diálogo Interamericano. Primera Edición.

**Place of Remediation:** All remedial sessions have been held in school premise with a few take-home assignments on complex tasks related to students' learning gap.

**Target Groups and Subjects:** The children studying in grades 3, 4 and 5 have been chosen as the target group for this remedial program and the package has been covering three major subjects: Bangla, Mathematics and English.

**Approach:** Single grade multi-groups approach has been followed for this remedial program. The 'Single grade multi-groups' approach refers to have children with different needs but studying in same grade will sit in one place/room.

**Number of Sessions and Duration:** A total of 93 sessions have been developed under the remedial package including a few additional sessions in which 34 for Bangla, 34 for Mathematics and 25 for English. However, according to plan a minimum of 60 sessions have been facilitated with the students through remedial sessions. There was scope to rearrange subject-specific sessions depending on students' needs identified during pre-diagnosis. Considering the school hour for both the single-shift and double-shift schools, each session has been continued for 45-60 minutes in a school day.

#### 1.4 Selection of Upazilas and Schools for Piloting

Following the description of RDPP of PEDP4, four Upazilas: Goalanda, Rajbari; Sadar, Bandarban; Chhatok, Sunamgonj and Nageshwari, Kurigram have been selected considering their poorest performance in NSA-2022 for piloting the remedial education package. Studying the better monitoring scope, all schools from those selected four Upazilas have been considered for piloting, and therefore the total number of Government Primary Schools for this purpose was 508. The following table shows Upazil-wise no. of schools-

*Table 1: Upazila-wise GPSs for Remedial Education Piloting*

District	Upazila	No. of GPS
Rajbari	Goalanda	51
Bandarban	Sadar	77
Sunamgonj	Chhatok	185
Kurigram	Nageshwari	195
<b>Total</b>		<b>508</b>

#### 1.5 Implementation of the Remedial Piloting Program

The remedial package had been implemented in the selected primary schools from 27 January 2024 to 30 May 2024. For uniform and effective implementation of the whole package, several activities had been planned and initiated. The activities and initiatives were-

- A detailed time-bound action plan along with specific strategies and role of different stakeholders had been designed and shared. (Annex A)
- Teaching Learning Materials (TLM) on Bangla, English and Mathematics had been developed and delivered to the schools with support from EU and Unicef.
- A day-to-day routine for remedial session had been developed and shared to the schools before starting for timely implementation of the whole package (Annex B). However, that schedule had been modified due to heatwave and some contextual factors.
- ToT has been done with 40 education officials including ADPEOs, UEOs, AUEOs, Instructors of PTI, URICs at national level. The ToT had been conducted by the core trainers who were involved with the Remedial Package Development process including DPE officials.
- The headteachers and three assistant teachers from each school had been oriented and trained on Remedial Education Package at Upazila level. The headteachers also orientated on remedial activity management at schools through online by the consultants and DPE officials.
- Remedial program monitoring schedule along with session observation checklist had been developed and shared with DPE to supervise and support the teachers by DPE personnel and by field education officials.

In order to assess grade level foundational competencies of students, as a result of remedial education program, DPE has requested the European Union to provide technical assistance to conduct the assessment.

### **1.6 Purpose of this Assessment**

The main purpose of this assessment is to measure children's progress on foundational competencies as a result of remedial education program. Specifically, this assessment intends to measure the effectiveness of the remedial education package in recovering the lost learning and minimizing the learning gaps that occurred due to school closure during the Covid-19 pandemic.

## Chapter Two: Methodology of this Assessment

### 2.1 Approach to measuring student progress

The implementation of remedial education package has been started with screening of students using diagnostic tests on all three major subjects focusing the fundamental competencies. Children's learning level during the screening tests has been considered as baseline value while their learning level during post-test has been considered as endline value in measuring learning progress through remedial education. Finally, students' level in each subject has been compared and estimated the learning progress and effect of the remedial package on their learning progress.

### 2.2 Student sample

Sampling technique and sample size estimation are the key activities undertaken when designing any research study. An adequate estimate (not less and not more) of sample size is important for ethical, scientific and logistic reasons. Although same sample size is better for comparison, this assessment considered different sample size for pre-test and post-test.

#### (a) Sample size and sampling design for pre-test

As mentioned, all the children appeared in the pre-test in all 508 GPSs have been considered as the baseline sample. We did not utilize any sampling strategy to choose them and finally the total sample for pre-test was 35019 including all grades. The following table shows the baseline sample-

Table 2: Number of children participated during pre-test

Grades	Goalanda, Rajbari	Chhatok, Sunamgonj	Nageshwari, Kurigram	Sadar, Bandarban	Total
Grade 3	1348	5534	4258	1547	12687
Grade 4	1224	5154	3816	1322	11516
Grade 5	1166	4998	3482	1170	10816
Total	3738	15686	11556	4039	35019

#### (b) Sample size and sampling design for post-test

The post-test has adopted multi-stage stratified cluster sampling design where the four sub-districts have been considered as strata and government primary schools have been treated as clusters, which have been selected in two stages. At the first stage, four upazilas/sub-districts have been selected from each stratum and then government primary schools have been selected from the selected upazilas/thanas at the 2<sup>nd</sup> stage. To study the variation in learning gains by students, the study has considered providing the main indicators in 04 domains (sub-districts), and hence the sample size of the study needs to be representative for these 04 domains. To ensure the representativeness of the main beneficiaries, the children of grades 3, 4 and 5 have been considered as the primary sampling units (PSU) for the post-test

sample. In this regard, this study has considered the following recognized sample size determination formula to estimate its sample size for diagnostic tests for students:

$$n = \frac{p(1-p)Z^2}{d^2} \times Deff$$

Where, p is the indicator percentage, Z is the normal variate value at 95% confidence interval, d is the error margin, and *Deff* is the assumed design effect for cluster sampling.

Based on 50% indicator percentage, Z value as 1.96 (at 95% confidence interval), 0.05 error margin and highest response distribution with an assumed design effect 2.5, the above-mentioned sample size determination formula yields that at least 960 children are required for each of the grade. To avoid any unexpected non-response, the study has increased the sample number of children from 960 to minimum 1000. This sample size is adequate to evaluate the learning gain in a sub-population and such numbers had been suggested by many documents, like Idealistic Approach of Maxwell and Caldwell<sup>6</sup>.

According to the database, average number of children is 31 to 34 in each class in each school under the piloting 04 Upazilas. However, data reveals that there were a significantly low number of children participating in the pre-test in a good number of primary schools. Therefore, this study has considered  $\pm 20$  as the average number of children for each class in each school during post-test. Taking the average 20, this study has planned to cover 50 schools/clusters from the piloting 04 Upazilas for diagnostic tests for children. However, all the children attend schools during the post-test have been considered as endline sample. Since, the number of schools under a Upazila differs, this study has chosen schools from the piloting Upazilas proportionately with a minimum of 08 school per Upazila. In this calculation, the number of schools is-

*Table 3: The succinct overview of the domain and number of sample clusters/schools*

	<b>Upazila</b>	<b>No. of Schools</b>
<b>Rajbari</b>	Goalanda	08
<b>Bandarbar</b>	Sadar	08
<b>Sunamgonj</b>	Chhatok	17
<b>Kurigram</b>	Nageshwari	17

Finally, this study has covered 5675 children from all three grades to provide the estimates on grade-level subject-wise learning gains. The overview of the number of children for post-test is given below-

<sup>6</sup> Maxwell, D., & Caldwell, R. (2008). The Coping Strategies Index. Second Edition. *Field Methods Manual*, USAID, Care, WFP, Feinstein International Center and TANGO.

Table 4: Number of children participated during pre-test

Grades	Goalanda, Rajbari	Chhatok, Sunamgonj	Nageshwari, Kurigram	Sadar, Bandarban	Total
Grade 3	348	652	604	417	2021
Grade 4	317	601	581	375	1874
Grade 5	302	542	599	337	1780
Total	967	1795	1784	1129	5675

## 2.3 Development of pre-test and post-test

### 2.3.1 Development of pre-test for screening children

For diagnosis, separate tests had been developed for each of the selected subjects for Grade 3, 4 and 5. The test for a grade-specific subject had been developed to assess students' competence on the foundational competencies and mostly from previous grades. Each of the tests consisted of diversified test items such as objective type items (MCQ, T/F, Fill in blanks, Matching, Answer in one word, etc.) and Short Structured Questions (SSQs). All the question papers were thoroughly screened in the context of relevance and sequence.

The grade-specific attainable learning outcomes had been reviewed and analysed first and then the foundational competencies of each subject were placed into three specific categories considering their sequence and importance in curriculum. The first stage of this process was the review of foundational competencies, and the second stage was the test items development. The developed test items for each subject had been reviewed by the technical committee consisted of participants from DPE, NCTB, NAPE, and PTI. Finally, incorporating all feedback given by the technical committee, all the tests had been finalized for using to screening the children before starting remedial sessions.

### 2.3.2 Development of post-test for assessing progress

Intending to investigate students' progress in achieving fundamental competencies as effect of remedial education program, it has been planned to assess children's learning at the end of the piloting phase using equivalent type of diagnostic tests. The focus of the post-test is the same as considered during screening tests including learning competencies, difficulty level of items, nature of items, number of assessment tasks, organization of the tests and others. All the tests have been finalized and validated by the technical committee of remedial education program for using during post-test.

As like as the screening tests, the post-test answer-scripts have been assessed by the schoolteachers using item specific marking rubrics followed by orientation for the assessors. However, assessment scores have been entered by the UEO office with the assistance of research associates (RAs) provided by EU following specific protocol using Kobo Toolbox digital data capturing software.

## 2.4 Data Analysis Framework

The study uses several descriptive and inferential statistical tools and techniques to analyse the data. Among the statistical tools, percentage, frequency distribution, average, standard deviation, cross-tabulation, and ANOVA and t-test have been used to analyse the data. The quantitative data from the diagnostic tests (pre- and post-test) have been analysed statistically following recognized analysis procedures. In this process, the Item Response Theory (IRT) has been employed to define scaled scores of children for each subject and grade. Among the numerous IRT models, the "Graded Response Model" is most widely used in educational achievement tests<sup>7</sup>. This model was utilized with the *R* programming language to get scaled scores for both the pre-test and post-test within 100-400. Based on student's achieved scaled score, their learning levels have been categorized into three major categories: proficient, average, and poor. The following categories have been used to labelling students-

*Table 5: The overview of the categories based on scaled score*

Categories	Scaled Score
Proficient	300-400
Average	200-299
Poor	100-199

**"Poor" Level:** Students at this learning level are in the early stages of developing foundational competencies. They do not have enough knowledge and abilities to be considered minimally successful at their grade level.

**"Average" Level:** Students at this level obtained scores that are in middle percentile. They display a moderate level of competencies for their grade level and achieved some of the foundational competencies.

**"Proficient" Level:** At this level, students have mastered the most of their grade-level foundational competencies. They score in the top percentile of the class. Almost all of the foundational competencies are achieved by them.

**Step-1:** Establish the baseline values of foundational competency, obtaining the achievement score through diagnostic tests (pre-tests), and labelling students into three categories: proficient, average, and poor in terms of specific competency and as a whole.

**Baseline value:** This analysis considers the pre-test data as the baseline value for each subject and grade. The subject-wise competency scores have been estimated by averaging the obtained scores from diagnostic tests for students. The Cronbach's Alpha test has been performed to test the internal consistency of the obtained scores in three subjects.

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<sup>7</sup> Matteucci, M. and Stracqualursi, L. (2006) 'Student Assessment via Graded Response Model', *STATISTICA*, 66(4), pp. 435-447.

**Step-2:** Analysis of student’s gender and location (piloting upazila) have been utilized to perform cross-tabulation with subject-wise competency levels to see whether there are any differences due to these two factors.

**Step-3:** Establish the endline values of foundational competency, obtaining the achievement score through diagnostic tests (post-tests), and labelling students into three categories: proficient, average, and poor in terms of specific competency and as a whole. Compare students’ level between pre- and post-test data to measure the gain in students as a result of attending remedial education program.

**Step-4:** Estimate effect size to measure the extent of influence of the remedial sessions in students’ learning progress. Reporting effect sizes is considered good practice when presenting empirical research findings in many fields. The reporting of effect sizes facilitates the interpretation of the substantive, as opposed to the statistical, significance of a research result. Effect sizes are particularly prominent in social and educational research. Relative and absolute measures of effect size convey different information and can be used complementarily. We have utilized the Cohen's  $d^8$  in estimating effect sizes. The effect sizes have been categorised in five types based on values and context and then interpreted. The following table presents the interpretation of effect against the value of  $d$ .

*Table 6: Categories of effect size and interpretation<sup>9</sup>*

Range of $d$ value	Interpretation
0.00 - 0.19	Trivial
0.20 - 0.49	Small
0.50 - 0.79	Medium
0.80 <	Large

## 2.5 Reliability of test items

Reliability is important in research because it ensures the truthfulness and consistency of the data obtained, controlling for random error. To find out the consistency and stability of measurement method, we have tested the reliability of the pre- and post-tests for all subjects utilizing Cronbach Alpha. According to findings, the minimum value of Cronbach Alpha is **0.700** while the highest value is **0.866** which indicates high reliability of the measurements performed for pre- and post-tests.

## 2.6 Limitations

This study planned to conduct FGDs and interviews with the stakeholders including students, teachers, parents, UEO/AUEO, DPE personnel to get insights and thoughts about the

<sup>8</sup> Effect size,  $d = \frac{\text{Mean score after intervention} - \text{Mean score before intervention}}{\text{Pooled Standard Deviation}}$

<sup>9</sup> Connolly, P. (2007). *Quantitative Data Analysis in Education*. London and New York: Routledge.

effectiveness, usability, and challenges of the remedial education program. However, due to time constraints, we could not arrange those. Therefore, this study cannot compare the quantitative data with the qualitative to validate and get deeper understanding of the learning progress occurred.

The recovery action plan highly emphasized on regular training, monitoring and mentoring of the remedial activities and a monitoring checklist were developed and shared with DPE to supervise and support the teachers. However, it was not done properly and therefore we cannot use those observation in interpreting the quantitative findings.

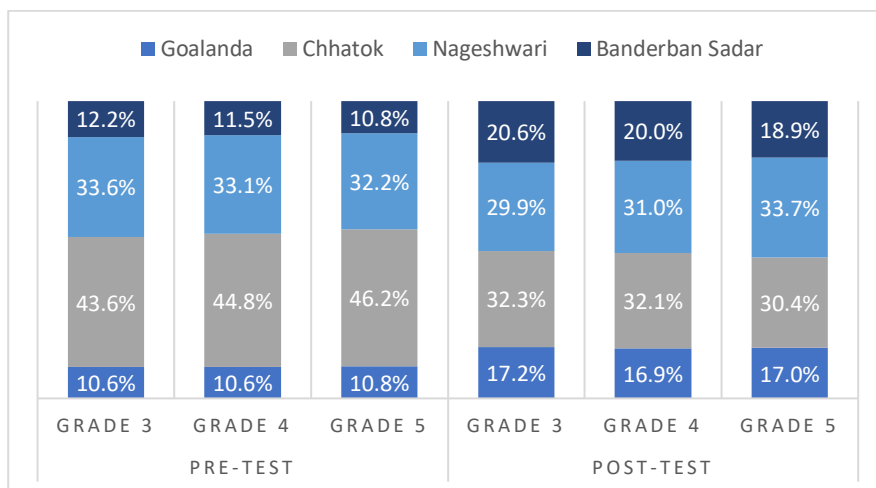
## Chapter Three: Results

This chapter presents the analysis and results on student learning progress based on data related to their performance during pre- and post-tests. The results are mainly based on the analysis of quantitative data as identified from analysis using descriptive and inferential analysis techniques. The analysed data are presented in tables and graphs where these fit appropriately.

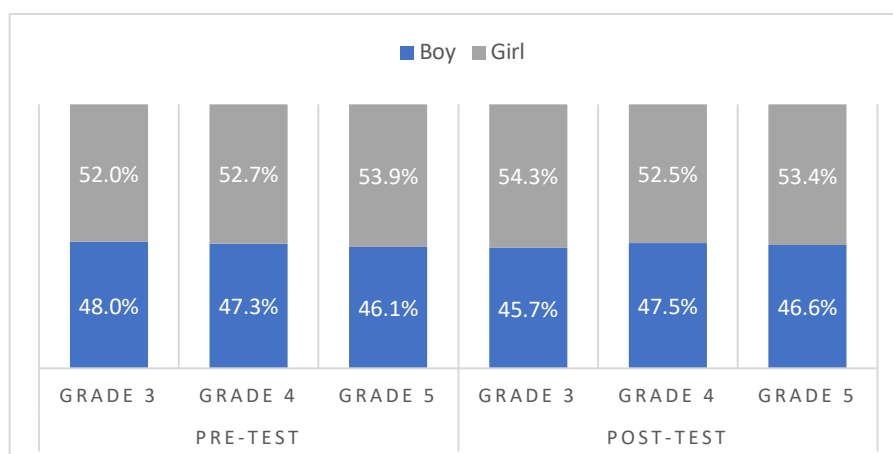
### 3.1 Demographics of the students

A total of 35019 children of grade 3-5 participated in the pre-test from all 508 GPSs while during post-test 5675 children participated from the selected 50 GPSs. We have tried to balance participation of children during post-test from each Upazila at a minimum level by adjusting number of schools at minimum eight (08) from each. The following figure presents grade-wise proportion of children’s participation in pre- and post-tests. Regardless of grades, participation of girls was a bit higher than the boys in both pre- and post-tests.

*Figure 1: Upazila-wise children distribution in each grade*



*Figure 2: Gender distribution of children participated in pre- and post-tests*



## 3.2 Comparative Analysis of Grade-3 Students' Learning Level

### 3.2.1 Grade-3 Students' Learning Progress in Bangla

Table-7 displays the average marks of Class-3 students in the Bangla subject for both the pre-test and post-test. Students obtained the highest scores in knowledge on the Bangla subject as the average pre-test score is 366.68, followed by a post-test score of 382.08. The p-value indicates that the difference between the average pre-test and post-test scores is significant. However, the impact size is 0.26, showing a minor influence of the remedial program. The effect size is bigger for understanding (0.78) and application (0.82) related. In both cases, the mean of scaled scores is much higher in post-tests.

In terms of overall results in Bangla Subject for Class-3 students, the pretest mean is 273.68 with a standard deviation of 55.93, while the post-test mean is 328.19 with a standard deviation of 57.50. The difference between the two means is statistically significant ( $p < 0.05$ ). The effect size for Class-3 students in this subject is 0.96. This result suggests that the remedial program has greatly improved the results of the Bangla subject for Class-3 students.

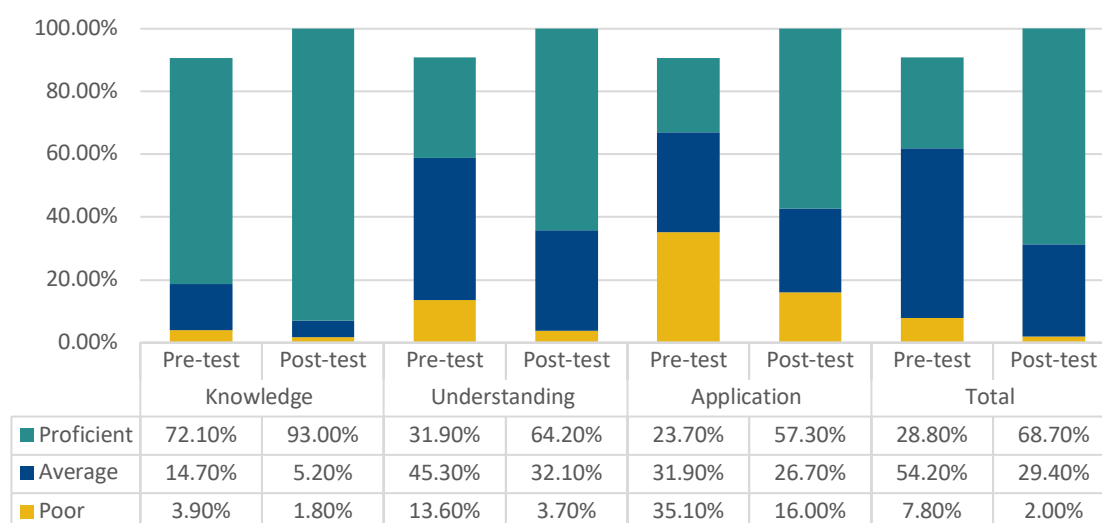
Table 7: Class-3 Average Scaled Scores in Bangla Subject

Bangla	Pre-test		Post-test		Sig.	Effect Size
	Mean	Std.	Mean	Std.		
Knowledge	366.68	68.19	382.08	49.49	.00	0.26
Understanding	272.19	68.33	325.03	66.96	.00	0.78
Application	236.73	93.70	314.80	95.93	.00	0.82
Total	273.68	55.93	328.19	57.50	.00	0.96

### Comparison Among Grade 3 Students' Learning Level in Bangla

According to the Figure-3, percentage of proficient students substantially increased in the post-test (68.70%) compared to the pre-test (28.80%). A similar pattern can be noticed when analysed each cognitive domain of Bangla. Though three-fourth of students are proficient in terms of knowledge, the percentage is drastically higher in the post-test (93%). In the pre-test, 13.60% of students demonstrated poor understanding, which decreased to only 3.7% in the post-test. Almost one-third of Class-3 students exhibited proficient understanding in the pre-test (31.90%), but this percentage nearly doubled in the post-test (64.20%). Similarly, the percentage of students with proficient application skills doubled in the post-test.

Figure 3: Learning Levels of Class-3 Students in Bangla Subject



### Upazila-wise Comparison of Average Scaled Score in Bangla of Grade 3 Students

Table-8 displays the average scores in the Bangla Subject pre-test and post-test for four Upazilas: Goalanda, Chhatok, Nageshwari, and Bandarban Sadar. Significant improvements were observed in all domains across the studied areas. Goalanda's average total score in Bangla increased from 280.45 to 360.35, while scores in understanding increased from 283.80 to 361.05 and in Application it increased from 241.08 to 357.67. In Chhatok, the average total score improved, but not as substantially as in the other three upazilas; it increased from 268.44 to 294.92. In this upazila, the application shows the greatest difference between pre-test and post-test mean, ranging from 222.81 to 264.56. Students of Nageshwari progressed significantly, with the total score average rising from 269.98 to 328.74, particularly in Application, where it increased from 238.35 to 315.21. Bandarban Sadar demonstrated significant improvements, with the average increasing from 294.32 to 352.56, and the mean application score increasing from 276.05 to 356.83. Mean scores increased in all upazilas, with the majority of the rise occurring in application. These findings highlight the intervention's effectiveness in significantly improving participants' abilities throughout the examined Upazilas.

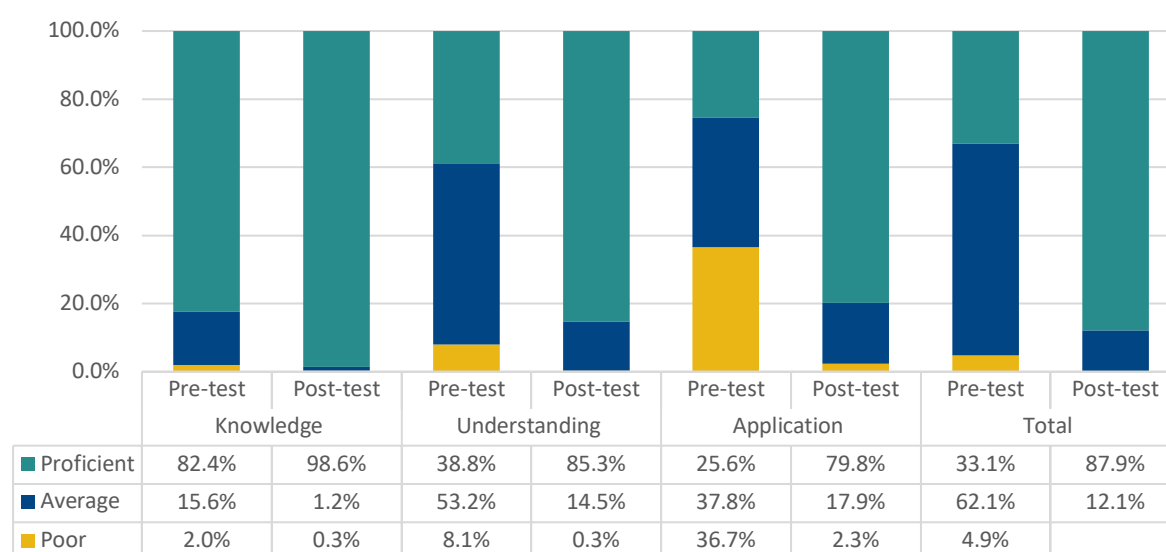
Table 8: Average Scaled Scores in Class-3 Bangla Subject Across Four Upazila

Upazila	Knowledge		Understanding		Application		Total	
	Pre-test	Post-test	Pre-test	Post-test	Pre-test	Post-test	Pre-test	Post-test
Goalanda	374.12	396.76	283.80	361.05	241.08	357.67	280.45	360.35
Chhatok	366.39	367.08	266.80	293.05	222.81	264.56	268.44	294.92
Nageshwari	360.54	384.88	266.74	326.10	238.35	315.21	269.98	328.74
Bandarban Sadar	375.83	389.29	293.27	343.43	276.05	356.83	294.32	352.56

### Upazila-wise Comparison of Learning Levels in Bangla of Grade 3 Students

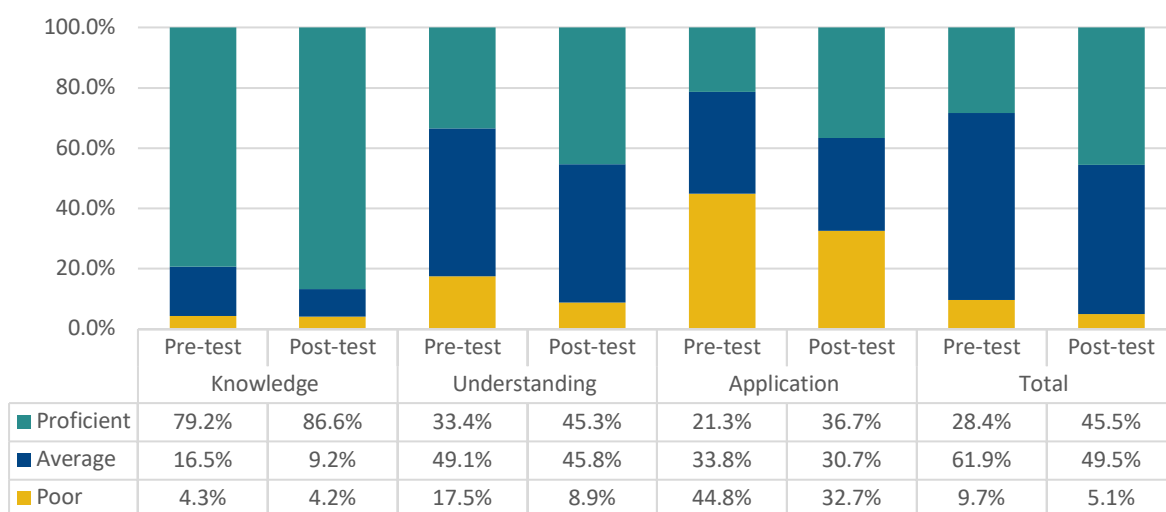
Figure-4 shows that Class-3 students possess proficiency in Bangla significantly increased to 87.9% from 33.1% in Goalanda upazila. In terms of total Bangla scores, the percentage of poor students in the pre-test is 4.9%, which drops to zero in the post-test. In terms of knowledge, students displayed the greatest proficiency in both the pre-test and post-test. Though the percentage of proficient students in knowledge increased in the post-test (from 82.4% to 98.6%). In case of understanding, the percentage of proficient students more than doubled between pre-test (38.8%) and post-test (85.3%). In application, the percentage of poor and average students declined in the post-test, whereas the percentage of proficient students climbed thrice, from 25.6% to 79.8%.

