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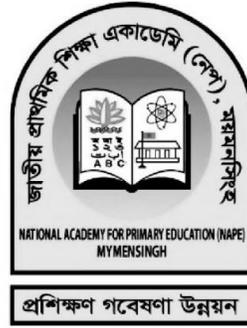
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Editorial

The National Academy for Primary Education (NAPE) is set to release the sixteenth edition of the "Primary Education Journal," a yearly publication aimed at promoting high-quality primary education. The journal includes six research-based articles covering various topics and problems in primary education.

The first article examines the extent of primary teachers' science teaching efficacy belief (STEB) in Bangladesh and also as to find out significant differences in teachers' science teaching efficacy.

The second article investigates different factors that influence on performance variation of the students in Mymensingh and Sylhet divisions at NSA 2022

The third article explores primary science teachers' understanding of exploring students' prior knowledge in primary science teaching practice.

The fourth article seeks to assess the learning levels of kindergarten students across various schools to determine the highest and lowest performers, which will aid in analyzing the factors affecting student achievement

The fifth article investigates the participation of children with disabilities (CwD) in rural Bangladeshi primary schools. It also identifies key barriers to inclusion and evaluates how COVID-19 exacerbated these challenges.

The final article investigates stakeholder experiences with the accelerated remedial lesson plan (ARLP) in Bangladesh, identifying implementation challenges and potential strategies.

All of the papers, in my opinion, will help ensure Bangladeshi elementary education of excellent standard. To develop new interventions in the primary

sector, I think we need to create an evidence-based solution process. This will aid in the formulation and efficient application of policy by policymakers.

My sincere gratitude to the editorial board members for lending their knowledge and putting in the effort required to establish the Journal as a global standard. I also want to express my gratitude to the expert panel for their thoughtful advice and cooperation in maintaining the caliber of the papers.

Lastly, I value the thoughts and feedback that readers have provided on the current issue, as these motivate us to enhance and improve subsequent releases.

Farid Ahmed (Joint Secretary)
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&
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Table of Content

Exploring Primary teachers' Science Teaching Efficacy Belief (STEB) in Bangladesh

Md. Rony*

Abstract

This study has been conducted to explore science teaching efficacy belief (STEB) of primary teachers in Bangladesh as well as to find out if there are any significant differences according to some variables. The samples for the study are the 151 primary teachers teaching in different schools of Manikganj district. Random sampling has been followed to select the participants. Science teaching efficacy belief (STEB) version A has been administered to collect data. Descriptive data analysis has been done to present the findings. The study found primary teachers have an average level of science teaching efficacy belief. They have higher self-efficacy beliefs than outcome expectancy beliefs. No significant differences have been found among participants Science teaching efficacy belief according to their age, gender, academic qualification, job duration and experience of teaching science but to geographical location of schools.

Keyword: Science teaching efficacy belief (STEB), Primary teachers, Science teachers.

Introduction

Bandura was the first to coin the term self-efficacy (Bandura, 1977). It means one's ability to organize and execute any action required. Teaching efficacy is one of its kinds. Teachers with high efficacy believe that they can teach students successfully, even underachieved or demotivated one. In contrast, teachers with low efficacy have a belief that there is little to do for improving the performance

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of demotivated students. Like teaching efficacy in any subject, Science teaching efficacy belief also consists of two types of belief. One is the self-efficacy belief of science teachers that they can teach science in a proper way. The other is outcome expectancy, which means students' performances, even the performance of underachieved ones, will be better if science is taught in a proper way. These two types of belief form science teaching efficacy belief in teachers.

Statement of the problem

Low science teaching efficacy of primary teachers has long been a problem (Palmer, Dixon & Archer, 2015). Many studies found primary teachers have low science teaching efficacy (Bencze & Hodson, 1999; Buss, 2010). However, most of the studies have been conducted on pre-service primary teachers. Tosun (2000) conducted a study on preservice primary teachers and found teachers have negative views regarding science teaching. Primary teachers often lack confidence in teaching science (Appleton, 1995; Morgan, 2012). These unconfident teachers often use a traditional approach in their science class (Varley, Murphy and Veale, 2008). Low self-efficacy of teachers has a negative impact on students' academic performance (Ashton, 1984, Goddard, Hoy and Woolfolk-Hoy, 2000). Gorrell, Hazareesingh, Carlson, & Stenmalm-Sjoblom (1993) conducted a comparative study among American, Srilankan and Swedish pre-service primary teachers and found Srilankan teachers having higher self efficacy belief than the American teachers. Moreover, the science teaching efficacy belief of primary teachers of Bangladesh is an explored area.

Rationale of the study

Various studies have confirmed that teachers' belief directly affects their teaching. Science teachers are no exception. Those who have strong efficacy beliefs perform better in class that resulted in better performance of students (Lewandowski, 2005; Hoy, 2000). Measuring teachers' self-efficacy level is of great importance as it has an impact on teachers' behavior, effort for teaching, selection of methods and techniques (Gibson