Figure 4: Goalanda Upazila Class-3 Students' Learning Levels in Bangla Subject



In Chhatok (Figure-5), more than three-fourths (79.2%) of the students demonstrated proficient knowledge. The percentage rose in the post-test (86.6%). In both understanding and application areas, the percentage of proficient students increased. Likely, in terms of understanding, there has been a significant drop in the percentage of poor students. In the pre-test, 17.5% of students had poor understanding, however this proportion decreased to 8.9% in the post-test. In application, the percentage of students that fell into the poor category decreased from pre-test (44.8%) to post-test (45.3%). In total Bangla subject scores, the percentage of poor students in the pre-test is 9.7%, and 5.1% in the post-test. In contrast, the percentage has climbed in the proficient category. In total, 28.4% of Chhatok upazila students demonstrated proficiency in the pre-test. However, following the intervention, the proportion increased to 45.5% in the post-test.

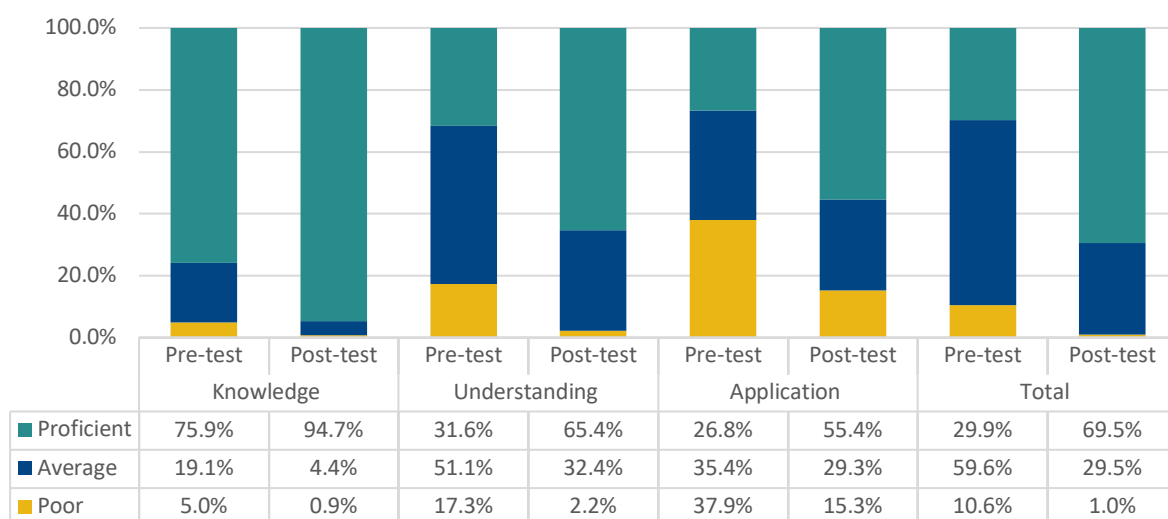
Figure 5: Chhatok Upazila Class-3 Students' Learning levels in Bangla Subject



According to Figure-6, when the average total score in the Bangla subject was taken into account, 29.9% of Nageshwari upazila's Class-3 students were proficient in the pre-test and 69.5% in the post-test. The percentage of students in the poor category has decreased significantly in the post-test when compared to their total Bangla score.

In the post-test, the percentage of proficient students in this item category increased from 75.9% to 94.7%. Similarly, the percentage of proficient students jumped by double when it came to understanding: 31.6% in the pre-test and 65.4% in the post-test. A similar trend can be noted in application, with the percentage of proficient students doubling from 26.8% to 55.4% on the post-test.

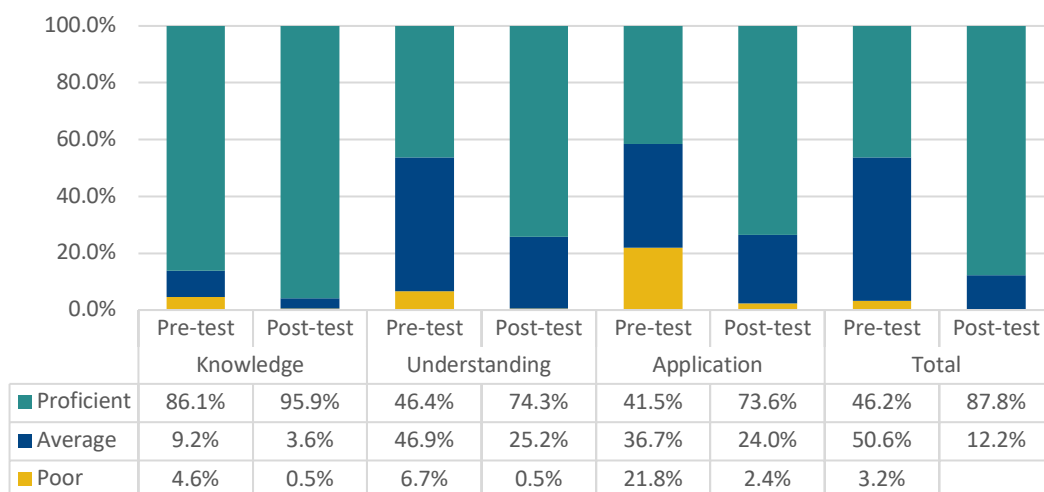
Figure 6: Nageshwari Upazila Class-3 Students' Learning levels in Bangla Subject



In terms of total score in the Bangla subject, 3.2% of Bandarban Sadar's class students are in the poor category, but no kids have been found in the category during post-test. Similarly, in the pre-test, half of the students (50.06%) achieved average scaled scores. In the post-test, the percentage dropped to 12.2%. The percentage of proficient students increased in the post-test to 87.8% from 46.2% in the Bengali subject as a whole. In knowledge, 86.1% of

students managed to fall in the proficient category in the pre-test and 95.9% in the post-test. In the pre-test, 4.6% of students had poor knowledge, but by the post-test, the percentage had reduced to nearly nil (0.5%). The number of proficient students grew for both understanding and application. The percentage of students who were proficient in understanding was 46.4 in the pre-test and 74.3% in the post-test. In terms of application, the percentage increased from 41.5% in the pre-test to 73.6% after the test.

Figure 7: Bandarban Sadar Upazila Class-3 Students' Learning levels in Bangla Subject



#### Gender-wise Comparison of Average Scaled Score in Bangla of Grade 3 Students

In the Bangla, the boys in Class-3 received an average scaled score of 269.72 on the pretest. The post-test average climbed to 324.49. Similarly, girl students likewise achieved higher average marks in the post-test (331.32) than in the pre-test (331.32). When the scores in each category of items are compared, both girls and boys scored the highest in knowledge. However, the average scaled score in the post-test is higher in both circumstances. In knowledge, boys and girls scored nearly the same (366.37 and 366.96, respectively) on the pre-test which is increased in the post-test. For boys, it increased to 379.94, while for girls, it rose to 383.88. It may be noted that the growth is greater among girl students. In the pre-test, boys scored 267.23 on understanding, while girls scored 276.74. The post-test average increased to 321.59 and 327.93. A similar tendency is also found in application ability, where girls outperformed boys in both the pre-test and the post-test, with the average being higher in the post-test.

Table 9: Average Scaled Scores in Bangla Subject for Boys and Girls of Class-3

	Knowledge		Understanding		Application		Total	
	Pre-test	Post-test	Pre-test	Post-test	Pre-test	Post-test	Pre-test	Post-test
Boys	366.37	379.94	267.23	321.59	229.78	310.49	269.72	324.49
Girls	366.96	383.88	276.74	327.93	243.10	318.43	277.31	331.32

### Gender-wise Comparison of Learning Levels in Bangla of Grade-3 Students

The table shows the learning levels of Class-3 students in Bangla based on gender for both the pre-test and post-test. The percentage of “Poor” category students in knowledge decreased from 4.3% to 2.4%, in understanding from 17.0% to 4.0%, and in application from 42.3% to 17.0%. Similarly, when looking at overall score, 2.2% of boy students in the post-test fell into the poor category, compared to 9.7% in the pre-test. On the other hand, girl students showed a decrease in the percentage of poor category students from pre-test to post-test. In Knowledge, it declined from 4.4% to 1.2%, for Understanding from 13.1% to 3.4% and for Application from 35.5% to 15.2%. Considering total score, the percentage of “poor” category students reduced to 1.8% among the girls in the post-test. On the other hand, the percentage of proficient students increased among boys and girls in the post-test significantly. In case of boys, the percentage increased in all cognitive areas. But the most significant change occurred in applying ability. In the pre-test, 24.2% of boys were in proficient category in application, but the percentage increased more than double (56.3%) in the post-test. Similar trend can be seen among the girls. In the pre-test, the percentage of proficient student is 34.1% in the post-test, it increased to 58.2%. Overall, in the Bangla subject, 29.2% boys were proficient in the pre-test, whereas in the post-test 65.6% boys demonstrated proficiency in Bangla subject. In case of girls, the percentage is increased from 34.1% to 71.2%.

Table 10: Comparison of Learning Levels of boys and girls in Bangla Subject of Class-3

Gender	Level	Knowledge		Understanding		Application		Total	
		Pre-test	Post-test	Pre-test	Post-test	Pre-test	Post-test	Pre-test	Post-test
Boys	Poor	4.3%	2.4%	17.0%	4.0%	42.3%	17.0%	9.7%	2.2%
	Average	16.6%	6.1%	50.5%	34.1%	33.5%	26.7%	61.1%	32.2%
	Proficient	79.2%	91.5%	32.5%	61.8%	24.2%	56.3%	29.2%	65.6%
Girls	Poor	4.4%	1.2%	13.1%	3.4%	35.5%	15.2%	7.5%	1.8%
	Average	15.9%	4.5%	49.3%	30.4%	36.6%	26.6%	58.4%	27.0%
	Proficient	79.7%	94.3%	37.6%	66.2%	27.9%	58.2%	34.1%	71.2%

### 3.2.2 Grade-3 Students’ Learning Progress in English

The table-11 shows the mean and standard deviation of scaled scores obtained by Class-3 students on the English subject pre-test and post-test. In terms of total English score, the pretest average was 244.04 with a standard deviation of 49.75. In the post-test, the mean increased significantly ( $p < 0.05$ ) to 290.65. The effect size is 0.92. It suggests that the remedial program has a large impact. In knowledge, the mean increased from pre-test (310.62) to post-test (346.19), however, the effect size is smaller (0.53). In terms of understanding, the mean rises in the post-test, with a strong effect size (0.91). Similarly, in the application, the mean increased (from 181.36 to 244.34) in the post-test.

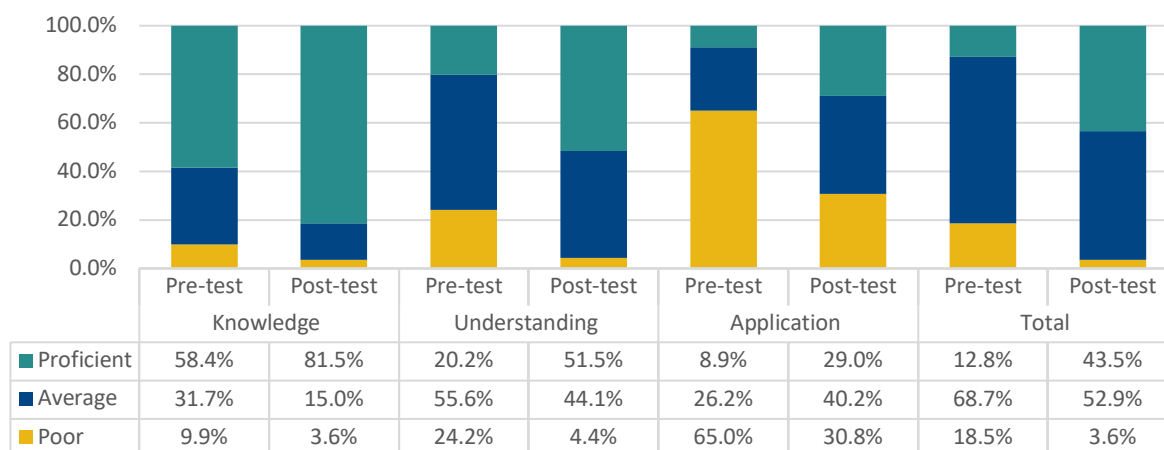
Table 11: Class-3 Average Scaled Scores in English Subject

English	Pre-test		Post-test		Sig.	Effect Size
	Mean	Std.	Mean	Std.		
Knowledge	310.62	75.60	346.19	58.11	.00	0.53
Understanding	246.09	65.13	303.11	59.65	.00	0.91
Application	181.36	77.75	244.34	85.92	.00	0.77
Total	244.04	49.75	290.65	51.36	.00	0.92

### Comparison Among Grade 3 Students' Learning Level in English

The remedial package resulted in significant improvement in all categories of English subjects for Class-3. In Knowledge, the proportion of students who achieved proficiency increased from 58.4% to 81.5%, while those in the "Poor" category decreased from 9.9% to 3.6%. In understanding, proficiency increased from 20.2% to 51.5%, while the "Poor" category decreased from 24.2% to 4.4%. Application proficiency also improved, with proficient students rising from 8.9% to 29.0% and percentage of students who fall in "poor" category dropping from 65.0% to 30.8%. Overall, the percentage of students in the "Poor" category fell from 18.5% to 3.6%, while in the "Proficient" category it rose from 12.8% to 43.5%.

Figure 8: Learning Levels of Class-3 Students in English Subject



### Upazila-wise Comparison of Average Scaled Score in English of Class-3

The table demonstrates a significant improvement in the average English scores of Class-3 students across four Upazilas in three separate categories of abilities: Knowledge, Understanding, and Application, as well as in overall scores. In Goalanda, the average total score climbed from 247.98 to 319.74 in the post-test, with notable increases in Knowledge (314.67 to 369.89), Understanding (253.40 to 343.18), and Application (183.62 to 277.86). Chhatok also improved, but more modestly, with average of total scores rising from 245.29 to 271.91, average of knowledge scores from 314.97 to 336.14, understanding scores from 250.68 to 280.60, and application scores from 178.41 to 218.21. The Nageshwari upazila

made considerable advances in the post-test increasing the average of total scores from 234.47 to 282.18, as well as improvements in Knowledge (302.36 to 344.61), Understanding (230.06 to 292.88), and Application (171.02 to 230.18). Bandarban Sadar also improved, with total scores rising from 258.42 to 307.14.

Table 12: Average Scaled Score in Class 3 English Subject in Different Upazila

Upazila	Knowledge		Understanding		Application		Total	
	Pre-test	Post-test	Pre-test	Post-test	Pre-test	Post-test	Pre-test	Post-test
Goalanda	314.67	369.89	253.40	343.18	183.62	277.86	247.98	319.74
Chhatok	314.97	336.14	250.68	280.60	178.41	218.21	245.29	271.91
Nageshwari	302.36	344.61	230.06	292.88	171.02	230.18	234.47	282.18
Bandarban Sadar	311.18	344.08	260.98	318.71	213.46	276.56	258.42	307.14

### Upazila-wise Comparison of Learning Levels in English of Grade-3 Students

Figure-9 shows that students' learning level in the English subject of Goalanda improved significantly from pre-test to post-test across Knowledge, Understanding, Application, and overall scores. The proportion of students rated as "Proficient" in Knowledge improved considerably, from 64.5% to 95.4%. Understanding proficiency increased from 17.2% to 78.4%, while application proficiency increased from 4.7% to 42.2%. For total English subject proficiency rate increased from 8.8% to 64.7%. In contrast, the percentage of students in the "Poor" category decreased dramatically, like in Knowledge, the percentage decreasing from 7.7% to 1.7%, and in Understanding, from 16.3% to 0%. The "Average" category also saw reductions, particularly in total scores, which fell from majority of the students (79.4%) to just over one-third (35.3%).

Figure 9: Class-3 Students' Learning Levels in English in Goalanda Upazila

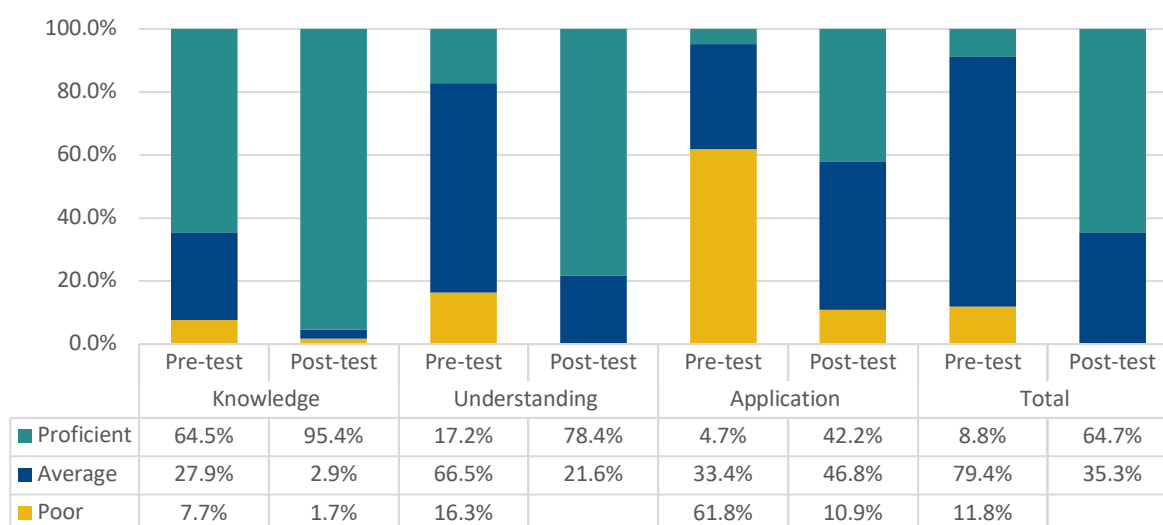


Figure-10 displays the English learning level of Chhatok's Class-3 students across various domains as well as in the English subject overall. A few (9.7%) of students were assessed as "Poor" in Knowledge during pre-test, which dropped to 6.6% in the post-test. Similarly, the percentage of "Poor" category for understanding reduced from 22.9% to 8.6%. Conversely, the proportion of students rated as "Proficient" in Understanding increased significantly, from 23.8% in the pre-test to 36.7% in the post-test. Similarly, the proportion of students classified as "Proficient" in application abilities grew dramatically from 8.8% to 18.4% in the post-test. In terms of total scores, the percentage of proficient students increased by double in the post-test (29.3%) compared to the pre-test (14.3%). In contrast, the percentage of students classified as "poor" declined from 18.5% to 7.5% during the post-test.

Figure 10: Class-3 Students' Learning Levels in English in Chhatok Upazila

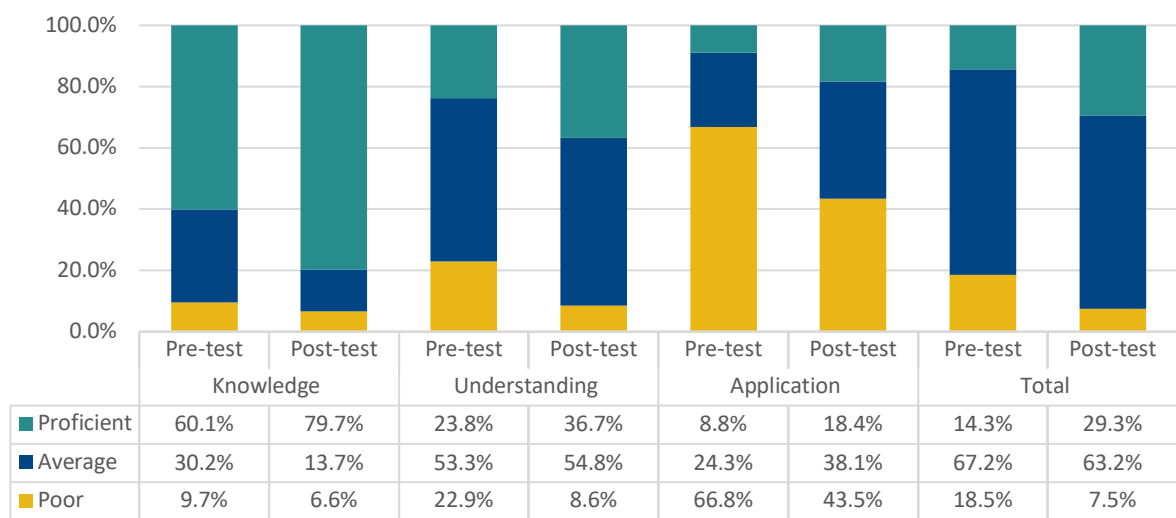
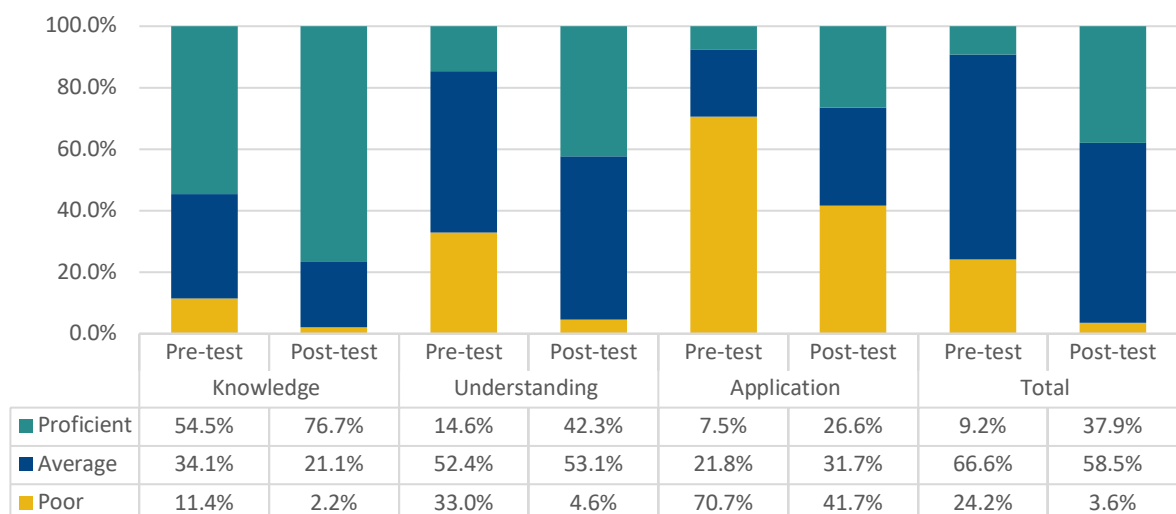


Figure-11 displays the categories of Class-3 students in Nageshwari Upazila for the English subject in both pre-test and post-test. When total English results were taken into account, the percentage of proficient students rose from 9.2% to 37.9%. In the same period, the percentage of "Poor" students fell from 24.2% to 3.6%. Similar trends can be noticed in

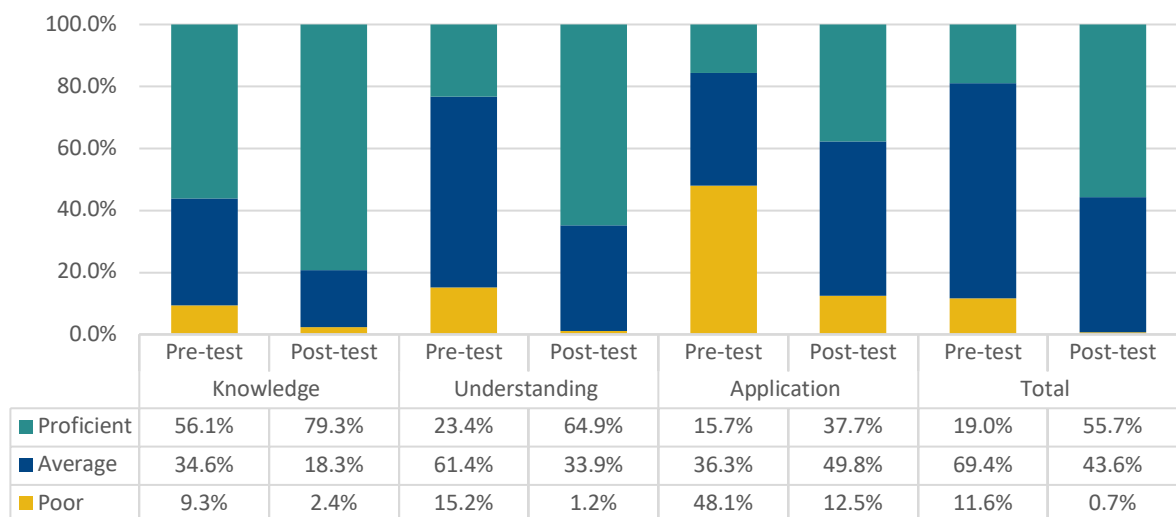
Figure 11: Class-3 Students' Learning Levels in English in Nageshwari Upazila



various categories of domain-related items. In the knowledge domain, 54.5% of students were classified as proficient in the pre-test, which increased to three-quarters of the students in the post-test (76.7%). In understanding and application, the post-test results show a similar increase in proficient student percentages. The percentage of understanding went from 14.6% to 42.3%, while the percentage of application increased thrice (from 7.5% to 26.6%) in the post-test.

Figure-12 illustrates that students' performance in the English subject of Bandarban upazila improved dramatically from pre-test to post-test in terms of Knowledge, Understanding, Application, and overall score. The percentage of students graded "Proficient" in Knowledge increased significantly, from 56.1% to 79.3%. Understanding proficiency rose from 23.4% to 64.9%, while application proficiency climbed from 15.7% to 37.7%. The total English subject proficient percentage rose from 19% to 55.7%. In contrast, the percentage of students in the "Poor" group declined drastically, with Knowledge dropping from 9.3% to 2.4% and understanding falling from 15.2% to 1.2%. The "Average" category also experienced decreases, particularly in total scores, which decreased from 69.4% to 43.6%.

Figure 12: Class-3 Students' Learning Levels in English in Bandarban Sadar Upazila



#### Gender-wise comparison of Average Scaled Scores in English of Grade 3 Students

The table compares boys' and girls' academic improvement in four areas: knowledge, understanding, application, and total scores, as measured during the pre-test and the post-test of English. Initially, boys had a mean Knowledge score of 309.01 and concluded at 343.68 in the post-test, whilst girls began at 312.07 and finished at 348.32. In terms of understanding, boys improved from 243.08 to 299.09, while girls improved from 248.83 to 306.52. Boys' application scores climbed from 177.75 to 239.27, while girls' scores rose from 184.64 to 248.65. Total scores, which included all areas, increased from 241.54 to 286.86 for boys and 246.32 to 293.87 for girls. These findings show consistent improvements in academic achievement for both genders across all examined areas.

Table 13: Average Scaled Scores in English Subject for Boys and Girls of Class-3

	Knowledge		Understanding		Application		Total	
	Pre-test	Post-test	Pre-test	Post-test	Pre-test	Post-test	Pre-test	Post-test
Boys	309.01	343.68	243.08	299.09	177.75	239.27	241.54	286.86
Girls	312.07	348.32	248.83	306.52	184.64	248.65	246.32	293.87

#### Gender-wise comparison of Learning Levels in English of Grade 3 Students

For boys, the percentage of proficient students climbed from 57.2% to 80.9% on knowledge, while the percentage of students in average and poor categories decreased in the post-test. Similarly, in understanding, the learning level of the proficient students rose to 8.3% to 26.1%. In case of application, percentage of proficient students grew from 11.6% to 39.9%, while the percentage in poor category decreased (20.0% to 4.4%). The overall result demonstrated a significant increase in proficient level from 11.6% to 39.9%.

For girls, in case of knowledge, the percentage of proficient students increased from 59.5% to 82.0%, with a corresponding decrease in average and poor categories. Similarly, in understanding, the learning level of the proficient students rose to 54.4%. In the case of application, the percentage of proficient students increased from 9.4% to 31.4%, The total performance showed a substantial rise in proficient level from 13.8% to 46.6%.

Table 14: Comparison of Learning Levels of Boys and Girls in English Subject of Class-3

Gender	Level	Knowledge		Understanding		Application		Total	
		Pre-test	Post-test	Pre-test	Post-test	Pre-test	Post-test	Pre-test	Post-test
Boys	Poor	10.1%	3.8%	66.9%	31.8%	20.0%	4.4%	20.0%	4.4%
	Average	32.7%	15.3%	24.8%	42.0%	68.4%	55.8%	68.4%	55.8%
	Proficient	57.2%	80.9%	8.3%	26.1%	11.6%	39.9%	11.6%	39.9%
Girls	Poor	9.7%	3.3%	23.1%	3.4%	63.2%	30.0%	17.2%	3.0%
	Average	30.8%	14.7%	55.1%	42.2%	27.4%	38.6%	69.0%	50.4%
	Proficient	59.5%	82.0%	21.8%	54.4%	9.4%	31.4%	13.8%	46.6%

#### 3.2.3 Grade-3 Students' Learning Progress in Math

Table-15 presents the average scaled scores for third-grade students in Math for both the pre-test and post-test. The initial average score was 238.67, but it increased to 283.45 in the post-test, with a standard deviation of 51.46. The rise is statistically significant ( $p < 0.05$ ), showing improved post-test results. An effect size of 0.89 indicates that the remedial treatment was largely effective. Students performed better on all types of items in the post-test. Before the intervention, they scored highest on understanding, but after the intervention, their highest scores were on knowledge. For knowledge, the average score rose

from 216.74 (with a standard deviation of 69.94) in the pre-test to 324.74 (with a standard deviation of 83.54) in the post-test, resulting a significant improvement ( $p < 0.05$ ). Similar significant improvements were observed in the understanding and application. For knowledge, application and in total score, the effect size is more than 0.80, that indicates large effect of the intervention.

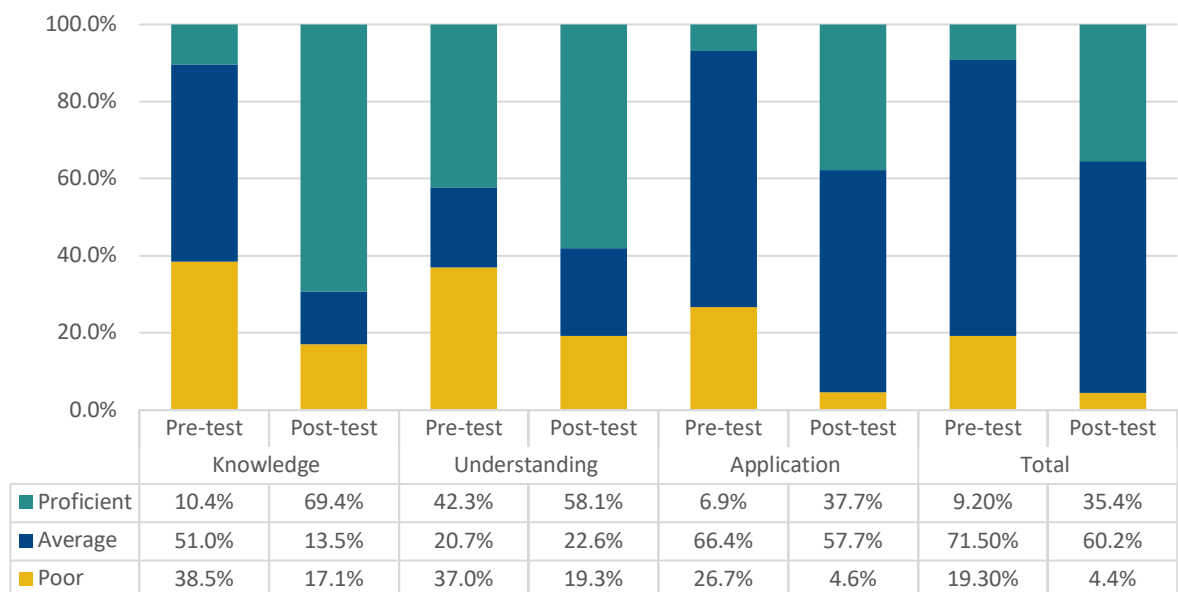
Table 15: Average Scaled Scores in Math Subject of Class-3

Math	Pre-test		Post-test		Sig.	Effect Size
	Mean	Std.	Mean	Std.		
<b>Knowledge</b>	216.74	69.94	324.74	83.54	.00	1.41
<b>Understanding</b>	256.35	125.62	307.24	118.11	.00	0.42
<b>Application</b>	227.43	49.91	285.60	55.26	.00	1.11
<b>Total</b>	238.67	48.61	283.45	51.46	.00	0.89

#### Comparison Among Grade 3 Students' Learning Level in Math

Figure-13 illustrates Class-3 students' Math learning levels by comparing pre-test and post-test results over three cognitive areas: Knowledge, Understanding, and Application, as well as their total Mathematics score. In knowledge, the percentage of proficient students scaled from 10.4% to 69.4%, while the percentage in average and poor categories decreased accordingly. Similarly, in understanding, the number of proficient students increased to 58.1%. In terms of application, the number of proficient students boosted from 6.9% to 37.7%, while the percentage of poor students decreased significantly (from 26.7% to 4.6%). The overall performance showed a large increase in the proficient category from 9.20% to 35.4%, with a significant decrease in the average and poor categories.

Figure 13: Learning levels of Class-3 Students in Math Subject



### Upazila-wise comparison of Average Scaled Score in Math of Grade 3 Students

Table-16 below shows the average scaled scores of Class -3 students in Math subjects in both the pre-test and post-test across four upazila. The average scaled score for class 3 Math students in Goalanda Upazila was 252.56 in the pre-test, and 335.65 in the post-test. For Chhatok Upazila, the average scaled score for class 3 Math students was 240.94 in the pre-test, and 262.36 in the post-test. For Nageshwari Upazila, the average scaled score for class 3 Math students was 227.11 in the pre-test, and 271.81 in the post-test. Bandarban Sadar Upazila's average scaled score for class 3 students was 246.22 in the pre-test, and 289.06 in the post-test. In all types of items and even in the total score from the post-test, Goalanda upazila scored the highest.

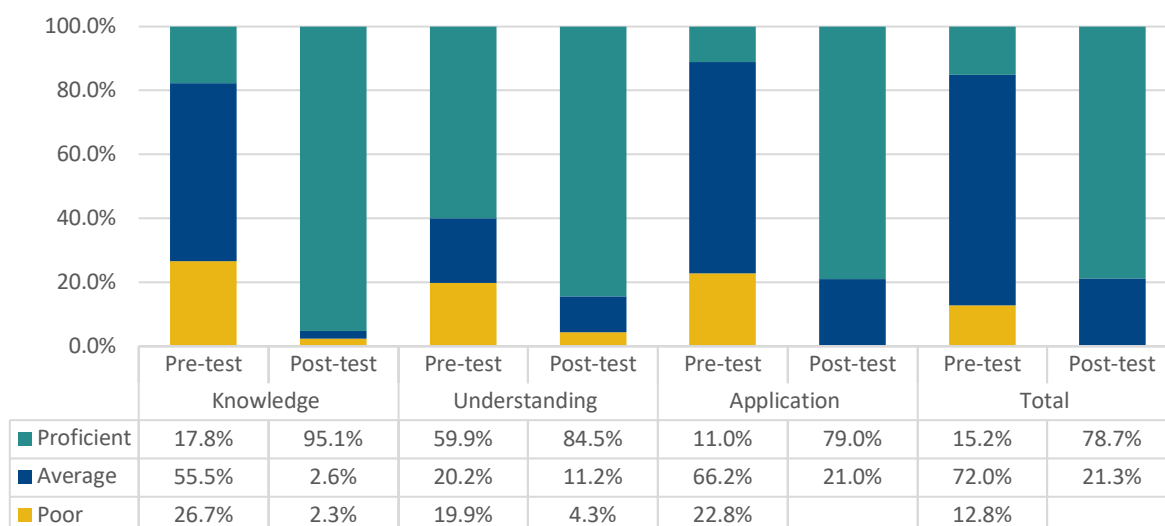
Table 16: Average Scaled Score of Class-3 in Math Across Four Upazila

Upazila	Knowledge		Understanding		Application		Total	
	Pre-test	Post-test	Pre-test	Post-test	Pre-test	Post-test	Pre-test	Post-test
<b>Goalanda</b>	239.89	378.42	305.94	370.89	237.75	339.61	252.56	335.65
<b>Chhatok</b>	220.89	279.53	243.18	278.99	230.72	268.35	240.94	262.36
<b>Nageshwari</b>	193.62	322.00	238.50	291.06	218.14	268.50	227.11	271.81
<b>Bandarban Sadar</b>	237.27	353.96	299.76	320.85	229.14	291.46	246.22	289.06

### Upazila-wise comparison of Learning Levels in Math of Grade 3 Students

Figure-14 depicts the learning levels of third-grade students in Math, comparing pre-test and post-test results from three categories of item and the total score in the Goalanda upazila. For knowledge, the percentage of proficient students dramatically increased from 17.8% to

Figure 14: Class 3 Students' Learning Levels in Math in Goalanda Upazila



95.1%, with decreases in both average and poor categories. Similarly, for understanding, the proficiency level rose to 84.5%, reflecting a significant improvement. In application, the percentage of proficient students grew from 11.0% to 79.0%, demonstrating the highest increasement in the upazila. Overall, there was a substantial rise in percentage of proficient students from 15.2% to 78.7%, along with a notable reduction in average and poor category of learning levels.

Figure-15 shows the learning levels of class 3 students in Math Subjects in Chhatok Upazila, comparing pre-test and post-test results across three cognitive areas: Knowledge, understanding, and application as well as the total scores. In the case of knowledge, the percentage of proficient students increased from 11.2% to 46.7%, with a corresponding decrease in average and poor categories. Similarly, in understanding, the percentage of proficient students rose to 48.2%. In application, the percentage increased from 7.4% to 27.4%, on the other hand, the percentage of poor category reduced (from 23.2% to 6.2%). The total performance showed a substantial rise in proficient category from 10.2% to 20.7%, a significant drop in average and poor category.

Figure 15: Class 3 Students' Learning Levels in Math in Chhatok Upazila

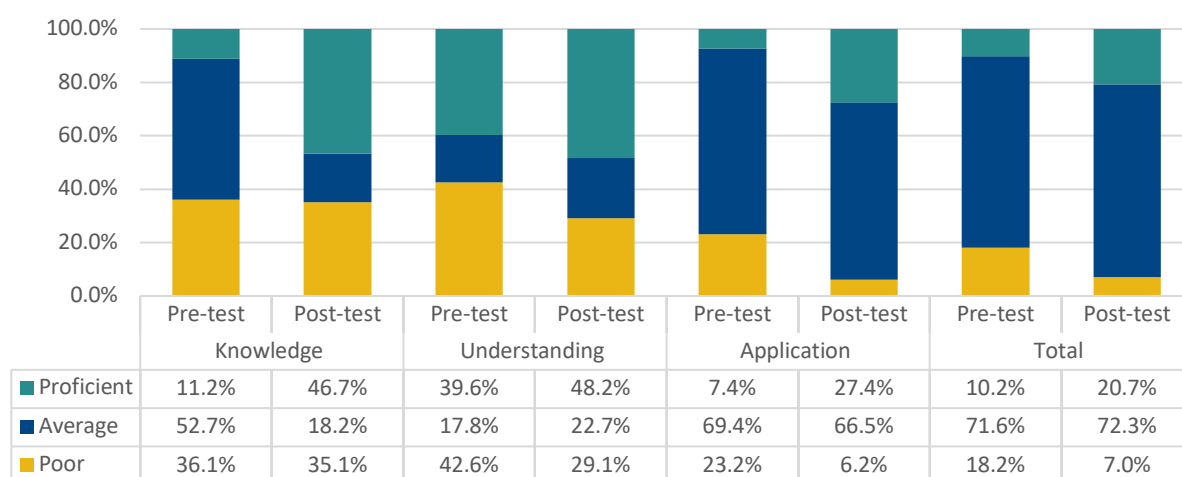


Figure-16 shows the Nageshwari upazila’s learning levels of Class-3 students in Math. Firstly, it shows the learning level of students across different type of item. It can be observed that in knowledge, the percentage of proficient students increased from 5.5% to 68.8%. But on the other hand, the percentage of poor and average student decreased in the post-test. Similarly, in understanding, the percentage rose to 50.2 in the post-test. The percentage of average students in this case increased to 29.3% in the post-test. For application, the percentage of proficient student increased from 3.9% to 22.9%, on the other hand, the poor category reduced (from 32.6% to 8.1%). The total performance showed a substantial rise in proficient category from 5.0% (pre-test) to 24.7% (post-test).

Figure 17: Class 3 Students' Learning Levels in Math in Naqeshwari Upazila

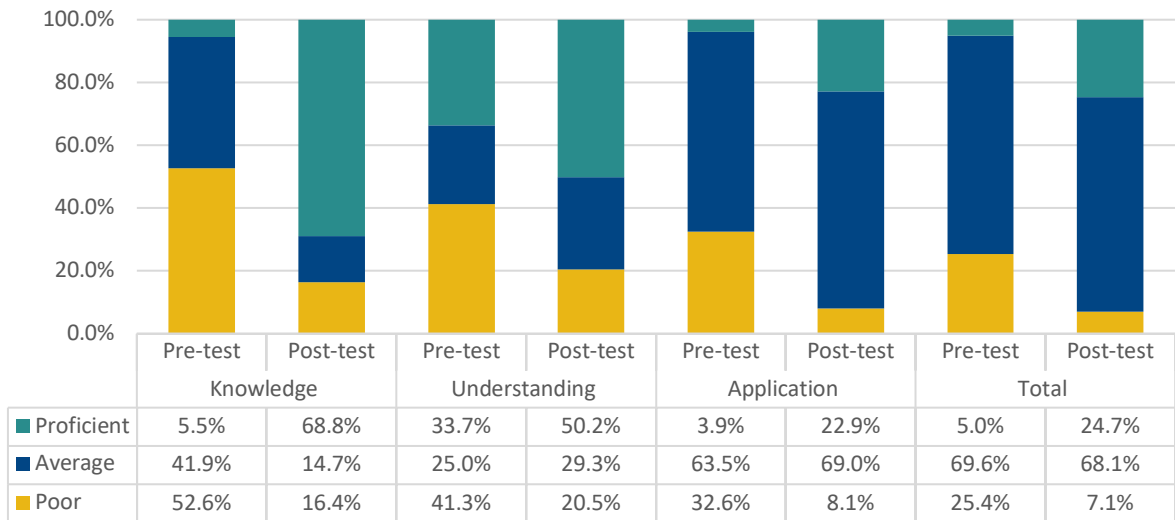
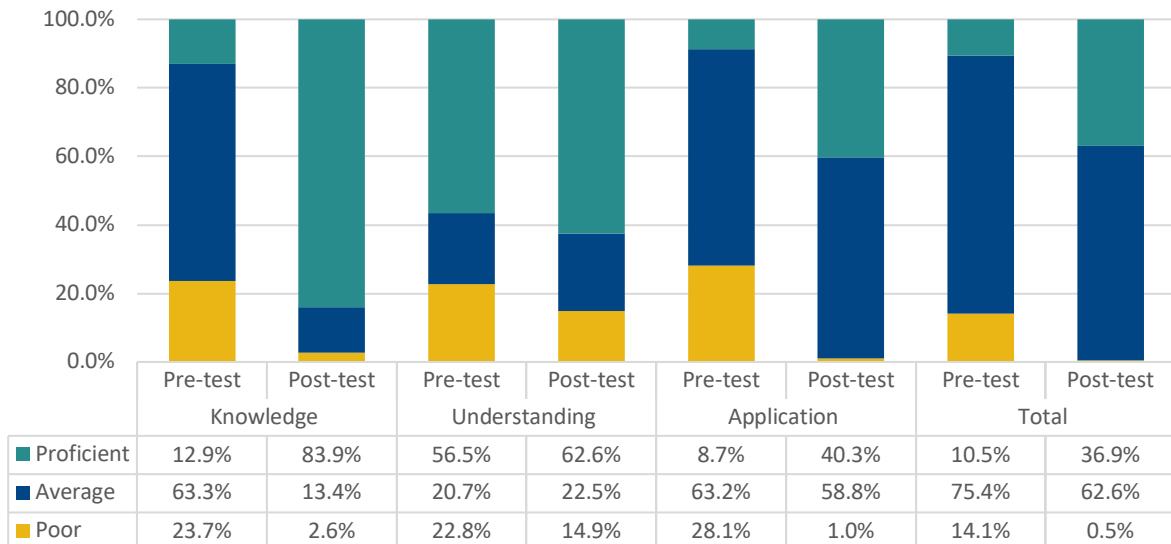


Figure-17 shows the comparison of learning levels of class 3 students in the Bandarban Upazila for math subject. When considering, knowledge, the percentage of proficient students increased from 12.9% to 83.9%. Similarly, in understanding, the percentage of proficient students rose to 62.6%. In the case of application, the learning level of proficient students increased from 8.7% to 40.3%. When the total score in the math subject is considered, it can be observed that in the pre-test, there were 10.5% proficient students, whereas the number has increased thrice to 36.9% in the post-test. Here, the ratio of average and poor category students dropped significantly. In pre-test, 14.1% students obtained scores that fall in the “Poor” Category. But in the post test, the percentage dropped to almost null (0.5%).

Figure 16: Class 3 Students' Learning Levels in Math in Bandarban Sadar Upazila



*Gender-wise comparison of Average Scaled Score in Math of Grade 3 Students*

Table-17 shows the average scaled scores in Math for third-grade boys and girls of both pre-test and post-test. In terms of total scores in Math, boys obtained an average of 237.76 in the pre-test and 281.54 in the post-test, illustrating improved result in the post-test. For girls, the average Math score rose from 239.52 in the pre-test to 285.04 in the post-test. Boys achieved

their highest average scaled scores in understanding in both the pre-test (254.76) and post-test (308.12), though the girls outperformed them in the pre-test (257.61). Girls also scored highest in understanding in the pre-test but achieved their highest scores in knowledge in the post-test.

Table 17: Average Scaled Scores in Math Subject for Boys and Girls of Class-3

	Knowledge		Understanding		Application		Total	
	Pre-test	Post-test	Pre-test	Post-test	Pre-test	Post-test	Pre-test	Post-test
<b>Boys</b>	214.75	323.40	254.76	308.12	227.01	282.85	237.76	281.54
<b>Girls</b>	218.57	325.86	257.61	306.50	227.82	287.89	239.52	285.04

### Gender-wise comparison of Learning Level in Math of Grade 3 Students

Table-18 summarizes the learning levels in Math for third-grade boys and girls, comparing pre-test and post-test results across three learning domains. For boys, the percentage of proficient students in knowledge increased from 10.1% to 69.6% in the post-test. Similarly in understanding the percentage of students rose to 59.9% from 41.9% (pre-test). In both domains, the percentage of boys in the average and poor category decreased significantly. Then for application the percentage again grew from 6.7% to 36.1%, with the low decreasing from 26.1% to 4.7%. Overall proficiency for boys increased from 8.5% to 34.0%. For girls, proficiency in knowledge rose from 10.7% to 69.2%, for understanding to 56.6%, and for application from 7.1% to 39.1%, with the poor category dropping from 27.2% to 4.5%. Overall proficiency for girls increased from 9.9% to 36.5%. Both boys and girls showed significant improvements across all categories, with notable reductions in the average and poor category of learning levels.

Table 18: Comparison of Learning Levels of Boys and Girls in Math Subject of Class-3

Gender	Level	Knowledge		Understanding		Application		Total	
		Pre-test	Post-test	Pre-test	Post-test	Pre-test	Post-test	Pre-test	Post-test
<b>Boy</b>	Poor	40.1%	17.8%	37.5%	21.3%	26.1%	4.7%	19.1%	4.7%
	Average	49.8%	12.6%	20.7%	18.9%	67.2%	59.2%	72.4%	61.3%
	Proficient	10.1%	69.6%	41.9%	59.9%	6.7%	36.1%	8.5%	34.0%
<b>Girl</b>	Poor	37.1%	16.6%	36.6%	17.6%	27.2%	4.5%	19.4%	4.2%
	Average	52.2%	14.2%	20.7%	25.8%	65.7%	56.4%	70.7%	59.3%
	Proficient	10.7%	69.2%	42.7%	56.6%	7.1%	39.1%	9.9%	36.5%

### 3.3 Comparative Analysis of Grade-4 Students' Learning Level

#### 3.3.1 Grade-4 Students' Learning Progress in Bangla

Table-19 presents the average scaled scores for Class-4 students in the Bangla subject across Knowledge, Understanding, and Application abilities in both pre-test and post-test phases. It also includes the total score of the subject. The overall average scaled score increased significantly to 323.40 from 278.22 (SD: 53.47). Statistical analysis shows a significant difference between these means ( $p < 0.05$ ), indicating that the post-test yielding better results in Bangla. The effect size of 0.84 underscores the large impact of the remedial program. Notably, students achieved higher scores across all type of item in the post-test, with Knowledge consistently yielding the highest scores. Pre-test scores averaged 297.22 (SD: 73.60) and increased to 352.38 (SD: 65.47) in the post-test, demonstrating significant improvement ( $p < 0.05$ ). Similar trends were observed in Understanding and Application, with effect sizes ranging from 0.60 to 0.79, indicating a moderate influence of intervention.

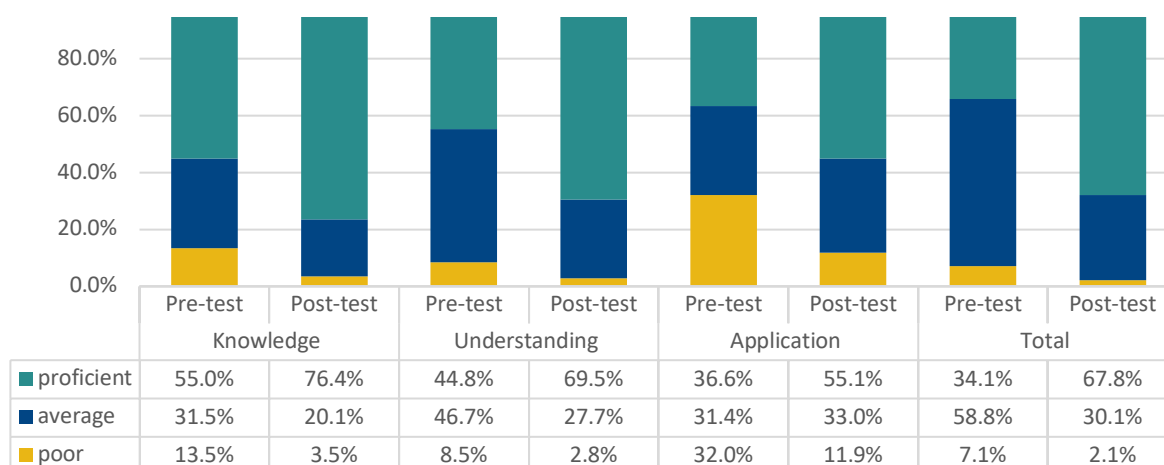
Table 19: Class-4 Average Scaled Scores in Bangla Subject

Bangla	Pre-test		Post-test		Sig.	Effect Size
	Mean	Std.	Mean	Std.		
Knowledge	297.22	73.60	352.38	65.47	.00	0.79
Understanding	291.01	65.31	328.38	58.89	.00	0.60
Application	251.16	98.87	315.58	90.66	.00	0.68
Total	278.22	54.18	323.40	53.47	.00	0.84

#### Comparison Among Grade 4 Students' Learning Level in Bangla

Figure-18 illustrates the increased percentage of proficient students in all cognitive areas during post-test. In terms of knowledge, the percentage of students increased from 55.0% to 76.4% during post-test. Other two types of items demonstrated similar trends. Notably, Knowledge consistently had the highest proportion of proficient students compared to Understanding and Application in both pre- and post-test (55% and 76.4%, respectively). The percentage of students in the "average" category decreased, reflecting a shift towards higher

Figure 18: Learning Levels of Class-4 Students in Bangla Subject



proficiency levels. Significant reductions in the "poor" category were particularly notable in Application (32.0% to 11.9%). When considering the total score in Bangla, the percentage of proficient students more than doubled from pre-test (34.1%) to post-test (67.8%).

#### *Upazila-wise Comparison of Average Scaled Score in Bangla of Grade 4 Students*

The table displays average scaled scores for Knowledge, Understanding, and Application of Class-4 students in the Bangla subject across four Upazilas (Goalanda, Chhatok, Nageshwari, and Bandarban Sadar) in both pre-test and post-test as well as the average of total score. All Upazilas demonstrated significant improvements across all cognitive areas, with Knowledge consistently yielding the highest scores. In the overall results in Bangla, Goalanda recorded the highest average in the post-test as the average increased from 288.1 to 341.17. In Bandarban Sadar, the average was 293.15 in the pre-test, that increased to 329.99 in the post-test. For Nageshwari, the average increased from 276.23 to 329.39. Chhatok showed the lowest increase in the average (272.85 to 304.14) among the four Upazilas.

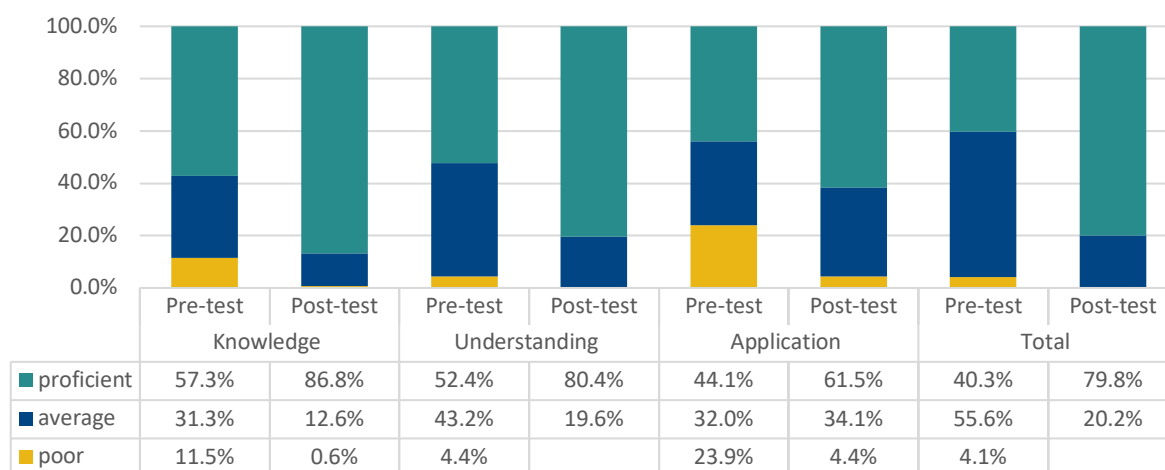
*Table 20: Average Scaled Scores in Class-4 Bangla Subject Across Four Upazila*

Upazila	Knowledge		Understanding		Application		Total	
	Pre-test	Post-test	Pre-test	Post-test	Pre-test	Post-test	Pre-test	Post-test
Goalanda	300.06	372.53	304.27	346.03	271.53	335.98	288.80	341.17
Chhatok	299.61	332.66	283.44	310.56	235.49	286.79	272.85	304.14
Nageshwari	291.76	359.51	289.21	332.85	254.03	323.02	276.23	329.39
Bandarban Sadar	299.28	355.95	311.09	335.10	282.92	333.01	293.15	329.99

#### *Upazila-wise Comparison of Learning Levels in Bangla of Grade 4 Students*

Figure-19 depicts Class-4 students' achievement levels in Goalanda Upazila for the Bangla subject, Proficiency in Knowledge increased significantly from 57.3% to 86.8% in the post-test, on the other hand the percentage of average and poor category students are decreased in the

*Figure 19: Goalanda Upazila Class-4 Students' Learning Levels in Bangla*



post-test. Similarly, in Understanding the percentage of proficient student rose significantly post-test (52.4% to 80.4%). Application also showed improvement, with the percentage of proficient students increasing from 44.1% to 61.5. Overall performance in the Bangla Subject, showed substantial growth in the proficient category (40.3% to 79.8%), alongside decreases in average and poor category.

Figure-20 displays Class-4 students' significant improvements across all cognitive areas. The percentage of proficient students increased in the post-test (54.9% to 63.7%) in the post-test, with corresponding decreases in the percentage of average (32.2% to 29.4%) and poor categories of students. In understanding, proportion of proficient students increased to 57.9% from 38.4%. Also, in Application the percentage of proficient students from 30% to 46.5%, with a decrease in the poor category (39.10% to 20.1%). When considering total result in Bangla, proficiency increased from 29.6% to 52.5%.

Figure 20: Class-4 Students' Learning Levels in Bangla in Chhatok Upazila

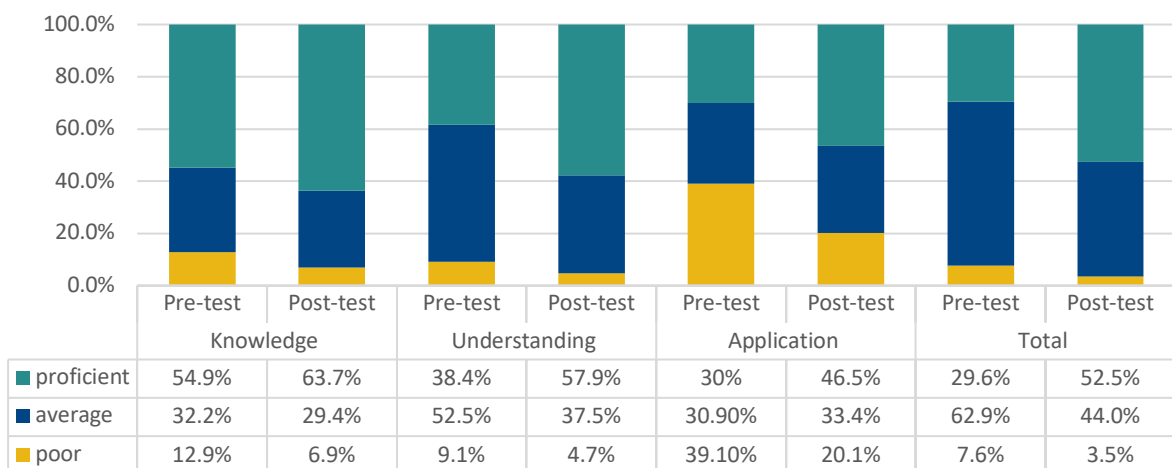
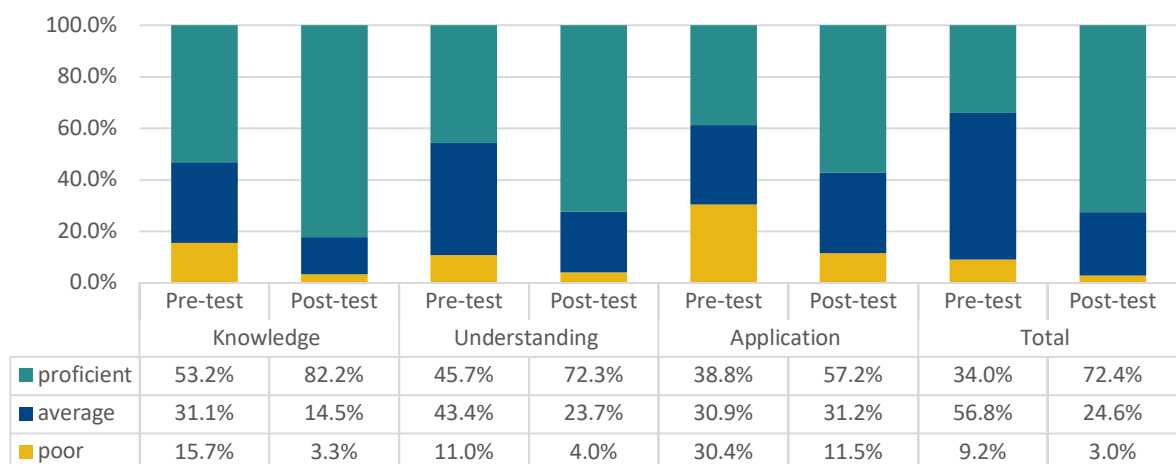


Figure-21 shows the learning levels of Class-4 students in Bangla subject in the Nageshwari Upazila, comparing pre-test and post-test results across three abilities: Knowledge, Understanding, and Application, as well as the total performance. In Knowledge, the percentage of proficient students increased significantly from 53.2% to 82.2%, with the average (from 31.1% to 14.5%) and poor (from 15.7% to 3.3%) categories decreasing

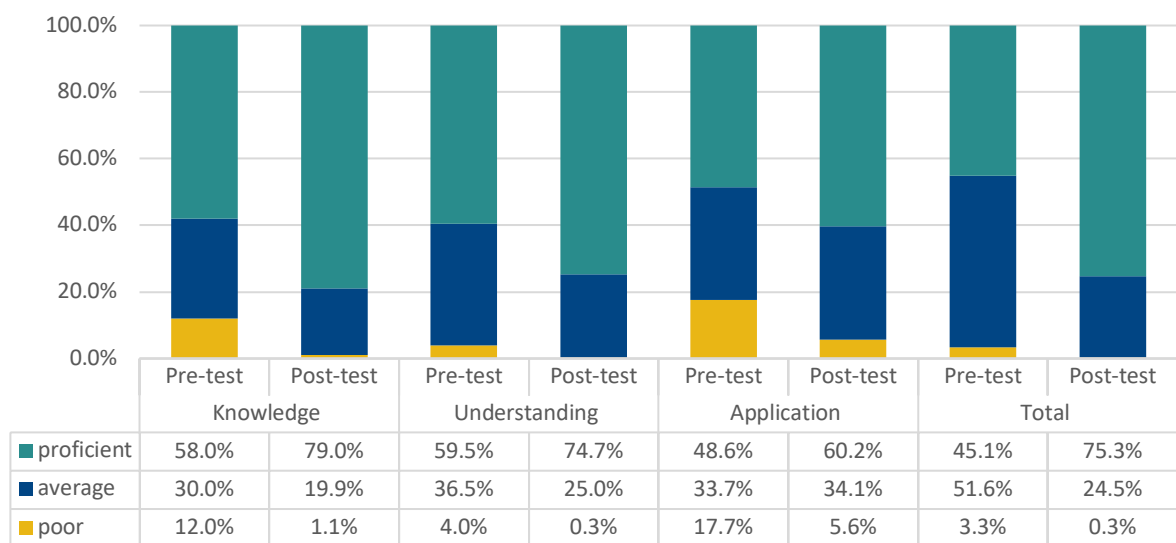
Figure 21: Class-4 Students' Learning Levels in Bangla in Nageshwari Upazila



respectively. In case of Understanding, the percentage of proficient category increased from 45.7% to 72.3%, while the average category decreased (from 43.4% to 23.7%), and the poor category dropped (from 10.9% to 4.0%). In Application also showed a notable increase in proficient category (from 38.8% to 57.2%), with the poor category decreasing (from 30.4% to 11.5%). Overall, the total proficiency increased from 34.0% to 72.4%, with the average category decreasing from 56.8% to 24.6%, and the poor category reducing from 9.2% to 3%.

Figure-22 illustrates Class-4 students' achievement levels in the Bangla in Bandarban Sadar Upazila, comparing pre-test and post-test results across Knowledge, Understanding, and Application, as well as overall performance. Proficiency in Knowledge increased (58.0% to 79.0%), with a decrease in the poor category (12.0% to 1.1%). In Understanding also, the percentage of proficient students increased from 59.5% to 74.7%, with almost no poor category (4.0% to 0.3%) in the post-test. Application showed an increase in proficiency (48.6% to 60.2%), with a decrease in poor category (17.7% to 5.6%). In terms of total score, the percentage of proficient student increased from 45.1% to 75.3% in the post-test, with a decrease in the average category (51.6% to 24.5%) and nearly eliminated poor category (3.3% to 0.3%).

Figure 22: Class-4 Students' Learning Levels in Bangla in Bandarban Sadar Upazila



#### Gender-wise Comparison of Average Scaled Score in Bangla of Grade 4 Students

The Table-21 also indicates that both boys and girls showed substantial improvements across all types of items during the post-test. In terms of average scaled scores of boys, in the Knowledge, the average increased from 291.78 to 350.63, in case of Understanding, average increased from 286.06 to 324.20, and for Application the average of score increased from 242.89 to 310.67, leading to an overall score increase (from 273.53 to 319.64) in the Bangla subject. On the other hand, in terms of girls, the scores increased for Knowledge (from 302.06 to 353.96), for Understanding (from 295.42 to 332.14), and for Application (from 258.53 to 319.99), leading to an overall score increase (from 282.41 to 326.78). Girls had higher average scores than boys in both pre-test and post-test evaluations, with notable gains in the Application.

Table 21: Average Scaled Scores in Bangla Subject for Boys and Girls of Class-4

	Knowledge		Understanding		Application		Total	
	Pre	Post	Pre	Post	Pre	Post	Pre	Post
Boys	291.78	350.63	286.06	324.20	242.89	310.67	273.53	319.64
Girls	302.06	353.96	295.42	332.14	258.53	319.99	282.41	326.78

### Gender-wise Comparison of Learning Levels in Bangla of Grade 4 Students

The table presents the achievement levels of Class-4 boys and girls in the Bangla subject of both pre-test and post-test across three cognitive areas: Knowledge, Understanding, and Application, along with the total scores. In case of boys, the percentage of students in the "Poor" category decreased across all items. Like for Knowledge (from 15.3% to 3.9%), Understanding (from 9.8% to 3.2%), and Application (from 34.8% to 13.2%), leading to an overall reduction (from 8.5% to 2.0%). Besides the "Proficient" category for boys increased notably: Knowledge (from 51.3% to 75.5%), Understanding (from 41.8% to 66.7%), and Application (from 32.8% to 53.0%). The overall achievement of boys increased in double (from 30.7% to 65.5%). On the other hand, for girls, similar trends can be seen. The "Poor" category gradually decreased in all three abilities: Knowledge (from 11.9% to 3.3%), Understanding (from 7.3% to 2.5%), and Application (from 29.5% to 10.7%), with the total dropping from 5.9% to 2.1%. The "Proficient" category for girls also increased in all three cognitive abilities: Knowledge (from 58.4% to 77.2%), Understanding (from 47.6% to 72.0%), and Application (39.9% to 57.0%), leading to an overall rise from 37.0% to 70.0%. Overall, both boys and girls exhibited significant improvements in their post-test results, with a considerable reduction in the "Poor" category and a substantial increase in the "Proficient" category across all items.

Table 22: Comparison of Learning Levels of boys and girls in Bangla Subject of Class-4

Gender	Level	Knowledge		Understanding		Application		Total	
		Pre	Post	Pre	Post	Pre	Post	Pre	Post
Boy	Poor	15.3%	3.9%	9.8%	3.2%	34.8%	13.2%	8.5%	2.0%
	Average	33.4%	20.7%	48.4%	30.1%	32.3%	33.8%	60.8%	32.5%
	Proficient	51.3%	75.5%	41.8%	66.7%	32.8%	53.0%	30.7%	65.5%
Girl	Poor	11.9%	3.3%	7.3%	2.5%	29.5%	10.7%	5.9%	2.1%
	Average	29.8%	19.5%	45.2%	25.5%	30.6%	32.3%	57.0%	27.9%
	Proficient	58.4%	77.2%	47.6%	72.0%	39.9%	57.0%	37.0%	70.0%

### 3.3.2 Grade-4 Students' Learning Progress in English

Table-23 displays the average scaled scores of class-four students in English as a whole. In the pre-test, the average scaled score for Class-4 students was 238.22, with a standard deviation of 55.06. The post-test mean is 274.87, with a standard deviation of 48.87. A statistically significant difference is observed between the means of both tests ( $p < 0.05$ ), showing that the

English Subject's result has improved in the post-test. The effect size in this situation is 0.71, indicating that the remedial program has moderate effect. Students performed better in all types of items in the post-test. In Understanding, students obtained the highest average scaled score than Knowledge and Application. This trend can be seen in both pre-test and post-test. In case of Understanding, in pre-test the mean is 260.09 (SD: 67.08) and in post-test the mean is 300.79 (SD: 54.93). The difference between these averages is significant as the p value is less than 0.05. Same scenario can be seen in understanding and application. In all cases the effect size is between (0.58-0.77) indicating moderate effect of the remedial program.

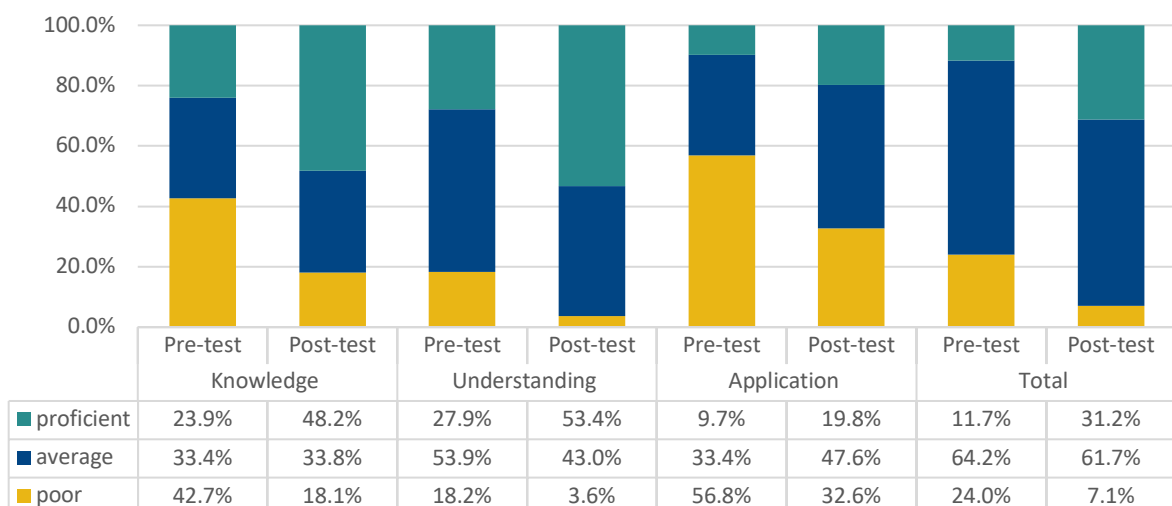
Table 23: Class-4 Average Scaled Scores in English Subject

English	Pre-test		Post-test		Sig.	Effect Size
	Mean	Std.	Mean	Std.		
Knowledge	221.29	99.96	296.23	94.50	.00	0.77
Understanding	260.09	67.08	300.79	54.93	.00	0.67
Application	186.50	80.54	233.33	80.00	.00	0.58
Total	238.02	55.06	274.87	48.87	.00	0.71

#### Comparison Among Grade 4 Students' Learning Level in English

Figure-23 shows the percentage of class-4 students achievement levels in English from the pre-test to the post-test. In the post-test, the percentage of proficient students increased in all item types: from 23.9% to 48.2% in Knowledge, 27.9% to 53.4% in Understanding, and 9.7% to 19.8% in Application. In Application, students obtained the highest average scaled score (From 9.7% to 19.8%) than cognitive abilities: Understanding and Knowledge. The percentage of "average" category indicates slight increase in Knowledge (from 33.4% to 33.8%), decrease in Understanding (From 53.9% to 43.0%), and increase in Application (From 33.4% to 47.6%). The percentage of students in the poor group shows a significant decline too, particularly in

Figure 23: Learning Levels of Class-4 Students in English Subject



Understanding (from 18.2% to 3.6%). The overall percentage of proficient students increased (From 11.7% to 31.2%), on the other hand, percentage of poor category students significantly declined (from 24.0% to 7.1%) from the pre-test to the post-test), Indicating promotion of students to higher achievement levels in post-test.

### Upazila-wise Comparison of Average Scaled Score in English of Class-3

Table-24 displays that all four Upazilas showed significant improvements in their post-test scores compared to the pre-test scores in English. In total, the students of Goalanda recorded the highest test scores (from 238.68 to 307.22), followed by Nageshwari (from 218.73 to 271.51) and Bandarban Sadar (from 250.03 to 290.55), Chhatok had the lowest test scores (from 247.38 to 251.07) among the four Upazilas.

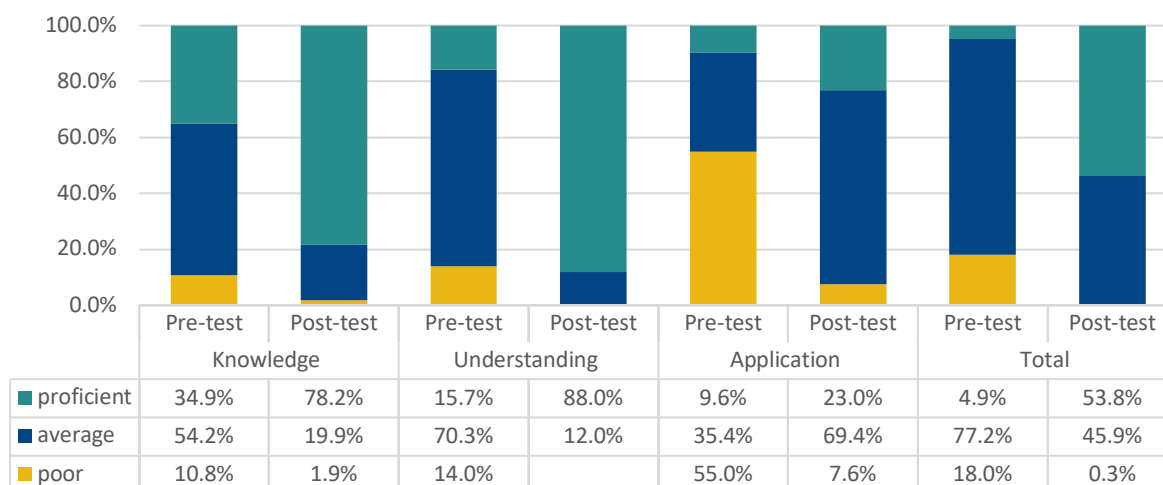
Table 24: Average Scaled Score in Class 4 English Subject in Different Upazila

Upazila	Knowledge		Understanding		Application		Total	
	Pre	Post	Pre	Post	Pre	Post	Pre	Post
Goalanda	271.50	363.88	253.64	340.15	190.90	266.25	238.68	307.22
Chhatok	256.68	276.04	269.56	280.30	192.87	190.77	247.38	251.07
Nageshwari	134.24	288.38	243.68	288.09	166.83	233.91	218.73	271.51
Bandarban Sadar	256.77	282.90	271.28	319.18	207.21	272.61	250.03	290.55

### Upazila-wise Comparison of Learning Levels in English of Grade 4 Students

Figure-24 shows the achievement levels of Class-4 students in English in Goalonodo Upazila, comparing pre-test and post-test results across three cognitive abilities: Knowledge, Understanding, and Application. In case of Knowledge, the percentage of proficient students increased dramatically (from 34.9% to 78.2%), while the percentage of average students decreased from 54.2% to 19.9%, and poor students significantly reduced from 10.8% to 1.9%,

Figure 24: Class-4 Students' Learning Levels in English in Goalanda Upazila



indicates promotion of students to higher achievements level. On the other hand, the Understanding level showed a remarkable increase in proficiency (from 15.7% to 88.0%), with average students dropping (from 70.3% to 12.0%) and poor students eliminated (from 14.0% to 0.0%). In case of Application, the percentage of proficient students improved (from 9.6% to 23.0%), while poor “category” students decreased from 35.4% to 69.4% and 55.0% to 7.6%. Overall, the percentage of total proficient students increased from 4.9% to 53.8%, with average students reducing from 77.2% to 45.9% and poor category students nearly eliminated, falling from 18.0% to 0.3%.

Figure-25 shows the achievement levels of Class-4 students in English in Chhatok Upazila, in both pre-test and post-test results across three cognitive areas: Knowledge, Understanding, and Application. In case of Knowledge, the percentage of proficient students increased (from 33.8% to 43.5%), while the number of average students decreased (from 44.1% to 27.6%). On the other hand, the percentage of poor category students increased (from 22.1% to 28.9%). In Understanding, proficient students increased from 34.0% to 38.6%, average students slightly increased from 50.5% to 53.2%, and poor category students decreased from 15.5% to 8.2%. In Application, percentage of proficient students declined from 11.8% to 8.9%, average students increased from 34.5% to 37.0%, and poor students increased significantly from 53.8% to 54.2%. Overall, the percentage of proficient students increased from 17.2% to 20.1%, the percentage of average students slightly increased from 63.1% to 64.2%, and the percentage of “poor: category decreased from 19.7% to 15.7%.

Figure 25: Class-4 Students' Learning Levels in English in Chhatok Upazila

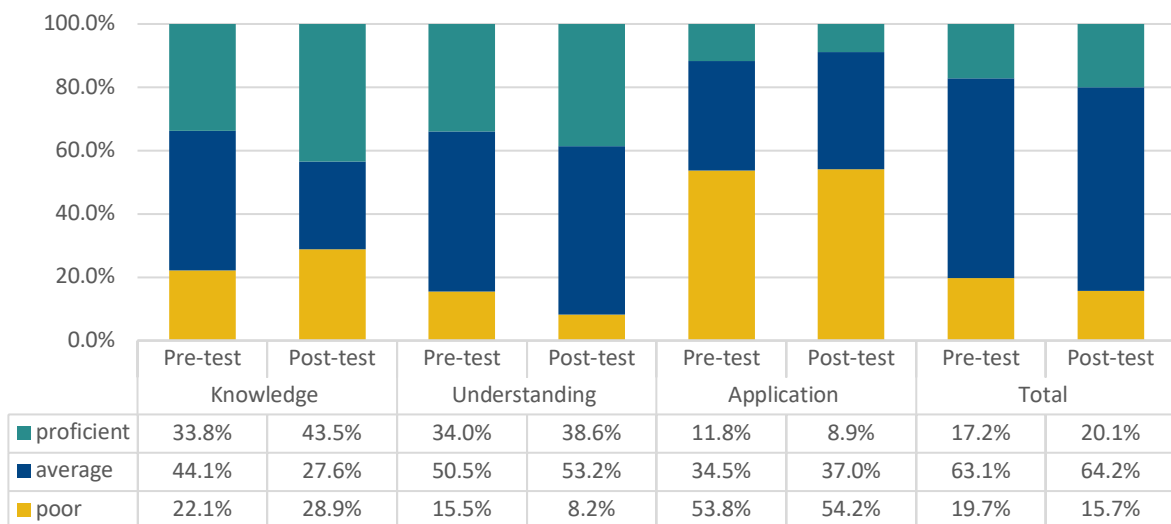


Figure-26 shows the achievement levels of Class-4 students in English in Nageshwari Upazila, in both pre-test and post-test results across three abilities: Knowledge, Understanding, and Application. In Knowledge, the percentage of proficient students increased remarkably (from 1.1 % to 44.5 %), the number of average students also increased significantly (from 2.8% to 37.6 %). On the other hand. the percentage of poor category students decreased notably (from 96.0% to 17.9%), which indicates promotion of students to higher achievements level. In Understanding, the percentage of proficient students increased (from 21.6% to 39.5%),

percentage average students slightly increased (from 51.7% to 57.6%), and poor category students decreased significantly (from 26.7% to 2.9%). In Application, percentage of proficient students increased (from 5.4% to 22.9%), average students increased (from 27.5% to 38.6%) and poor students decreased (from 67.1% to 38.5%). The percentage of students at the poor level dropped dramatically, especially in knowledge (from 96.0% to 17.9%) and in overall (from 36.2% to 6.4%) indicating promotion of students to higher achievements level.

Figure 26: Class-4 Students' Learning Levels in English in Nageshwari Upazila

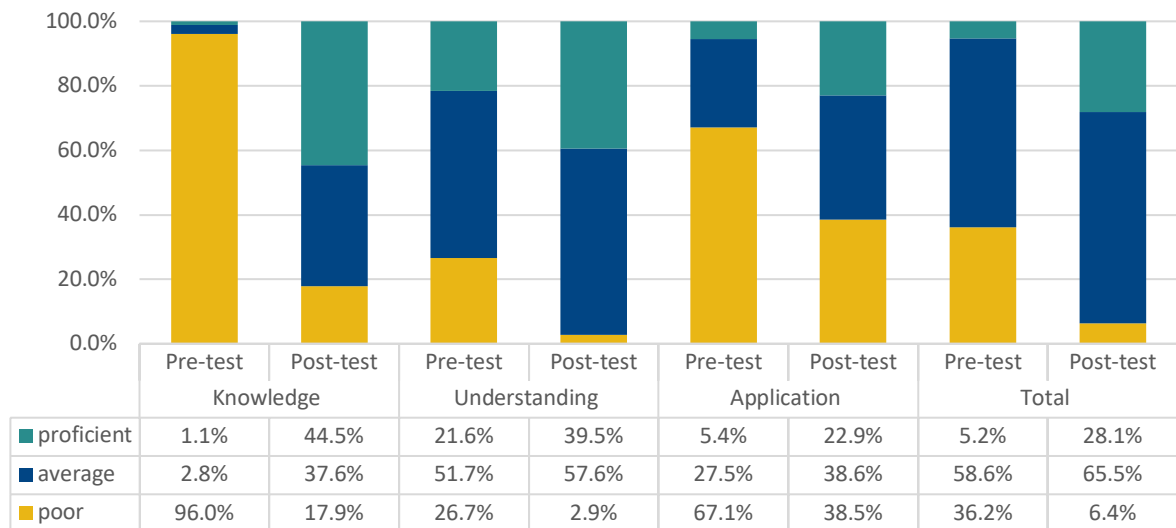
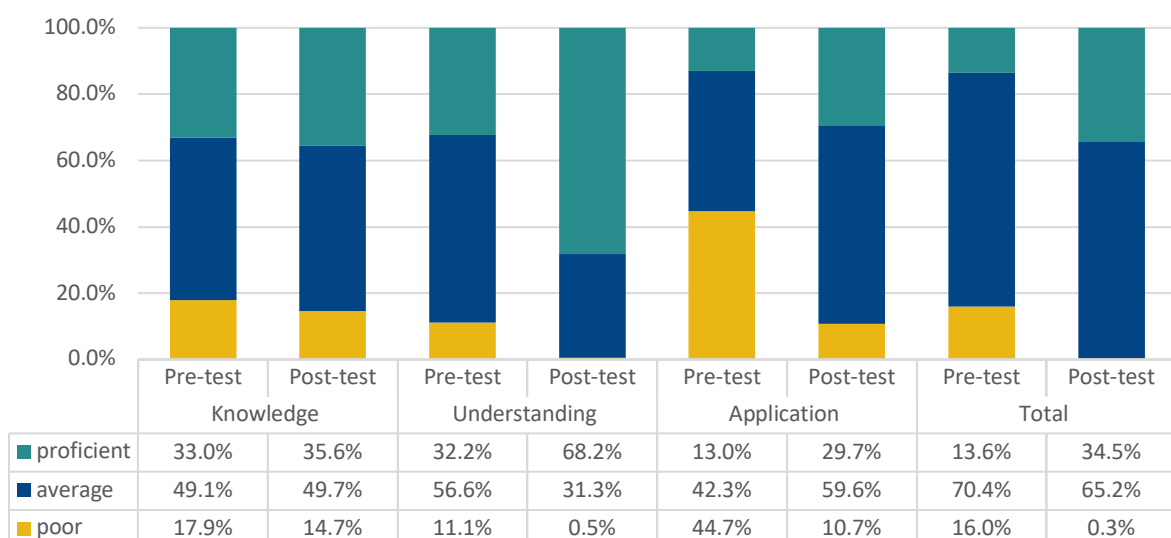


Figure-27 shows the achievement levels of Class-4 students in English in Bandarban Sadar Upazila, comparing pre-test and post-test results across three abilities: Knowledge, Understanding, and Application. In Knowledge, the percentage of proficient students increased (from 33.0% to 35.6%), the percentage of average students also increased slightly (from 49.1% to 49.7%), and the percentage of poor students reduced (from 17.9% to 14.7%). On the other hand, the Understanding level showed an increase in the percentage of proficient students (from 32.2% to 68.2%), with average students dropping (from 56.6% to 31.3%) and poor students nearly eliminated (from 11.1% to 0.5%). In Application, the

Figure 27: Class-4 Students' Learning Levels in English in Bandarban Sadar Upazila



percentage of proficient students improved (from 13.0% to 29.7%), while average students also increased (from 42.3% to 59.6%) and the percentage of poor category students decreased notably (from 44.7% to 10.7%). Overall, the percentage of total proficient students increased (from 13.6% to 34.5%), and poor category students nearly eliminated, falling (from 16.0% to 0.3%).

#### *Gender-wise comparison of Average Scaled Scores in English of Grade 4 Students*

Table-25 presents the average scaled scores of Class-4 boys and girls in the English subject of both pre-test and post-test across three cognitive areas: Knowledge, Understanding, and Application, along with the total scores. In Knowledge, boys' scores increased from 218.56 to 294.21, while girls' scores increased from 223.69 to 298.03. In understanding, boys' scores improved from 257.11 to 298.90, and girls' scores increased from 262.72 to 302.48. For application, boys' scores increased from 183.25 to 229.24, and for girls' it increased from 189.36 to 236.99. Overall, the total scores for boys increased from 235.43 to 272.01, on the other hand for girls, from 240.30 to 277.43. The Table indicates notable progress in English proficiency for both genders, with girls showing slightly higher scores both before and after the tests in all areas.

*Table 25: Average Scaled Scores in English Subject for Boys and Girls of Class-4*

	Knowledge		Understanding		Application		Total	
	Pre	Post	Pre	Post	Pre	Post	Pre	Post
Boys	218.56	294.21	257.11	298.90	183.25	229.24	235.43	272.01
Girls	223.69	298.03	262.72	302.48	189.36	236.99	240.30	277.43

#### *Gender-wise comparison of Learning Levels in English of Grade 4 Students*

Table-26 shows the achievement levels of Class-4 boys and girls in the English subject of both pre-test and post-test across three areas: Knowledge, Understanding, and Application), along with the total scores. For boys, the percentage of students in the "Poor" category decreased across all areas: Knowledge (from 43.7% to 18.2%), Understanding (from 19.6% to 3.6%), and Application (from 58.6% to 35.6%), leading to a notable overall reduction (from 25.6% to 7.7%). Besides, "Proficient" category for boys increased: Knowledge (from 23.1% to 47.9%), Understanding (from 26.1% to 52.9%), and Application (from 8.8% to 18.7%). The overall achievement of boys increased (from 10.9% to 28.4%). On the other hand, for girls, similar trends can be seen. The "Poor" category gradually decreased in all three areas: Knowledge (from 41.8% to 17.9%), Understanding (16.9% poor to 3.7%) and Application (from 55.3% to 30.0%), with the total dropping from 22.7% to 6.7%. The "Proficient" category for girls also increased in all three areas: Knowledge (from 24.7% to 48.4%), Understanding (from 29.5% to 53.8%), and Application (from 10.6% to 20.7%), leading to an overall rise from 12.5% to 33.2%.

Table 26: Comparison of Learning Levels of Boys and Girls in English Subject of Class-4

Gender	Level	Knowledge		Understanding		Application		Total	
		Pre	Post	Pre	Post	Pre	Post	Pre	Post
Boy	Poor	43.7%	18.2%	19.6%	3.6%	58.6%	35.6%	25.6%	7.7%
	Average	33.2%	33.8%	54.2%	43.6%	32.6%	45.8%	63.5%	63.4%
	Proficient	23.1%	47.9%	26.1%	52.9%	8.8%	18.7%	10.9%	28.9%
Girl	Poor	41.8%	17.9%	16.9%	3.7%	55.3%	30.0%	22.7%	6.7%
	Average	33.5%	33.7%	53.6%	42.5%	34.2%	49.3%	64.9%	60.1%
	Proficient	24.7%	48.4%	29.5%	53.8%	10.6%	20.7%	12.5%	33.2%

### 3.3.3 Grade-4 Students' Learning Progress in Math

The table shows the average scaled scores of Class-4 students in Math for Knowledge, Understanding, and Application and in total. The average scaled score for in Math is significantly increased to 280.02 from 223.08 ( $p < 0.05$ ). The effect size indicates the large effect of remedial program on students' progress. Students performed better in all types of items during the post-test. In Understanding, students obtained the highest average scaled score than Knowledge and Application. This trend can be seen in both pre-test and post-test. Though in pre-test of Understanding the mean is 267.44 (SD: 96.71) and in post-test the mean is 332.94 (SD: 77.26). The difference between these averages is significant as the p value is less than 0.05. Same scenario can be seen in knowledge and application. In all cases the effect size is between (0.75 – 1.29) which indicates notable effect of the remedial program.

Table 27: Class 4 Average Scaled Scores in Math Subject

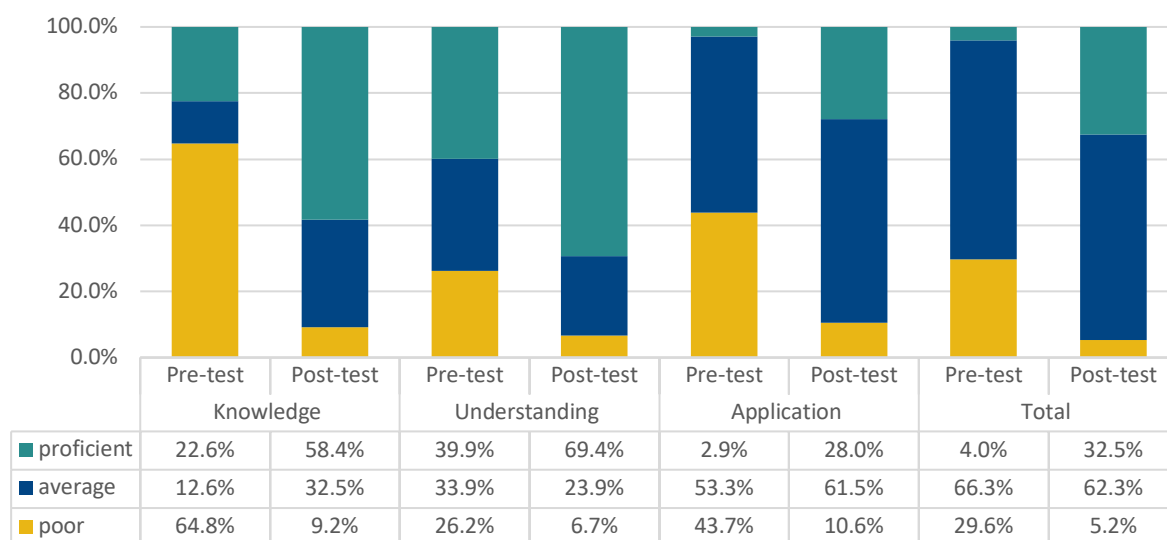
Math	Pre-test		Post-test		Sig.	Effect Size
	Mean	Std.	Mean	Std.		
Knowledge	205.73	98.50	319.37	78.01	.00	1.29
Understanding	267.44	96.71	332.94	77.26	.00	0.75
Application	206.63	51.61	270.43	56.45	.00	1.18
Total	223.08	46.48	280.02	48.21	.00	1.20

### Comparison Among Grade 4 Students' Learning Level in Math

Figure-28 shows that the percentage of proficient students is increased in all cognitive abilities of Math: from 22.6% to 58.4 in Knowledge, 39.9% to 69.4% in Understanding, and from 2.9% to 28.0% in Application. The percentage of students in the poor category shows a significant decline, particularly in knowledge (from 64.8% to 9.2%), reflecting the shift towards higher proficiency. The overall percentage of proficient students outstandingly increased from the pre-test to the post-test (from 4.0 % to 32%) and the percentage of "Poor" category indicates

a notable decline (from 29.6% to 5.2%), indicating promotion of students to higher achievement levels in post-test.

Figure 28: Learning levels of Class-5 Students in Math Subject



#### Upazila-wise comparison of Average Scaled Score in Math of Grade 4 Students

Table-28 provides the average scaled scores of various types of cognitive abilities: Knowledge, Understanding, and Application of Class-4 students in Math in both the pre-test and post-test across four Upazilas (Goalanda, Chhatok, Nageshwari and Bandarban Sadar). The table also displays the total average scaled scores of class-four students in Math. All four Upazilas showed significant improvements in their post-test scores compared to the pre-test scores across all item types. In knowledge, students of all four Upazilas obtained the highest average scaled score than Understanding and Application. In total, the students of Goalanda recorded the highest test scores (from 232.95 to 326.96), followed by Nageshwari (from 214.41 to 265.52) and Bandarban Sadar (from 223.25 to 281.82), Chhatok had the lowest test scores (from 226.29 to 267.86) among the four Upazilas.

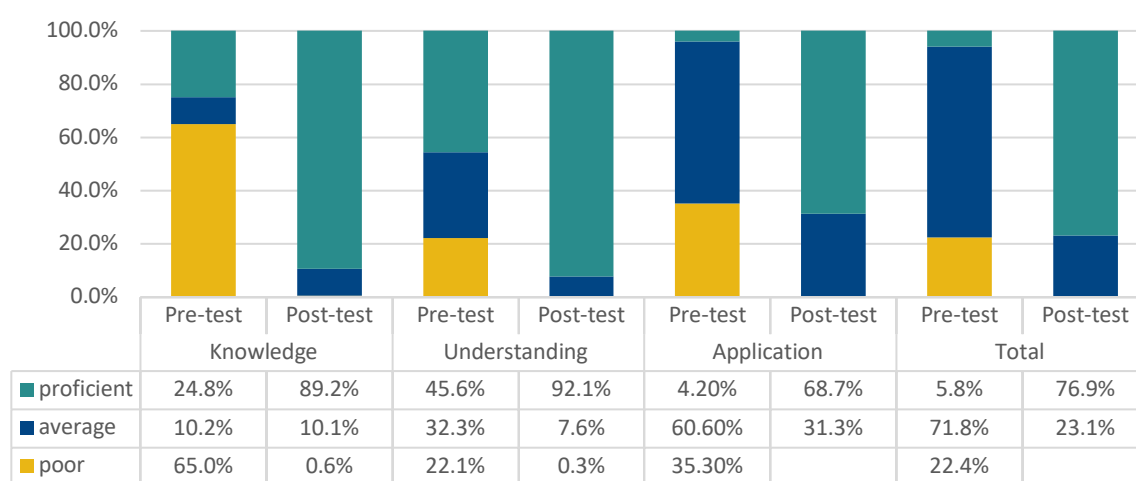
Table 28: Average Scaled Score in Class-4 Math Subject Across Four Upazila

Upazila	Knowledge		Understanding		Application		Total	
	Pre	Post	Pre	Post	Pre	Post	Pre	Post
Goalanda	212.97	364.64	275.85	378.69	218.96	319.20	232.95	326.96
Chhatok	219.38	307.67	284.13	339.01	204.76	253.89	226.29	267.86
Nageshwari	187.72	320.19	248.22	316.30	201.54	252.26	214.41	265.52
Bandarban Sadar	192.03	298.58	244.18	309.88	214.86	283.25	223.25	281.82

### Upazila-wise comparison of Learning Levels in Math of Grade 3 Students

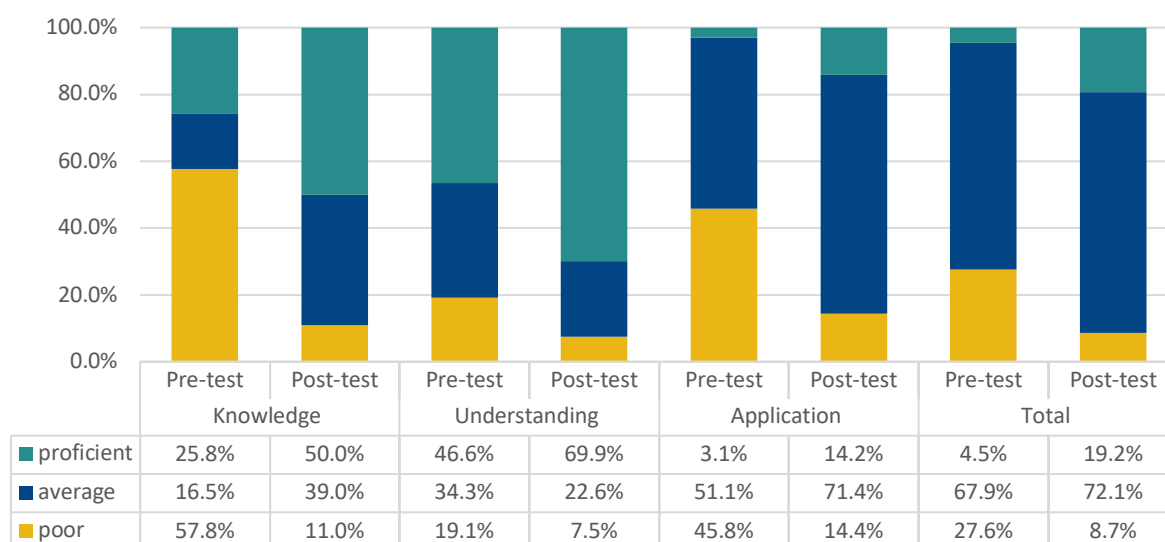
Figure-29 shows the achievement levels of Class-4 students in Math in Goalanda Upazila, in both pre-test and post-test results across three cognitive areas: Knowledge, Understanding, and Application. In case of Knowledge, the percentage of proficient students increased (from 24.8% to 89.2%), while the percentage of poor category students decreased (65% to 0.6%). In Understanding, percentage of proficient students increased from 45.6% to 92%, and poor category students decreased from 22.1% to 0.3%. Application shows the most notable change, with percentage of proficient student increasing from a mere 4.2% to 68.7%, and poor category decreasing from 35.3% to 0. Overall, the total percentage of proficient students increased from 5.8% to 76.9%, and the total percentage of poor students decreased from 22.4% to null.

Figure 29: Class-4 Students' Learning Levels in Math in Goalanda Upazila



The chart shows the achievement levels of Class-4 students in Math in Chhatok Upazila, in both pre-test and post-test results across three abilities: Knowledge, Understanding, and Application. In case of Knowledge, the percentage of proficient students increased (from

Figure 30: Class-4 Students' Learning Levels in Math in Chhatok Upazila



25.8% to 50%), while the percentage of poor category students decreased (57.8% to 11%). In Understanding, percentage of proficient students increased from 46.6% to 69.9%, and poor category students decreased from 19.1% to 7.5%. Application shows the most notable change, with percentage of proficient student increasing from a mere 3.1% to 14.2%, and poor category decreasing from 45.8% to 14.4%. Overall, the total percentage of proficient students increased from 4.5% to 19.2%, and the total percentage of poor students decreased from 27.6% to 8.7%. indicating substantial progress of students of Chhatok in Math.

According to Figure-31, students' foundational abilities in Math has increased significantly in Nageshwar Upazila. In Knowledge, the percentage of proficient students increased (from 17.6% to 57%), while those considered poor decreased (from 73% to 11.3%). In Understanding, proficient students increased (from 32.3% to 65.7%), and poor category students remarkably dropped (from 34.6% to 7%). In Application, the percentage of proficiency increased (from 1.3% to 18.3%), and poor category decreased (from 45.7% to 17.6%). Overall, the total percentage of proficient students increased (from 1.6% to 22%), and the total percentage of poor students decreased (from 34.3% to 6.7%) which indicates substantial progress of the students of Nageshwari Upazilla in math achievement levels from pre-test to post-test.

Figure 31: Class-4 Students' Learning Levels in Math Nageshwari Upazila

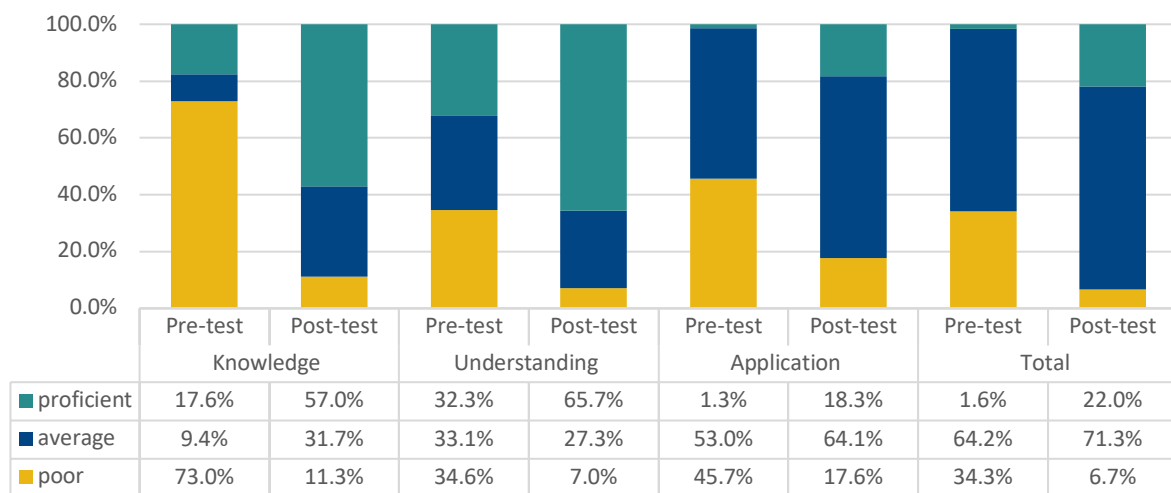
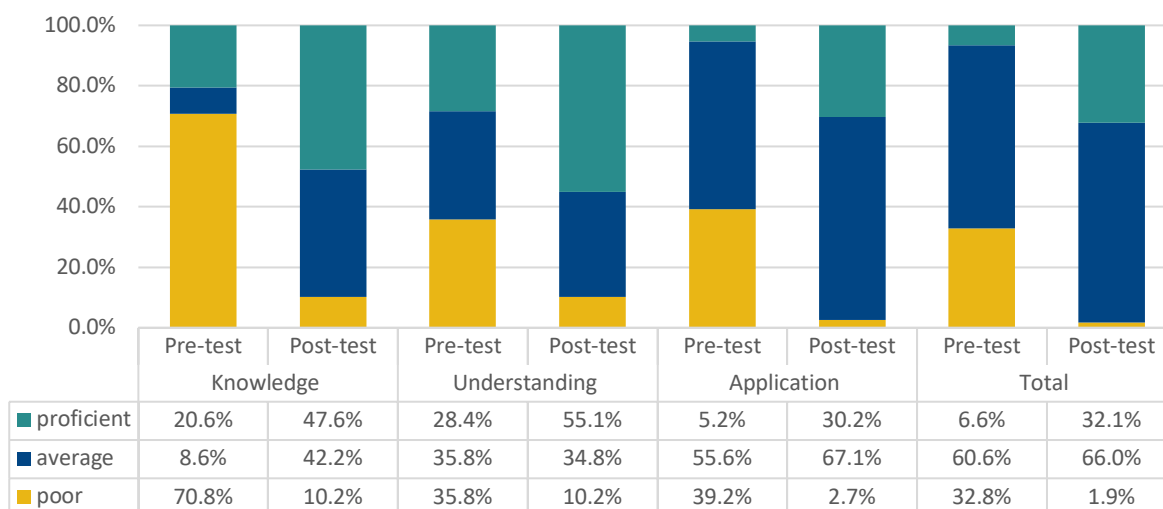


Figure-32 shows the achievement levels of Class-4 students in Math in Bandarban Sadar Upazila, in both pre-test and post-test results across three abilities: Knowledge, Understanding, and Application. In case of Knowledge, the percentage of proficient students increased (20.6% to 47.6%), while those considered poor decreased (70.8% to 10.2%). In Understanding, percentage of proficient students increased (from 28.4% to 55.1%), and poor category students dropped (35.8% to 10.2%). In Application, the percentage of proficiency increased (5.2% to 30.2%), and poor category decreased (from 39.2% to 2.7%). Overall, the total percentage of proficient students increased (6.6% to 32.1%), and the total percentage of poor students decreased (from 32.8% to 1.9%) which indicates substantial progress of the students of Bandarban Sadar Upazilla in math achievement levels from pre-test to post-test.

Figure 32: Class-4 Students' Learning Levels in Math in Bandarban Sadar Upazila



### Gender-wise comparison of Average Scaled Score in Math of Grade-4 Students

The table presents the average scaled scores of Class-4 boys and girls in the Math subject of both pre-test and post-test across three cognitive skills: Knowledge, Understanding, and Application, along with their total scores. In Knowledge, boys scores increased from 200.66 to 319.02, while girl's scores increased from 210.23 to 319.69. In understanding, boys scores improved from 265.05 to 335.13, and girls' scores increased from 269.57 to 330.98. For application, average scores of the boys increased from 205.06 to 268.46, and for girls, it increased from 208.02 to 272.20. Overall, the total scores for boys increased from 221.16 in the pre-test to 278.92 in the post-test, on the other hand for girls, from 224.78 to 281.01. The Table indicates progress in Math for both genders, with girls showing slightly higher scores both before and after the tests in all items.

Table 29: Average Scaled Scores in Math Subject for Boys and Girls of Class-4

	Knowledge		Understanding		Application		Total	
	Pre	Post	Pre	Post	Pre	Post	Pre	Post
Boys	200.66	319.02	265.05	335.13	205.06	268.46	221.16	278.92
Girls	210.23	319.69	269.57	330.98	208.02	272.20	224.78	281.01

### Gender-wise comparison of Learning Level in Math of Grade-4 Students

The table shows the achievement levels of Class-4 boys and girls in the Math subject of both pre-test and post-test across three cognitive abilities: Knowledge, Understanding, and Application, along with the total scores. In case of boys, the percentage of students in the "Poor" category decreased across all abilities: Knowledge (from 67.1 % to 9.6%), Understanding (from 27.7% to 6.5%), and Application (from 44.6% to 9.8%), leading to a

notable overall reduction (from 30.5% to 5.2%). Besides, the "Proficient" category for boys increased: Knowledge (from 20.5% to 58.5%), Understanding (from 39.5% to 68.9%), and Application (from 2.8% to 26.8%). Overall, the percentage of proficient students in boys increased (from 3.6% to 31.5%). On the other hand, for girls, similar trends can be seen. The "Poor" category gradually decreased in all three areas: Knowledge (from 62.8% to 8.8%), Understanding (from 24.9% to 6.9%) and Application (from 43.03% to 11.3%), with the total dropping from 28.9% in the pre-test to 5.2% in the post-test. The "Proficient" category for girls also increased in all three cognitive areas: Knowledge (from 24.3% to 58.2%), Understanding (from 40.3% to 69.8%), and Application (from 3.1% to 29.0%), leading to an overall rise from 4.4% in the pre-test to 33.4% in the post-test.

Table 30: Comparison of Learning Levels of Boys and Girls in Math Subject of Class-4

Gender	Level	Knowledge		Understanding		Application		Total	
		Pre	Post	Pre	Post	Pre	Post	Pre	Post
Boy	Poor	67.1%	9.6%	27.7%	6.5%	44.6%	9.8%	30.5%	5.2%
	Average	12.4%	32.0%	32.8%	24.6%	52.6%	63.4%	65.9%	63.3%
	Proficient	20.5%	58.5%	39.5%	68.9%	2.8%	26.8%	3.6%	31.5%
Girl	Poor	62.8%	8.8%	24.9%	6.9%	43.0%	11.3%	28.9%	5.2%
	Average	12.9%	33.0%	34.8%	23.3%	53.9%	59.8%	66.7%	61.4%
	Proficient	24.3%	58.2%	40.3%	69.8%	3.1%	29.0%	4.4%	33.4%

### 3.4 Comparative Analysis of Grade-5 Students' Learning Level

#### 3.4.1 Grade-5 Students' Learning Progress in Bangla

It can be observed that in the pre-test, students obtained average of 277.38 with a standard deviation of 59.88. The average increased to 319.09 (Standard deviation 56.10) in the post-test. The difference between the mean is statistically significant ( $p$ -value $<0.05$ ). Effect size in this case is 0.72, indicating a large effect of remedial program on the improvement of the averages. In knowledge abilities, student obtained 232.81 in the pre-test and 367.30 in the post-test. This difference is also significant ( $p$  value  $<0.05$ ). The progression in this case is very largely influenced by the remedial package or the intervention (Effect size  $> 0.80$ ). In understanding and application abilities, the average score also improved in the post-test significantly.

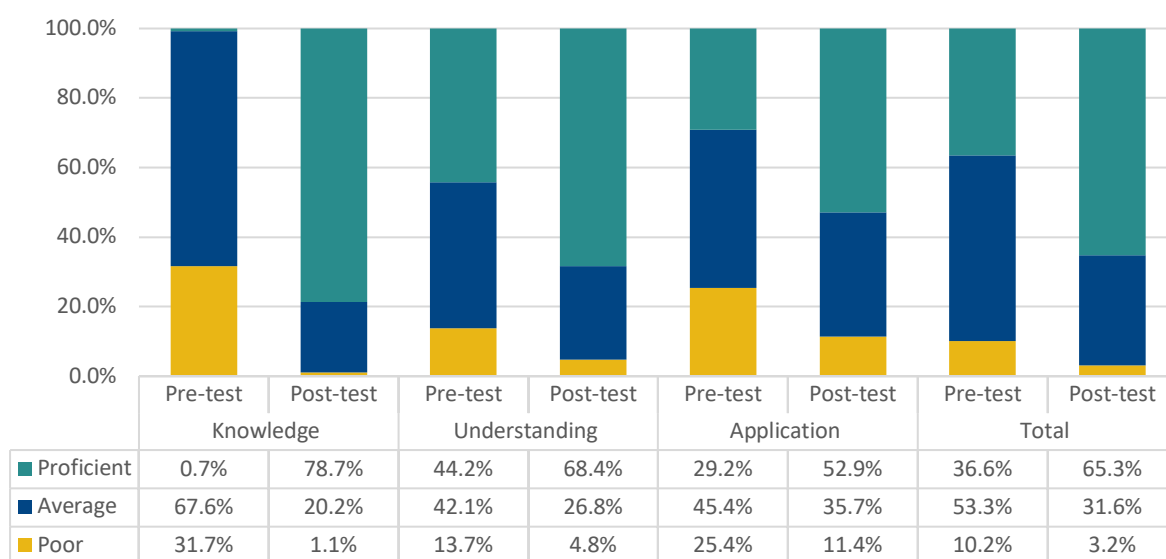
Table 31: Class-5 Average Scaled Scores in Bangla Subject

Bangla	Pre-test		Post-test		Sig.	Effect Size
	Mean	Std.	Mean	Std.		
Knowledge	232.81	56.61	367.30	63.84	.00	2.23
Understanding	284.49	74.00	325.59	66.47	.00	0.59
Application	255.55	79.15	302.05	80.75	.00	0.58
Total	277.38	59.88	319.09	56.10	.00	0.72

### Comparison Among Grade 5 Students' Learning Level in Bangla

Figure-33 shows the percentage of different learning level students in Bangla subject of class-5. It can be observed that one third of the students (36.6%) in the pre-test were proficient in Bangla. The percentage rose to 65.3% in the post-test. The percentage of student in the "average" and "poor" category decreased. More than half (53.3%) of the respondents of grade-5 were categorized as average Bangla student in the pre-test. The percentage decreased to 31.6% in the post-test. Same reduction can be seen in the percentage of "poor" category students. The figure also shows how the students' learning level improved in the post-test for different cognitive abilities. For knowledge abilities, almost none (0.7%) were proficient in the pre-test. The percentage rose to 78.7% in the post-test. Conversely, in the pre-test, it can be observed that 31.7% students were in "poor" category regarding knowledge abilities in Bangla subject. The percentage dropped to only 1.1% in the post-test. Similarly, the percentage of proficient students in both understanding and application abilities increased in the post-test and the percentage of "average" and "poor" category students decreased.

Figure 33: Learning Levels of Class-5 Students in Bangla Subject



### Upazila-wise Comparison of Average Scaled Score in Bangla of Grade 5 Students

The table shows that in Bangla the average score increased for all of the upazilas in the post-test. The average of total scores in Bangla for Goalanda upazila was 298.69 in the pre-test. The average increased to 342.96 in the post-test. For Chhatok, it was 267.96 in the pre-test and 292.87 in the post-test. In Nageshwari and Bandarban Sadar also the average of scaled score in total Bangla subject increased significantly in the post-test. The table also demonstrates the average scores in each of the cognitive abilities across four upazilas. It is observed that, for all abilities (Knowledge, Understanding and Application), the average score increased in the post-test than it is in the pre-test. For instance, in Goalanda upazila, the average score for knowledge abilities increased from 243.66 to 384.81 in the post-test. In understanding items,

the average score of Nageshwari Upazila increased the highest. It moved from 277.82 to 327.12. And for application abilities, again Nageshwari upazila progressed the highest (from 256.30 to 310.75).

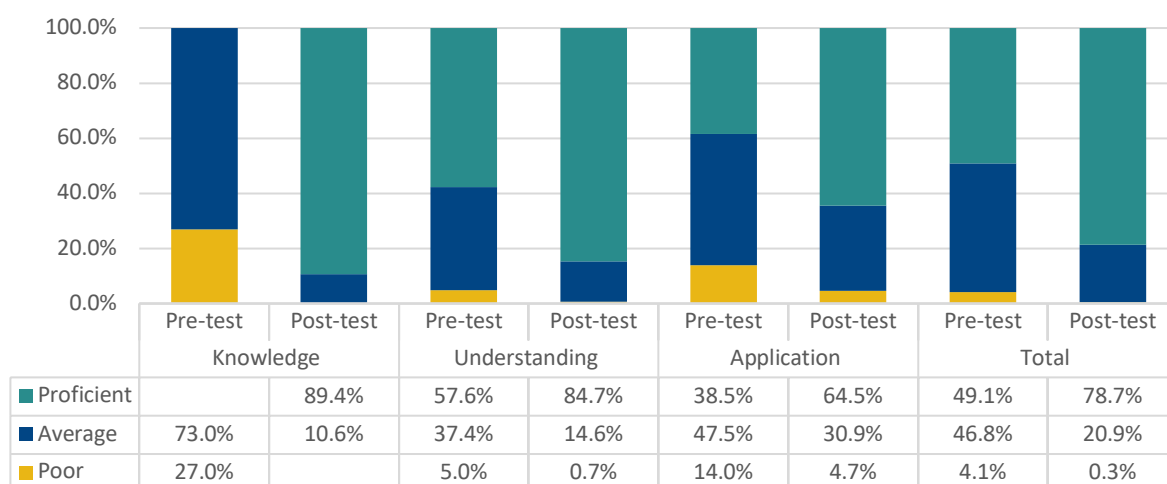
Table 32: Average Scaled Scores in Class-5 Bangla Subject Across Four Upazila

Upazila	Knowledge		Understanding		Application		Total	
	Pre	Post	Pre	Post	Pre	Post	Pre	Post
Goalanda	243.66	384.61	308.75	354.81	281.00	325.94	298.69	342.96
Chhatok	238.65	350.46	274.85	300.99	238.57	263.41	267.96	292.87
Nageshwari	213.85	371.62	277.82	327.12	256.30	310.75	272.45	322.46
Bandarban Sadar	247.72	371.21	316.16	336.16	296.14	327.31	306.62	333.83

### Upazila-wise Comparison of Learning Levels in Bangla of Grade 5 Students

The figure demonstrates the progression of learning levels in Bangla subject of Golanada's class-5 students. Considering the total score, the percentage of "Proficient" student was 49.1% in the pre-test, that climbed to 78.7% in the post-test. The percentage of "Poor" category students dropped to almost null in the post test (0.3%) from the pre-test (4.1%). For knowledge abilities. no proficient student in Bangla subject were found among Goalanda's students of class-5 in the pre-test. The percentage climbed to 89.4% in the post-test. In the pre-test, 27% students were categorized in the "Poor" category, that percentage deducted to null (0%) in the post-test. In understanding and application abilities also, same trend can be observed.

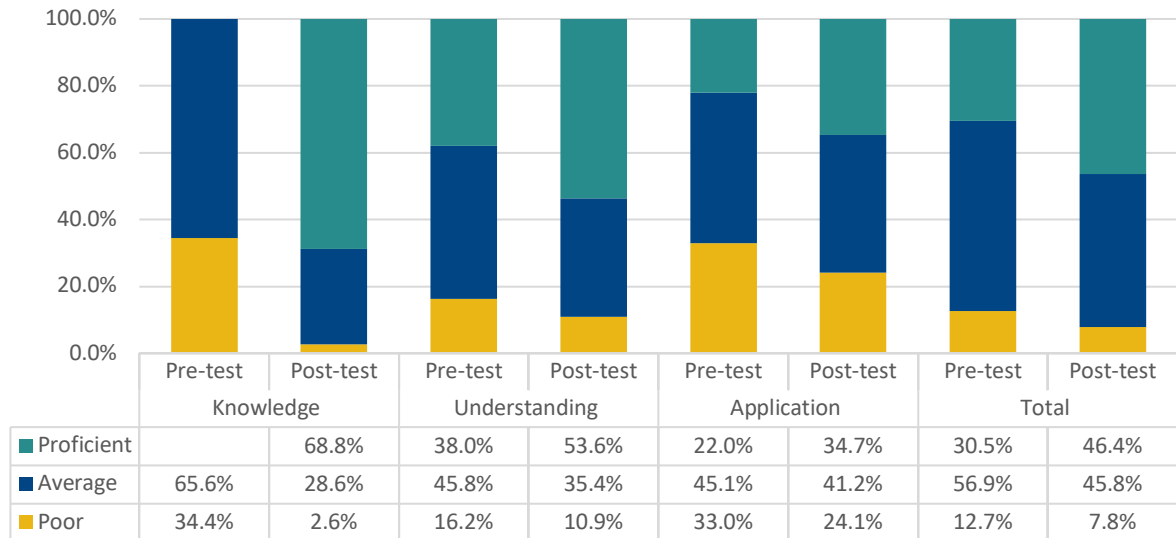
Figure 34: Class-5 Students' Learning Levels in Bangla in Goalanda Upazila



In Chhatok upazila, 30.5% of the class 5 students were proficient in the pre-test, considering the total score in Bangla subject. The percentage increased to 46.4% in the post-test. The percentage of poor category students in total scores decreased to 7.8% in the post-test from 12.7% (in the pre-test). In cognitive abilities also the percentage of proficient student increased in the post-test. For example, in knowledge abilities, no student was proficient in

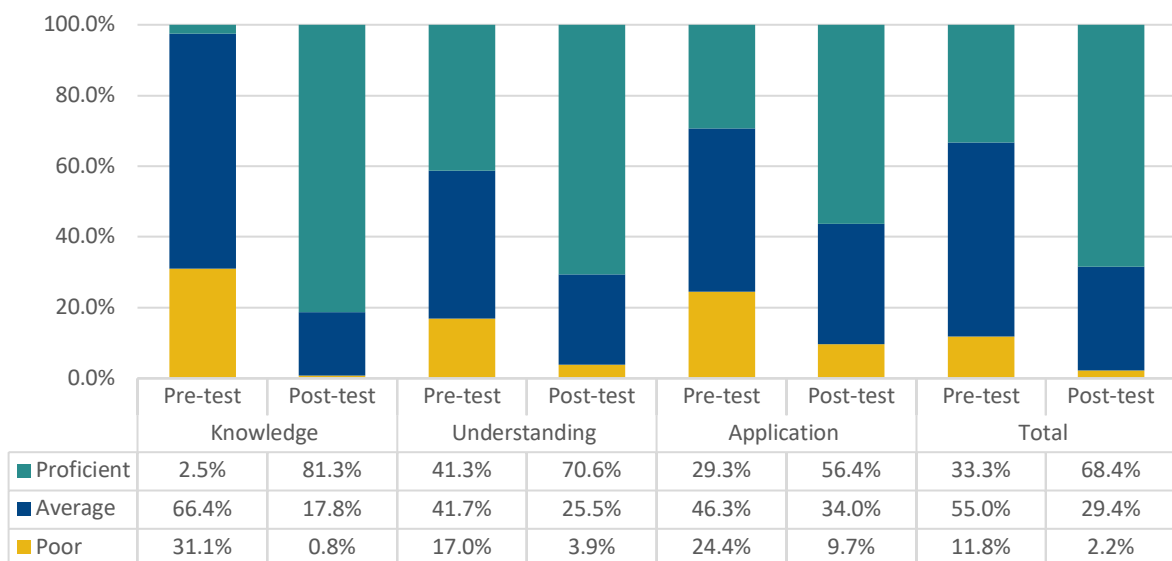
the pre-test. That proportion increased to two-third (68.8%) in the post-test. In application abilities, the improvement is lesser in this case. The proficient students' percentage was 22% in the pre-test that improved to 34.7% in the post-test.

Figure 35: Class-5 Students' Learning levels in Bangla in Chhatok Upazila



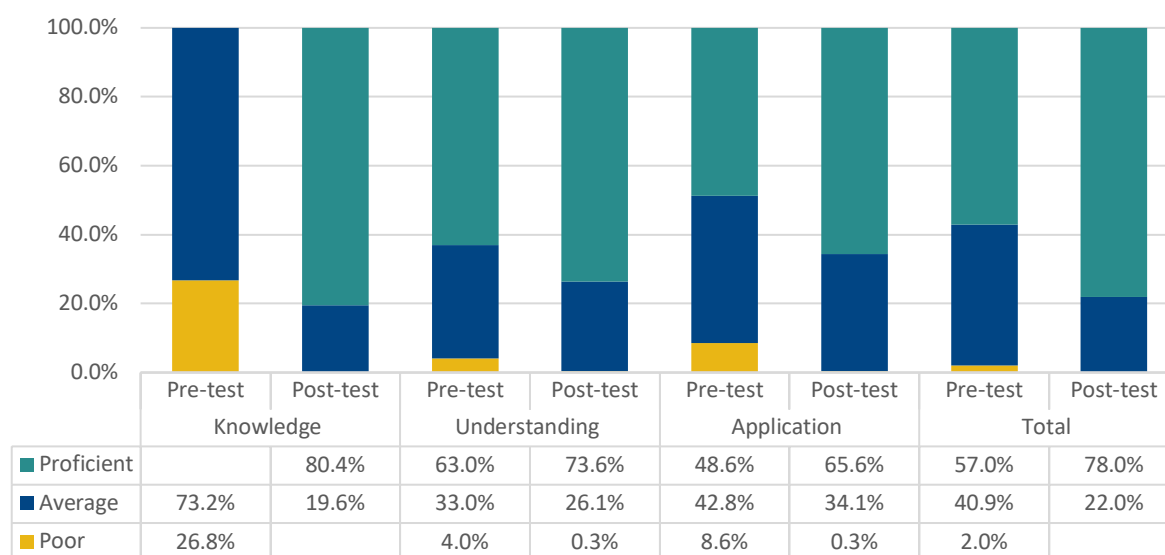
The students of Nageshwari upazila demonstrated improvement in the learning level regarding Bangla subject. The percentage of proficient student in Bangla subject was 33.3% in the pre-test, that increased to double in the post-test (68.4%). In knowledge abilities the progression of learning level is more dominating in the Nageshwari upazila. In knowledge abilities, the percentage of proficient student was just 2.5% in the pre-test. It rose to 81.3% in the post-test. The major increasement resulted a severe reduction in the percentage of "poor" category students. From 31.1%, the percentage of "poor" category students dropped to almost zero (0.8%) in the post-test.

Figure 36: Class-5 Students' Learning levels in Bangla in Nageshwari Upazila



In case of total scores in Bangla, 2% students of Bandarban sadar were categorized as “poor” students in the pre-test. The percentage dropped to null in the post-test. The percentage of proficient student increased to 78% from 57%. In knowledge abilities, no student was categorized as proficient in the pre-test. In post-test the percentage increased to 80.4%. This major increasement, caused a deduction in the percentage of “average” and “poor” category students. Whereas one-fourth of the students were categorized as “poor” student, that percentage dropped to null. In understanding and application abilities, the percentage of “poor” students dropped to almost zero (0.3%) from 4% and 8.6%, respectively.

Figure 37: Class-5 Students' Learning levels in Bangla in Bandarban Sadar Upazila



### Gender-wise Comparison of Average Scaled Score in Bangla of Grade 5 Students

The average of total scores for boys is 273.36 in the pre-test, that increased to 317.26 in the post-test. For girls similarly, the average increased to 320.68 from 280.72. Girls obtained better average scores in all abilities. But in understanding ability, the average for boys increased more than the girls, as it increased to 325.42 from 280.20, compared to the girls, whose average in the pre-test and post-test was 288.05 and 325.74, respectively.

Table 33: Average Scaled Scores in Bangla Subject for Boys and Girls of Class-5

	Knowledge		Understanding		Application		Total	
	Pre	Post	Pre	Post	Pre	Post	Pre	Post
Boys	229.98	365.39	280.20	325.42	250.15	297.79	273.36	317.26
Girls	235.15	368.96	288.05	325.74	260.02	305.77	280.72	320.68

### Gender-wise Comparison of Learning Levels in Bangla of Grade 5 Students

For boys, the percentage of proficient student increased almost double in the post-test (63.2%), as it was 34.2% in the pre-test. For girls also the percentage of proficient student increased from 38.6% to 67.1%. In all cognitive abilities, post-tests' result showed major improvement. For instance, the percentage of proficient students in knowledge abilities was almost zero for both boys (0.7%) and girls (0.8%). In the post-test, it increased to 77.3% and 80%, respectively.

Table 34: Comparison of Learning Levels of boys and girls in Bangla Subject of Class-5

Gender	Level	Knowledge		Understanding		Application		Total	
		Pre	Post	Pre	Post	Pre	Post	Pre	Post
Boy	Poor	33.8%	0.9%	15.2%	5.6%	27.5%	11.8%	11.2%	3.8%
	Average	65.5%	21.9%	43.4%	27.9%	46.2%	38.0%	54.7%	33.0%
	Proficient	0.7%	77.3%	41.4%	66.5%	26.3%	50.2%	34.2%	63.2%
Girl	Poor	29.9%	1.3%	12.5%	4.1%	23.6%	11.1%	9.3%	2.6%
	Average	69.3%	18.8%	41.0%	25.8%	44.8%	33.7%	52.1%	30.3%
	Proficient	0.8%	80.0%	46.5%	70.0%	31.6%	55.2%	38.6%	67.1%

### 3.4.2 Grade-5 Students' Learning Progress in English

Grade-5 students demonstrated a higher average of total score in English in the post-test. They obtained an average of 227.31 in the pre-test, that increased to 291.84 in the post-test. This difference is statistically significant ( $p < 0.05$ ). The effect size is 1.19, indicating a large effect of the remedial package. The differences in the averages of all cognitive abilities are significant, as the p-value is less than 0.05 in all cases. In case of application abilities, the improvement is the most. Here, average of score in the pre-test was only 160.85 that increased to 253.75 in the post-test.

Table 35: Class-5 Average Scaled Scores in English Subject

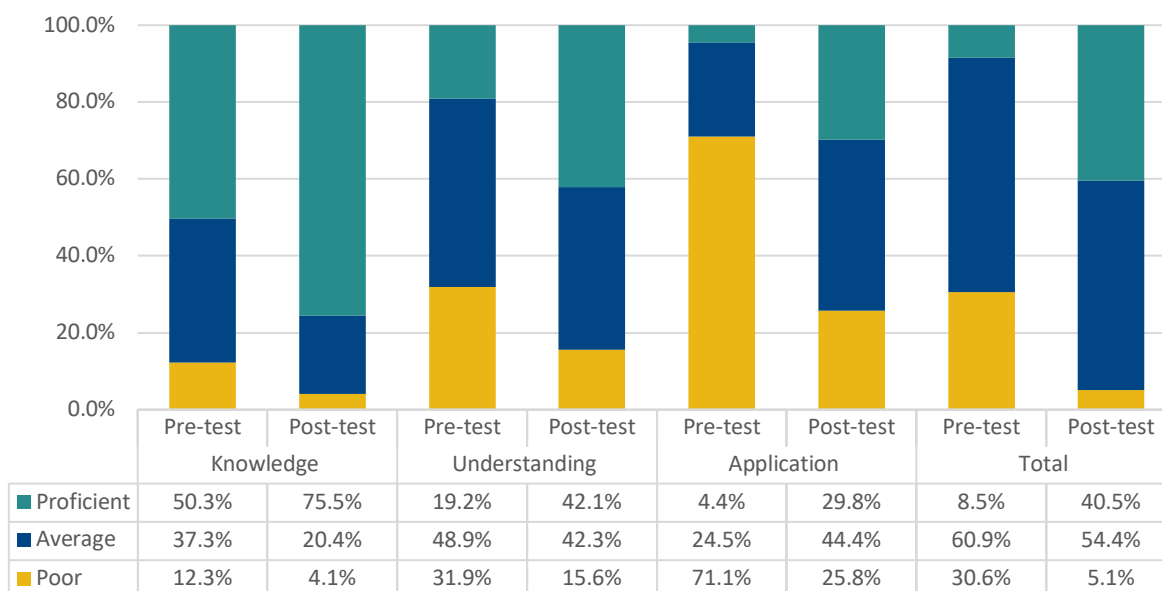
English	Pre-test		Post-test		Sig.	Effect Size
	Mean	Std.	Mean	Std.		
Knowledge	303.22	89.11	350.15	70.89	.00	0.59
Understanding	229.37	75.42	285.58	74.84	.00	0.75
Application	160.85	71.18	253.75	85.58	.00	1.19
Total	227.31	52.66	291.84	55.87	.00	1.19

### Comparison Among Grade 5 Students' Learning Level in English

The percentage of "Proficient" student, when considering the total score, increased almost five times in the post-test, as it was 8.5% in the pre-test and increased to 40.5% in the post-

test. The reduction of “Average” and “Poor” category students also occurred in the post-test of English subject among Grade-5. Almost one-third of the students (30.6%) were categorized as “Poor” students in the post-test. The percentage dropped to only 5.1% in the post-test. Similarly in cognitive abilities also, same trend can be seen, where the percentage of “Proficient” student increased, and percentage of “Average” and “Poor” students decreased.

Figure 38: Learning Levels of Class-5 Students in English Subject



#### Upazila-wise Comparison of Average Scaled Score in English of Class-5

The average of total score in English for grade-5 students increased significantly in all upzilas. But Goalanda upazila is showing the highest improvement, as the average of total score in the pre-test was 229.61 and that increased to 350.02. In case of all cognitive abilities also, Goalanda upazila obtained highest average scores in the post-test and showing the highest improvement. For instance, in application abilities, the average in the pre-test was 165.71. This average increased almost double (329.85) in the post-test.

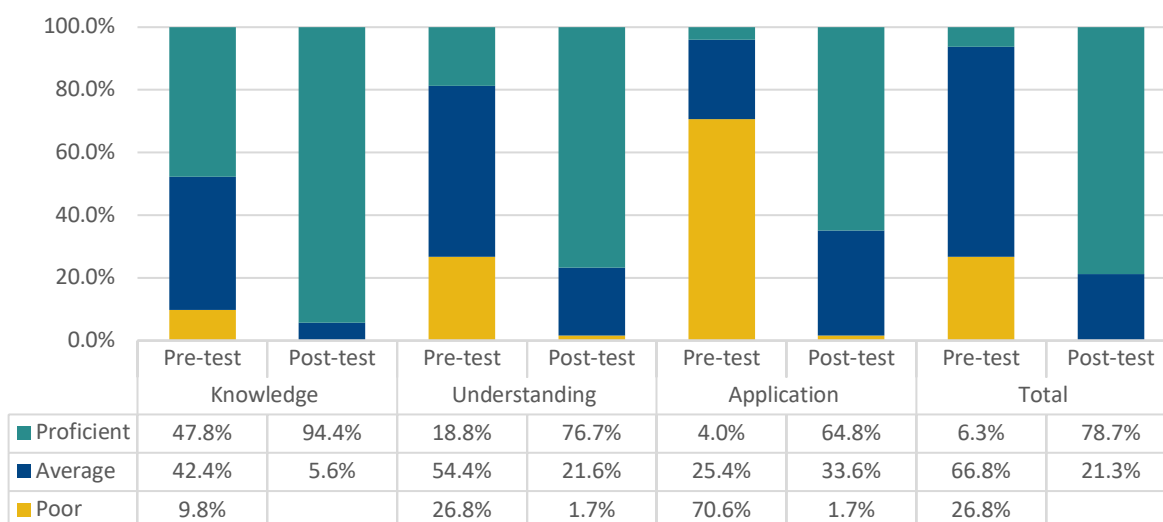
Table 36: Average Scaled Score in Class 5 English Subject in Different Upazila

Upazila	Knowledge		Understanding		Application		Total	
	Pre	Post	Pre	Post	Pre	Post	Pre	Post
Goalanda	302.63	388.11	236.53	353.09	165.71	329.85	229.61	350.02
Chhatok	319.02	330.21	237.62	260.26	159.53	224.82	234.03	269.20
Nageshwari	273.51	348.08	210.75	276.33	154.27	238.39	212.32	283.71
Bandarban Sadar	312.75	351.79	234.44	282.05	178.30	259.03	234.73	290.34

### Upazila-wise Comparison of Learning Levels in English of Grade-5 Students

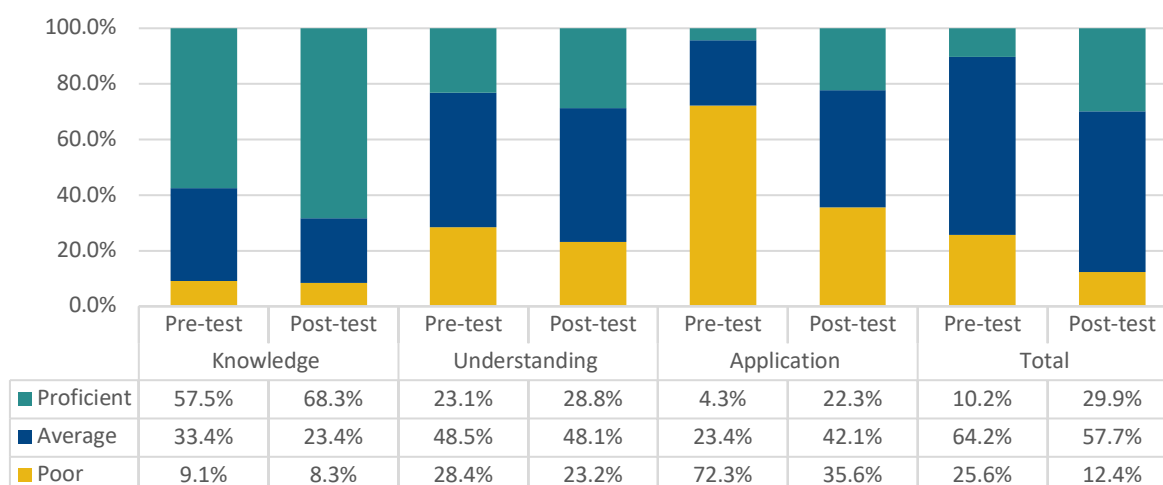
In Goalanda, the percentage of proficient students increased to 78.7% from 6.3%. No student in the post-test was found to be in the “Poor” category. In knowledge ability, the percentage of proficient student in the pre-test was 47.8%, whereas in the post-test almost all student (94.4%) transformed to be proficient student. Conversely, in the pre-test, 9.8% students were in the “Poor” category. This percentage deducted to zero in the post-test. In understanding and application abilities also, very little proportion of students (1.7% in both cases) were in the “Poor” category.

Figure 39: Class-5 Students' Learning Levels in English in Goalanda Upazila



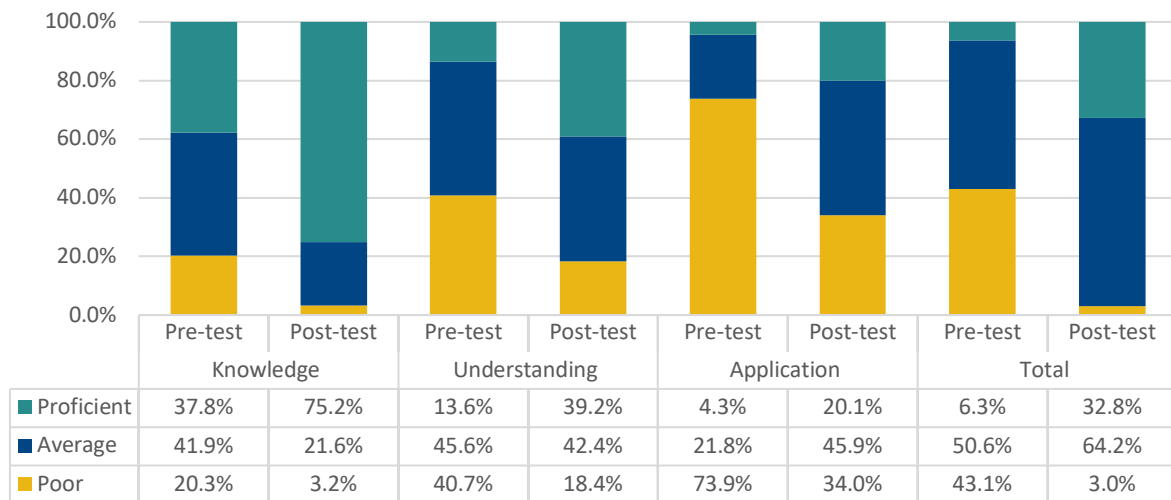
Among the class 5 students of Chhatok upazila, 10.2% students were categorized as proficient student in the pre-test of English, whereas the percentage almost tripled (29.9%) in the post-test. In knowledge ability, a little growth can be seen in the percentage of proficient students from pre-test (57.5%) to post-test (68.3%). Similar growth is seen in the understanding abilities. But only in Application ability, the percentage increased in a larger margin. In pre-test, the percentage of proficient students in the application abilities were 4.3%. This percentage is increased to 22.3% in the post-test.

Figure 40: Class-5 Students' Learning Levels in English in Chhatok Upazila



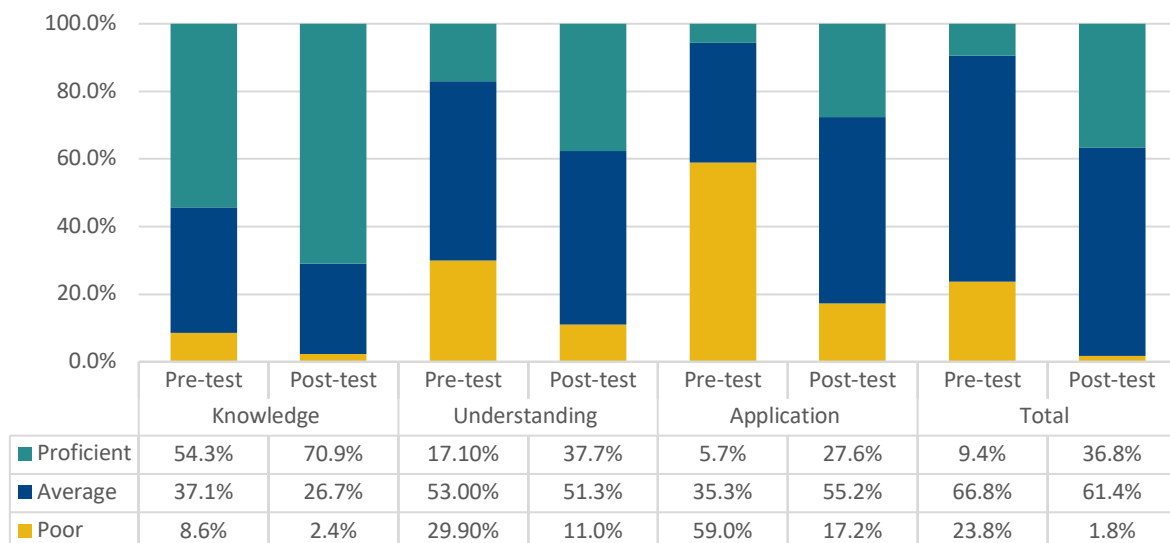
The percentage of proficient student in Nageshwari upazila increased to 32.8% in the post-test from 6.3% (pre-test). Conversely in the “Poor” category, the percentage dropped to only 3% from 43.1%. In knowledge abilities, the percentage increased almost double for “Proficient” students, from 37.8% (pre-test) to 75.2% (post-test). In understanding ability also, a major increasement occurred. In pre-test, there was only 13.6% proficient students in the pre-test, whereas the percentage tripled to 39.2%. In application abilities, the percentage of proficient student improved to 39.2% from 13.6%.

Figure 41: Class-5 Students' Learning Levels in English in Nageshwari Upazila



In Bandarban Sadar, the percentage of “Poor” category students downed to only 1.8% in the post-test from one-fourth of the students (23.8%). Majority of the students upgraded to proficient category in the post-test. This resulted an increasement in the proficient category. In the pre-test, the percentage of proficient student was 9.4%, whereas in post-test, it climbed to 46.8%. Similarly, in all cognitive abilities similar pattern can be observed. In application abilities, more than half of the students (59%) were in poor category. In the post-test, the percentage dropped to only 17.2%.

Figure 42: Class-5 Students' Learning Levels in English in Bandarban Sadar Upazila



### *Gender-wise comparison of Average Scaled Scores in English of Grade 5 Students*

The average of total scaled scores in English for boys is 226.48 in the pre-test and 292.26 in the post-test. The difference is statistically significant. For girls also, a statistically significant difference can be seen between the average of pre-test (228.01) and post-test (291.47). In understanding abilities, despite obtaining lower average in the pre-test (227.59), boys managed to achieve higher average (286.08) in the post-test, compared to the girls. In other cases, girls obtained better averages in both tests.

*Table 37: Average Scaled Scores in English Subject for Boys and Girls of Class-5*

	Knowledge		Understanding		Application		Total	
	Pre	Post	Pre	Post	Pre	Post	Pre	Post
Boys	304.05	356.05	227.59	286.08	158.63	249.98	226.48	292.26
Girls	302.52	345.06	230.84	285.15	162.70	257.01	228.01	291.47

### *Gender-wise comparison of Learning Levels in English of Grade 5 Students*

From just 8.3%, the percentage of proficient students among boys climbed to 41.3%. Similarly, the percentage increased to 39.7% from 8.7% for girls. The percentage of poor category students among boys decreased to only 5% from almost one-third (30.4%) of the students. In case of girls, the percentage also dropped in an same range. In all cognitive abilities similar trend of increasement in the proficient category and reduction in remaining learning levels can be observed.

*Table 38: Comparison of Learning Levels of Boys and Girls in English Subject of Class-5*

Gender	Level	Knowledge		Understanding		Application		Total	
		Pre	Post	Pre	Post	Pre	Post	Pre	Post
Boy	Poor	11.8%	3.5%	31.8%	16.6%	71.8%	27.0%	30.4%	5.0%
	Average	37.6%	19.3%	50.5%	40.5%	23.6%	43.9%	61.3%	53.7%
	Proficient	50.5%	77.2%	17.6%	42.9%	4.7%	29.1%	8.3%	41.3%
Girl	Poor	12.8%	4.5%	32.0%	14.8%	70.5%	24.8%	30.7%	5.3%
	Average	37.1%	21.4%	47.5%	43.8%	25.3%	44.9%	60.5%	55.0%
	Proficient	50.1%	74.1%	20.5%	41.4%	4.2%	30.3%	8.7%	39.7%

### 3.4.3 Grade-5 Students' Learning Progress in Math

A significant difference can be observed between averages of pre-test and post-test. In case of total scores, the average in the pre-test was 239.39 (Standard deviation 46.61), and in the post-test, it increased to 297.24 (Standard deviation 54.29). The effect size is 1.15, indicating a very large effect of the remedial program in this improvement. In all cognitive abilities, the average scores increased in the post-test, compared to the averages of pre-test. It mostly improved in case of application abilities. Here the average of scaled score in the pre-test was 238.66, that increased to 289.17 in the post-test. The average also improved on a very large scale in the understanding abilities, as the effect size is more than 0.80. In understanding abilities, the average increased from 287.61 to 358.52.

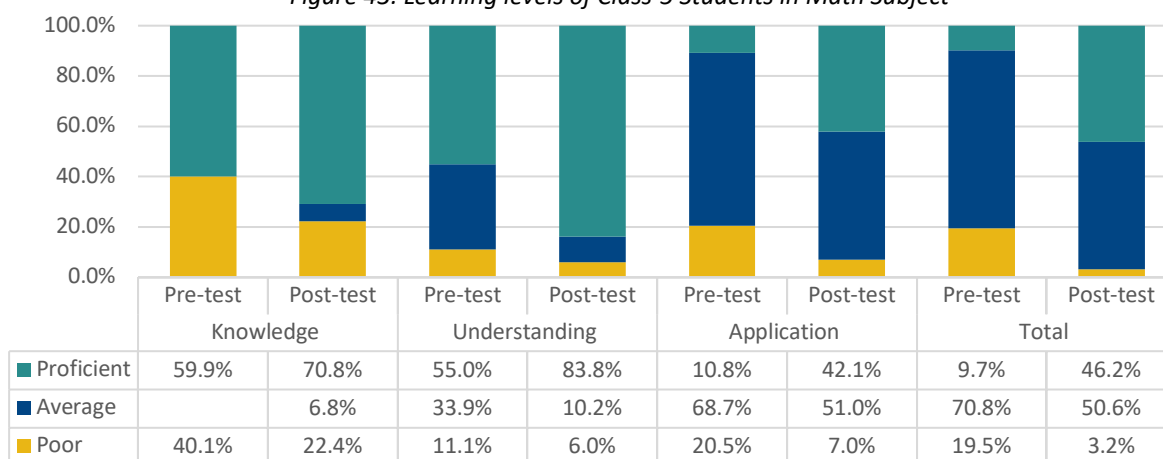
Table 39: Class 5 Average Scaled Scores in Math Subject

Math	Pre-test		Post-test		Sig.	Effect Size
	Mean	Std.	Mean	Std.		
Knowledge	281.54	130.87	335.39	105.65	.00	0.46
Understanding	287.61	94.36	358.52	74.10	.00	0.84
Application	238.66	48.56	289.17	60.30	.00	0.93
Total	239.39	46.61	297.24	54.29	.00	1.15

#### Comparison Among Grade 5 Students' Learning Level in Math

Considering the total score in English, the percentage of proficient students increased from 9.7% to almost half of the students of class 5 (46.2%). On the other hand, the percentage of poor category student decreased to 3.2% from 19.5%. In knowledge abilities, almost half of the students (40.1%) were in poor category in the pre-test. The percentage dropped to 22.4% in the post-test. This increasement resulted in increasement in the proportion of student in upper levels. There were no average students in terms of knowledge abilities in the pre-test. The percentage increased to 6.8%, along with the percentage of proficient student. In pre-test the percentage of proficient student in this ability is 50.9%, that increased to 70.8% in the post-test.

Figure 43: Learning levels of Class-5 Students in Math Subject



### Upazila-wise comparison of Average Scaled Score in Math of Grade 5 Students

Goalanda upazila demonstrated a better improvement in the average of total scaled scores in Math compared to other upazilas. In pre-test, the average was 251.74 and it increased to 353.97. This difference between the averages is statistically significant. For other upazilas also, a significant difference between the averages of both tests can be seen. In knowledge and understanding abilities, Golanda upazila showed highest average in both rests. In all cases, the average improved in the post-tests. In terms of Application abilities, Bandarban Sadar's average increased the most. In pre-test, the average was 277.31 that increased to 372.45 in the post-test.

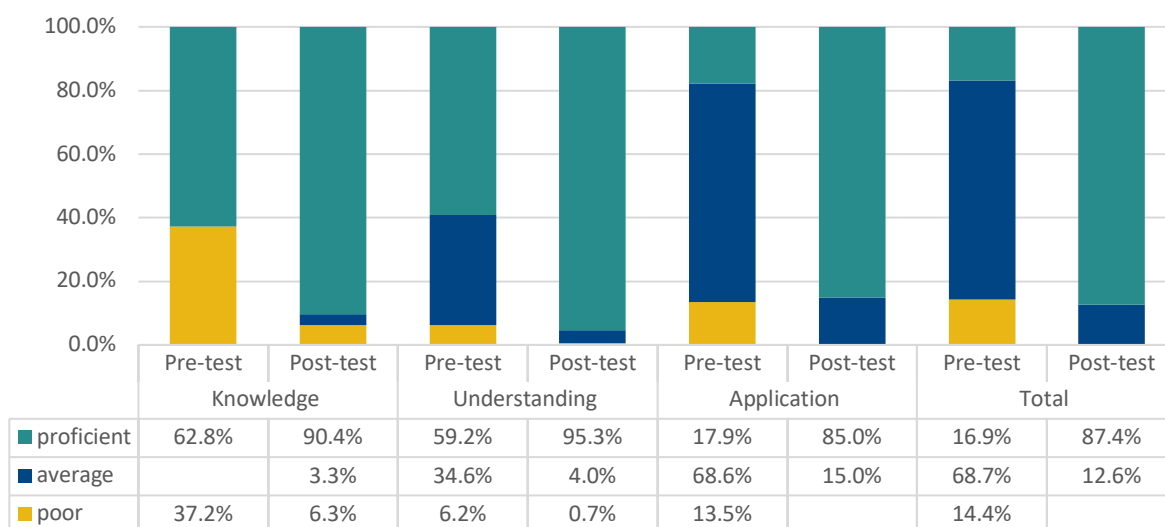
Table 40: Average Scaled Score in Class-5 Math Subject Across Four Upazila

Upazila	Knowledge		Understanding		Application		Total	
	Pre	Post	Pre	Post	Pre	Post	Pre	Post
Goalanda	287.03	379.88	303.05	387.65	252.68	350.70	251.74	353.97
Chhatok	298.28	336.38	297.51	350.29	242.60	261.59	244.38	273.68
Nageshwari	260.52	329.04	270.27	343.39	227.01	275.43	227.87	283.70
Bandarban Sadar	262.92	305.33	277.31	372.45	239.10	302.73	236.90	308.25

### Upazila-wise comparison of Learning Levels in Math of Grade 5 Students

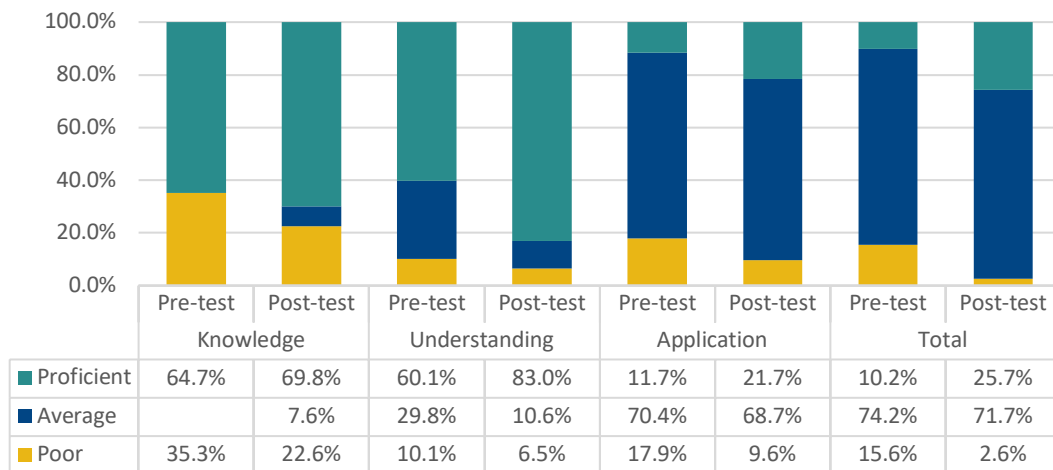
A huge portion of class 5 students of Goalanda upazila, upgraded from lower learning levels to “Proficient” category in the post-test. For instance, the percentage of poor category student in the pre-test was 14.4%, that dropped to zero. Also, the percentage of average students in math was more than two-third (68.7%). This ratio reduced to only 12.6% in the post-test. In proficient category the percentage was 16.9% that increased to 87.4% in the post-test. In understanding ability, the percentage of “Average” student dropped to only 4% from 34.6%. This resulted a higher percentage of students converted to “Proficient” category.

Figure 44: Class 5 Students' Learning Levels in Math in Goalanda Upazila



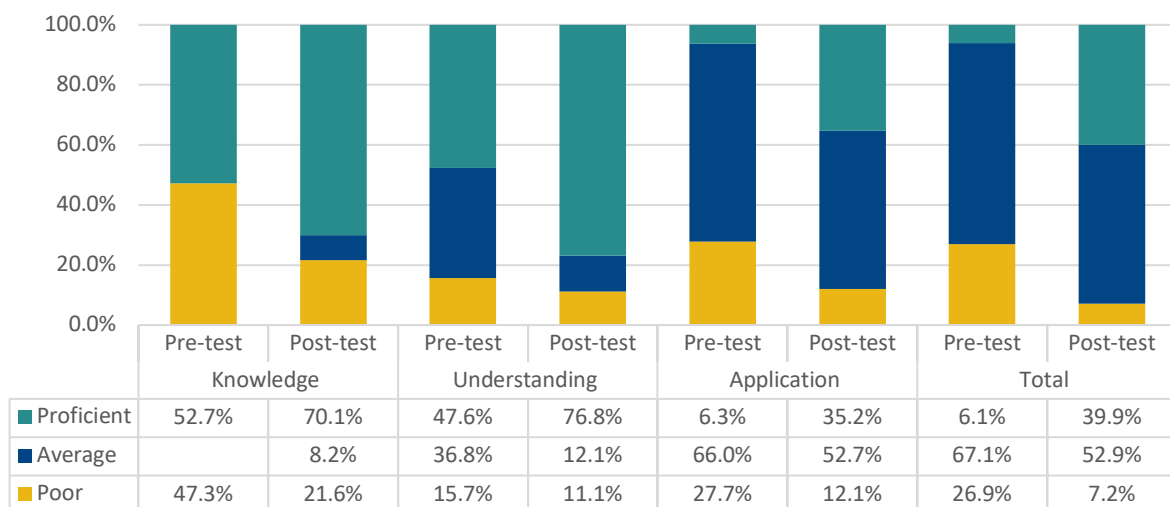
In Chhatok upazila, the percentage of proficient student increased to 25.7% from 10.2%. This increasement is lowest among all upazilas. There is no significant deduction in the percentage of “Average” students in terms of total scores of Math. In knowledge ability, the percentage of poor category reduced to 22.6% from 35.3%. In this case, the percentage of “Average” student increased from null to 7.6%. Increasement in the percentage of “Average” students is rarely seen in this assessment. In other cognitive abilities also, the percentage of proficient student increased very little in the post-test.

Figure 45: Class 5 Students' Learning Levels in Math in Chhatok Upazila



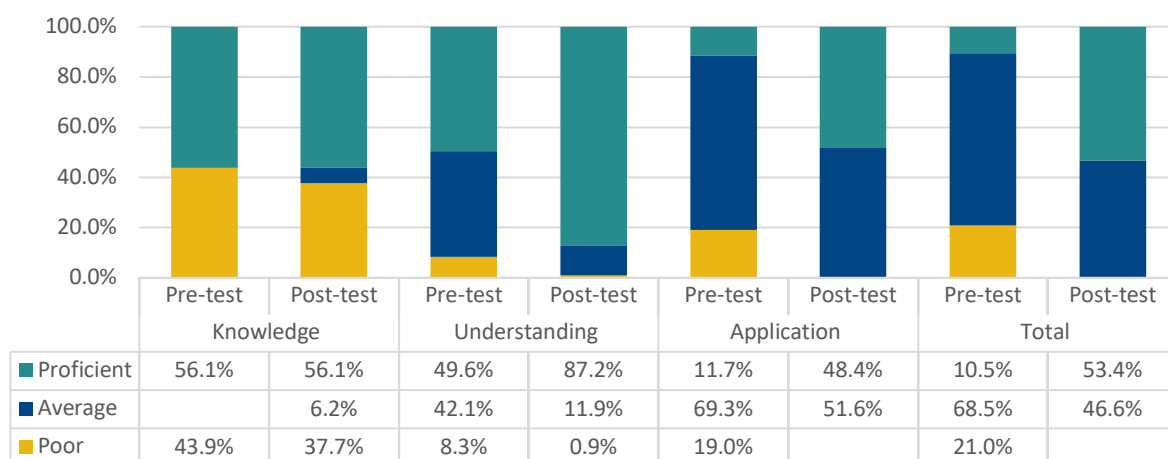
In Nageshwari upazila, the percentage of proficient student increased from 6.1% to 39.9% in the post-test. On the other hand, the percentage of poor category students dropped to only 7.2%. In knowledge abilities, the percentage of proficient students increased from 52.7% to 70.1%. Here also, the percentage of average students in the knowledge abilities increased, from 0 to 8.2%. In application abilities, only 6.3% students were proficient in Nageshwari upazila. This percentage increased to more than one-third of the students (35.2%).

Figure 46: Class 5 Students' Learning Levels in Math in Nageshwari Upazila



In Bandarban Sadar, only 10.5% students were classified as proficient in Math. In pre-test, more than half of the students (53.4%) became proficient in Math. Almost one-fourth of the student in the pre-test was categorized as “Poor” category students. This percentage reduced to zero in the post-test. No improvement or deterioration were seen in the in the percentage of proficient students in knowledge abilities. Though in understanding and application abilities the percentage increased hugely. In understanding abilities, it increased from 49.6% to 87.2%, And for application abilities, it increased to 48.4% from 11.7%. In both of this type of abilities the percentage of “Poor” category students dropped to zero (0.9% and 0, respectively).

Figure 47: Class 5 Students' Learning Levels in Math in Bandarban Sadar Upazila



#### Gender-wise comparison of Average Scaled Score in Math of Grade 5 Students

In the pre-test, boys had an average scaled score of 239.35, which increased to 298.86 in the post-test. Similarly, girls scored an average of 239.42 in the pre-test and 295.83 in the post-test. In terms of knowledge abilities, girls obtained higher average in both-tests. In understanding abilities, boys achieved average of 289.72 that increased to 361.70. In this case the average in both tests, are greater than what girls obtained. In case of all cognitive abilities, both boys and girls' average of score in the pre-test is increased in the post-test.

Table 41: Average Scaled Scores in Math Subject for Boys and Girls of Class-5

	Knowledge		Understanding		Application		Total	
	Pre	Post	Pre	Post	Pre	Post	Pre	Post
Boys	281.38	332.86	289.72	361.70	238.57	290.91	239.35	298.86
Girls	281.68	337.60	285.86	355.76	238.73	287.66	239.42	295.83

#### Gender-wise comparison of Learning Level in Math of Grade 5 Students

The percentage of proficient student among boys increased from 8.8% to 48.1% in the post-test. Similarly, among girls, the percentage increased to 44.6% from 10.6%. In this case, boys demonstrating a better performance than the girls. Similarly, in understanding and application abilities also, the percentage of proficient student increased more among boys. For instance, in application abilities, the percentage of proficient student increased from 9.5% to 45.1%. But for girls the percentage increased to 39.4% from 11.8%. On the other hand, girls

demonstrated a better increase in the percentage of proficient students in the post-test of knowledge abilities.

*Table 42: Comparison of Learning Levels of Boys and Girls in Math Subject of Class-5*

Gender	Level	Knowledge		Understanding		Application		Total	
		Pre	Post	Pre	Post	Pre	Post	Pre	Post
Boys	Poor	40.2%	23.5%	10.5%	4.6%	19.4%	6.1%	19.2%	3.2%
	Average	-	6.3%	33.7%	10.7%	71.1%	48.8%	72.0%	48.7%
	Proficient	59.8%	70.2%	55.9%	84.7%	9.5%	45.1%	8.8%	48.1%
Girls	Poor	40.1%	21.4%	11.7%	7.2%	21.4%	7.8%	19.7%	3.3%
	Average	-	7.3%	34.0%	9.8%	66.8%	52.8%	69.7%	52.2%
	Proficient	59.9%	71.3%	54.3%	83.0%	11.8%	39.4%	10.6%	44.6%

### 3.5 Observations on Field Implementation of Remedial Package

The EU-TA team had been visited few schools to oversee remedial sessions and had some discussions with the headteachers and education officials on how the remedial activities were going on at field. The observations and discussions identified some issues which might impact the effectiveness of the Remedial Package in ensuring children’s achievement of foundational competencies. The major issues are-

- ✓ Teachers didn’t group and label students based on their performance on the pre-test that’s why treating the whole class in uniform manner. Individual needs of children were found ignored during observations which is crucial for remediation and teachers were not following the instructions for delivering remedial sessions appropriately that instructed to them through the TG and training. These scenarios reflect that teachers’ training was not effective and uniform for all teachers.
- ✓ Majority teachers implementing the Remedial Sessions as regular Class activities, and they were not emphasizing on supporting children as needed. Students’ involvement in peer- learning and assessment were fully ignored in the sessions and teachers were also not aware of these. Therefore, it became difficult for a teacher to address all children especially to those who need assistance.
- ✓ Students’ low attendance in remedial classes. As the teachers were continuing the remedial sessions, few students were missing. Therefore, a need to re-conduct the sessions was found to keep all children in same pace and same learning status and proceed to the next sessions.
- ✓ Teachers were not following the central schedule of remedial sessions that supplied to them and delivering different lessons of same subject according to their own customized planning. For example, one teacher was delivering Lesson-4 for Grade-3 while another teacher was delivering Lesson-19 for the same grade. This scenario was similar for other subjects and grades too.

- ✓ Interestingly in one school, pair-teaching by two teachers was found in which one teacher was delivering the sessions and her colleague facilitating children as co-teacher to follow and perform their task accordingly. This could be a lesson for the policy makers to redesign the remedial implementation plan in future.

## Chapter Four: Conclusion and Recommendations

### 4.1 Conclusion

The first conclusion that can be drawn from this study is that students at the primary level have significant learning progress through their participation in Remedial Sessions. Their progress is evident in achieving the foundational competencies regardless of cognitive abilities: Knowledge, Understanding and Application.

There was a positive impact found across the subjects in minimizing learning divides among the children irrespective of their grades. Expectedly, significant number of students under the “poor” during pre-test moved to “average” or “proficient” level in all grades during post-test. The improvement is found most in Goalanda Upazila and least in Chhatok Upazila. In terms of cognitive abilities, children’s progress is found significantly higher in application abilities, regardless of upazila and gender.

There was a need to strengthen understanding among teachers on remedial sessions conduction procedures. Although, the teachers had no clear understanding initially, it has improved having second phase orientation. During second orientation with the headteachers, it was found misconceptions about remedial activity implementation and inconsistency of session completion in all four Upazilas. The headteachers argued for clear instruction of remedial program and continuous monitoring and mentoring support which led them to run the program effectively.

Lastly, it was expected that all children must secure the fundamental competencies as a result of participating in remedial sessions. However, some children could not assure their proficiency, which needs further investigations about the implementation procedure of Remedial Package, regular participation of children in remedial sessions, capacity of teachers, and the package itself.

Policymakers can consider policies and strategies to implement the whole package as suggested providing all necessary supports to the school. This study identifies some relevant strategies: screening the students and identify their level, teaching to the level of each student, extending the teaching time, and continuous assessment and monitoring learning. In addition, since the curriculum framework has been reformed, a rigorous analysis of new curriculum framework would help to contextualize the fundamental competencies and then review the existing TLMs to align.

### 4.2 Recommendations

According to this study, students in all primary grades have significant improvement in attaining the foundational competencies of the three major subjects. Based on the quantitative findings of this assessment and observations and discussions, several recommendations are subsequently put forward to address these issues.

**Firstly**, DPE, NCTB and NAPE need to jointly formulate a Remedial Education Implementation Framework containing strategies to overcome the learning gaps. Since, understanding the current learning status of children is prerequisite to remedy, the empirical findings of this study will assist DPE to plan in the following aspects-

- Teacher training needs to be ensured and effectively delivered through extending duration and involving experts in face-to-face mode.
  - More emphasize on strategies of labelling students through diagnosis
  - Focusing on remedial sessions conduction strategies
  - Prioritizing on continuous assessment for monitoring learning progress
- Regular review and/or revise the existing TLMs and Teacher Instruction Guide in line with new curriculum framework.
  - More focus on fundamental skills, especially in literacy and numeracy
  - Student-centred instructional strategies (e.g., joyful learning using different teaching-learning materials; activity-based learning; and formative assessment)
- Development of a scheme for monitoring and mentoring support both teachers and students.

**Secondly**, strategies formulated by DPE and MoPME need to be implemented in the real context. For instance,

- Workshops, trainings, meetings and campaigns need to be organised to ensure that stakeholders are fully aware of their roles including parents and community.
- UEOs/URCIs need to monitor and mentor the teachers by maintaining cooperative, collaborative and cordial relationships with them.

**Finally**, further empirical research focusing on opportunities and challenges needs to be conducted to investigate the efficacy and effectiveness of the Remedial Education Package along with its strategies prior to nation-wide implementation.

## Annex A: Recovery Action Plan

Aspects	Description	Responsible	Strategies	Resource required	Benefits	Challenges	Way forwards
<b>Timing</b>	<ul style="list-style-type: none"> <li>✓ Before regular class (Double shift school)</li> <li>✓ After regular class (Single shift school)</li> </ul>	<ul style="list-style-type: none"> <li>✓ HT</li> <li>✓ UEO</li> <li>✓ AUEO</li> </ul>	<ul style="list-style-type: none"> <li>✓ In collaboration with the local authority</li> <li>✓ In collaboration with parents</li> </ul>	<ul style="list-style-type: none"> <li>✓ 03 Classrooms</li> </ul>	<ul style="list-style-type: none"> <li>✓ Individual teacher can deal with individual grade</li> <li>✓ Easier to achieve set goals</li> </ul>	<ul style="list-style-type: none"> <li>✓ Managing classrooms</li> <li>✓ Monitoring and supervision</li> </ul>	<ul style="list-style-type: none"> <li>✓ Use the period of non-scholastic subject</li> <li>✓ Concern field official</li> <li>✓ Ensure accountability</li> <li>✓ Rewarding</li> </ul>
<b>Weekly sessions</b>	<ul style="list-style-type: none"> <li>✓ Total 05 in each week for each grade                             <ul style="list-style-type: none"> <li>- 02 for Bangla</li> <li>- 02 for Math</li> <li>- 01 for English</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>✓ Subject teacher</li> <li>✓ HT</li> <li>✓ UEO</li> <li>✓ AUEO</li> </ul>	<ul style="list-style-type: none"> <li>✓ In collaboration with the field official</li> <li>✓ Considering needs</li> </ul>	<ul style="list-style-type: none"> <li>✓ 03 Classrooms in each day</li> </ul>	<ul style="list-style-type: none"> <li>✓ Individual teacher can deal with individual grade</li> </ul>	-	<ul style="list-style-type: none"> <li>✓ Active supervision and monitoring by local education officials</li> </ul>
<b>Screening students</b>	<ul style="list-style-type: none"> <li>✓ Before starting remedial program</li> <li>✓ Categorizing students</li> </ul>	<ul style="list-style-type: none"> <li>✓ Subject teacher</li> <li>✓ HT</li> <li>✓ UEO</li> <li>✓ AUEO</li> </ul>	<ul style="list-style-type: none"> <li>✓ Conduct diagnostic assessment on foundation skills</li> </ul>	<ul style="list-style-type: none"> <li>✓ Diagnostic test/tools</li> </ul>	<ul style="list-style-type: none"> <li>✓ Students' needs will be identified</li> <li>✓ Need based supports will be ensured</li> </ul>	<ul style="list-style-type: none"> <li>✓ Proper utilization of screening tools and select exact learners</li> </ul>	<ul style="list-style-type: none"> <li>✓ AT/HT/Supervisors need to be trained</li> </ul>
<b>Facilitation modalities</b>	Teacher led instruction	Grade specific subject teacher	<ul style="list-style-type: none"> <li>✓ Facilitate students in large group</li> <li>✓ Form small group and provide tasks on needs</li> <li>✓ Follow instruction guide</li> </ul>	<ul style="list-style-type: none"> <li>✓ Worksheet</li> <li>✓ Activity sheet</li> <li>✓ Take-home assignment</li> </ul>	Better teacher-learning activities in known contents and competencies	<ul style="list-style-type: none"> <li>✓ Availability of teachers as per required time</li> </ul>	<ul style="list-style-type: none"> <li>✓ Allocation of budget for printing the worksheets/ activity sheets</li> <li>✓ Within the school time, class routine may be rescheduled</li> </ul>
	Teacher led instruction + Child to Child (C2C) guided by teacher	Grade specific subject teacher	<ul style="list-style-type: none"> <li>✓ Form small group and provide tasks on needs</li> <li>✓ Assign advanced student to each group to facilitate</li> <li>✓ Monitor group activities</li> <li>✓ Follow instruction guide</li> </ul>	<ul style="list-style-type: none"> <li>✓ Worksheet</li> <li>✓ Activity sheet</li> <li>✓ Take-home assignment</li> </ul>	<ul style="list-style-type: none"> <li>✓ Reduce teacher load</li> <li>✓ Increase interaction, leadership and understanding</li> <li>✓ Initiate collaborative learning</li> </ul>	<ul style="list-style-type: none"> <li>✓ Engage student</li> <li>✓ Monitoring</li> </ul>	<ul style="list-style-type: none"> <li>✓ Allocation of budget for printing the worksheets/ activity sheets</li> <li>✓ Motivation/mentoring by AT/HT and parent</li> </ul>
	Teacher led instruction + Child to Child (C2C) guided by teacher + ICT supported facilitation (If available)	DPE, NCTB	Upload digital contents on govt. platform	Digitalized contents	<ul style="list-style-type: none"> <li>✓ Easily to present</li> <li>✓ Time-saving</li> <li>✓ Repeated use</li> </ul>	Lack of ICT equipment	<ul style="list-style-type: none"> <li>✓ Use ICT equipment (If available)</li> <li>✓ Encourage to use</li> <li>✓ Use existing digital contents</li> </ul>
<b>Capacity Building</b>	<ul style="list-style-type: none"> <li>✓ Training of subject teachers on remedial program</li> <li>✓ Training HT/UEO/AUEO/URCI/AURCI/ADPEO on</li> </ul>	DPE	<ul style="list-style-type: none"> <li>✓ One-day in-person or online training</li> <li>✓ One-day in-person or online training</li> </ul>	<ul style="list-style-type: none"> <li>✓ Training program and material</li> <li>✓ Instructional guide</li> </ul>	<ul style="list-style-type: none"> <li>✓ Teachers will be trained for facilitating remedial package</li> <li>✓ Officials will be oriented about their roles in supervision and</li> </ul>	<ul style="list-style-type: none"> <li>✓ Conduct training for all teachers and officials before starting remedial program</li> </ul>	<ul style="list-style-type: none"> <li>✓ Set accountability/ monitoring</li> <li>✓ Assign focal point at district level</li> <li>✓ Initiate training program as early as possible</li> </ul>

Aspects	Description	Responsible	Strategies	Resource required	Benefits	Challenges	Way forwards
	supervision and monitoring				monitoring remedial program		
<b>Student Assessment and Progress Tracking</b>	<ul style="list-style-type: none"> <li>✓ Assessment of progress and record keeping</li> <li>✓ Regular monitoring of students' progress</li> <li>✓ Periodic monitoring of students' progress</li> </ul>	<ul style="list-style-type: none"> <li>✓ Subject teacher</li> <li>✓ HT</li> <li>✓ UEO &amp; URC officials</li> <li>✓ ADPEO/Asst. Super of PTI</li> </ul>	<ul style="list-style-type: none"> <li>✓ Teachers will assess students' progress as well as their difficulties on regular basis</li> <li>✓ Teachers will keep students' progress records using the supplied tracking tools</li> <li>✓ Teachers will store the evidence related students' learning recovery using the App</li> <li>✓ HT will monitor students' progress at least twice in a week</li> <li>✓ UEO/AUEO/URCI/AURCI will monitor the remedial activities twice in a month</li> <li>✓ ADPEO/Asst. Super of PTI will monitor the remedial activities twice in month</li> </ul>	<ul style="list-style-type: none"> <li>✓ Continuous assessment guideline</li> <li>✓ Monitoring tools</li> <li>✓ App</li> </ul>	<ul style="list-style-type: none"> <li>✓ Teacher can track the learning progress of learners and assist them to ensure achievement</li> </ul>	<ul style="list-style-type: none"> <li>✓ Proper assessment and tracking</li> <li>✓ Record keeping</li> <li>✓ Ensure monitoring of all schools</li> </ul>	<ul style="list-style-type: none"> <li>✓ Develop monitoring tools/checklist</li> <li>✓ Develop apps for monitoring record storing</li> </ul>
<b>Parental and Community involvement</b>	<ul style="list-style-type: none"> <li>✓ Involvement of parents/ siblings/ academic caregivers through awareness development</li> <li>✓ Monthly meeting with Parents</li> <li>✓ Weekly meeting with SMC/PTA</li> <li>✓ Monthly meeting with community people including elites</li> </ul>	<ul style="list-style-type: none"> <li>✓ HT</li> <li>✓ AT</li> <li>✓ UEO</li> </ul>	<ul style="list-style-type: none"> <li>✓ Special meeting with targeted parents</li> <li>✓ Involvement of local elite.</li> </ul>	<ul style="list-style-type: none"> <li>✓ No specific resource required</li> </ul>	<ul style="list-style-type: none"> <li>✓ Motivated parents/ learners/community</li> </ul>	<ul style="list-style-type: none"> <li>✓ Engagement of parents and community members</li> </ul>	<ul style="list-style-type: none"> <li>✓ Build awareness by AT/HT/UEO</li> </ul>
<b>Maintain Student Dairy</b>	<ul style="list-style-type: none"> <li>✓ Each student will have diary to keep records about learning progress</li> <li>✓ The diary will show students' learning, existing gaps and feedback to meet the gaps</li> </ul>	<ul style="list-style-type: none"> <li>✓ Subject teacher</li> </ul>	<ul style="list-style-type: none"> <li>✓ Subject Teacher will write in the dairy</li> </ul>	<ul style="list-style-type: none"> <li>✓ A well-structured diary mentioning specific aspects</li> </ul>	<ul style="list-style-type: none"> <li>✓ Teacher-student; student-parent; and teacher-parent collaboration in minimizing learning gaps</li> </ul>	<ul style="list-style-type: none"> <li>✓ Purchase dairy</li> <li>✓ Management</li> <li>✓ Ensure parent's contribution</li> </ul>	<ul style="list-style-type: none"> <li>✓ Funding for printing or purchasing dairy</li> <li>✓ Motivating parents</li> </ul>

Aspects	Description	Responsible	Strategies	Resource required	Benefits	Challenges	Way forwards
	<ul style="list-style-type: none"> <li>✓ The diary will parent's role in their child's learning focusing target and tasks</li> </ul>						
<b>Process Documentation &amp; Evaluation</b>	<ul style="list-style-type: none"> <li>✓ Students' performance on screening will be documented</li> <li>✓ Remedial activities at field will be observed</li> <li>✓ Implementation of activities along with challenges will be investigated</li> <li>✓ A diagnostic test will be administered at the end of remedial package</li> </ul>	<ul style="list-style-type: none"> <li>✓ DPE</li> <li>✓ DP</li> <li>✓ NCTB</li> <li>✓ NAPE</li> <li>✓ ADPEO</li> <li>✓ UEO</li> <li>✓ HT</li> </ul>	<ul style="list-style-type: none"> <li>✓ Students' performance on screening will be used as baseline data</li> <li>✓ Remedial activities at field will be observed randomly by different officials and observed information will be shared with the DPE</li> <li>✓ Implementation of activities along with challenges will be noted by different officials and shared with the DPE</li> <li>✓ The diagnostic test results will be treated as the endline data</li> <li>✓ Effectiveness of remedial will be assessed comparing students' performance in baseline and endline.</li> </ul>	<ul style="list-style-type: none"> <li>✓ Observation protocol</li> <li>✓ Diagnostic test</li> </ul>	<ul style="list-style-type: none"> <li>✓ Authority will identify the appropriateness of the remedial package and implementation challenges</li> <li>✓ Effectiveness of the package will be measured</li> <li>✓ Findings will help to finalize the remedial package</li> </ul>	<ul style="list-style-type: none"> <li>✓ Proper diagnosis</li> <li>✓ Active observation and investigation</li> </ul>	<ul style="list-style-type: none"> <li>✓ AT/HT/Supervisors need to be trained</li> <li>✓ Observers and investigators need to be trained</li> <li>✓ Involvement an expert to lead the documentation and evaluation for whole piloting period</li> </ul>
<b>Celebrating Achievement</b>	<ul style="list-style-type: none"> <li>✓ Recovery of learning will be celebrated within a district as well as centrally</li> </ul>	<ul style="list-style-type: none"> <li>✓ DPE</li> <li>✓ DPEO</li> </ul>	<ul style="list-style-type: none"> <li>✓ Based on students' performance on diagnostic assessment at the end of remedial program best performing schools will be awarded</li> </ul>	<ul style="list-style-type: none"> <li>✓ Incentive</li> <li>✓ Certificate</li> </ul>	<ul style="list-style-type: none"> <li>✓ Higher engagement and motivation of schools and teachers</li> <li>✓ Acceleration in implementation</li> </ul>	<ul style="list-style-type: none"> <li>✓ Teacher selection and distribution</li> </ul>	<ul style="list-style-type: none"> <li>✓ Subject based trained teachers will be engaged or rotationally all teachers may involve</li> </ul>

## Annex B: Detailed Sessions Schedule for Remedial Program

### রিমেডিয়াল শিক্ষা পাইলট কার্যক্রম

#### বিস্তৃত সময়সূচি

রিমেডিয়াল ক্লাস শুরু: ২১ জানুয়ারি ২০২৪

রিমেডিয়াল ক্লাস শেষ: ৩০ এপ্রিল ২০২৪

মোট কর্মদিবস: ৪২ দিন

এক শিফটে পরিচালিত বিদ্যালয়ের জন্য

ক্রম	তারিখ	৩য় শ্রেণি	৪র্থ শ্রেণি	৫ম শ্রেণি
জানুয়ারি ২০২৪				
১	২১/০১/২৪ (রবিবার)	বাংলা: ১২.১০-০১.০০ গণিত: ০১.৫০-০২.৪০	বাংলা: ০২.৪০-০৩.৩০ গণিত: ০৩.৩০-০৪.১৫	গণিত: ০২.৪০-০৩.৩০ ইংরেজি: ০৩.৩০-০৪.১৫
২	২২/০১/২৪ (সোমবার)	গণিত: ০১.৫০-০২.৪০	ইংরেজি: ০১.৫০-০২.৪০ গণিত: ০২.৪০-০৩.৩০	বাংলা: ০১.৫০-০২.৪০ ইংরেজি: ০২.৪০-০৩.৩০
৩	২৩/০১/২৪ (মঙ্গলবার)	বাংলা: ১২.১০-০১.০০ ইংরেজি: ০১.৫০-০২.৪০	বাংলা: ০২.৪০-০৩.৩০ গণিত: ০৩.৩০-০৪.১৫	গণিত: ০২.৪০-০৩.৩০ বাংলা: ০৩.৩০-০৪.১৫
৪	২৪/০১/২৪ (বুধবার)	বাংলা: ০১.৫০-০২.৪০	ইংরেজি: ০১.৫০-০২.৪০ বাংলা: ০২.৪০-০৩.৩০	গণিত: ০১.৫০-০২.৪০ ইংরেজি: ০২.৪০-০৩.৩০
৫	২৫/০১/২৪ (বৃহস্পতিবার)	বাংলা: ১২.১০-০১.০০ গণিত: ০১.৫০-০২.৪০	-	-
৬	২৮/০১/২৪ (রবিবার)	বাংলা: ১২.১০-০১.০০ ইংরেজি: ০১.৫০-০২.৪০	বাংলা: ০২.৪০-০৩.৩০ গণিত: ০৩.৩০-০৪.১৫	গণিত: ০২.৪০-০৩.৩০ বাংলা: ০৩.৩০-০৪.১৫
৭	২৯/০১/২৪ (সোমবার)	গণিত: ০১.৫০-০২.৪০	ইংরেজি: ০১.৫০-০২.৪০ গণিত: ০২.৪০-০৩.৩০	বাংলা: ০১.৫০-০২.৪০ ইংরেজি: ০২.৪০-০৩.৩০
৮	৩০/০১/২৪ (মঙ্গলবার)	বাংলা: ১২.১০-০১.০০ ইংরেজি: ০১.৫০-০২.৪০	বাংলা: ০২.৪০-০৩.৩০ গণিত: ০৩.৩০-০৪.১৫	গণিত: ০২.৪০-০৩.৩০ ইংরেজি: ০৩.৩০-০৪.১৫
৯	৩১/০১/২৪ (বুধবার)	গণিত: ০১.৫০-০২.৪০ ইংরেজি: ০২.৪০-০৩.৩০	ইংরেজি: ০১.৫০-০২.৪০ বাংলা: ০২.৪০-০৩.৩০	বাংলা: ০১.৫০-০২.৪০ গণিত: ০২.৪০-০৩.৩০
ফেব্রুয়ারি ২০২৪				
১০	০১/০২/২৪ (বৃহস্পতিবার)	বাংলা: ১২.১০-০১.০০ গণিত: ০১.৫০-০২.৪০	-	-
১১	০৪/০২/২৪ (রবিবার)	বাংলা: ১২.১০-০১.০০ ইংরেজি: ০১.৫০-০২.৪০	বাংলা: ০২.৪০-০৩.৩০ গণিত: ০৩.৩০-০৪.১৫	গণিত: ০২.৪০-০৩.৩০ বাংলা: ০২.৩০-০৪.১৫
১২	০৫/০২/২৪ (সোমবার)	গণিত: ০১.৫০-০২.৪০	ইংরেজি: ০১.৫০-০২.৪০ গণিত: ০২.৪০-০৩.৩০	বাংলা: ০১.৫০-০২.৪০ ইংরেজি: ০২.৪০-০৩.৩০
১৩	০৬/০২/২৪ (মঙ্গলবার)	বাংলা: ১২.১০-০১.০০ ইংরেজি: ০১.৫০-০২.৪০	বাংলা: ০২.৪০-০৩.৩০ গণিত: ০৩.৩০-০৪.১৫	গণিত: ০২.৪০-০৩.৩০ বাংলা: ০৩.৩০-০৪.১৫
১৪	০৭/০২/২৪ (বুধবার)	গণিত: ০১.৫০-০২.৪০	ইংরেজি: ০১.৫০-০২.৪০ বাংলা: ০২.৪০-০৩.৩০	বাংলা: ০১.৫০-০২.৪০ গণিত: ০২.৪০-০৩.৩০
১৫	০৮/০২/২৪ (বৃহস্পতিবার)	বাংলা: ১২.১০-০১.০০ গণিত: ০১.৫০-০২.৪০	-	-
১৬	১১/০২/২৪ (রবিবার)	বাংলা: ১২.১০-০১.০০ ইংরেজি: ০১.৫০-০২.৪০	বাংলা: ০২.৪০-০৩.৩০ গণিত: ০৩.৩০-০৪.১৫	গণিত: ০২.৪০-০৩.৩০ বাংলা: ০৩.৩০-০৪.১৫
১৭	১২/০২/২৪ (সোমবার)	গণিত: ০১.৫০-০২.৪০	ইংরেজি: ০১.৫০-০২.৪০ গণিত: ০২.৪০-০৩.৩০	বাংলা: ০১.৫০-০২.৪০ ইংরেজি: ০২.৪০-০৩.৩০
১৮	১৩/০২/২৪ (মঙ্গলবার)	বাংলা: ১২.১০-০১.০০ ইংরেজি: ০১.৫০-০২.৪০	বাংলা: ০২.৪০-০৩.৩০ গণিত: ০৩.৩০-০৪.১৫	গণিত: ০২.৪০-০৩.৩০ বাংলা: ০৩.৩০-০৪.১৫
১৯	১৫/০২/২৪ (বৃহস্পতিবার)	বাংলা: ১২.১০-০১.০০ গণিত: ০১.৫০-০২.৪০	-	-





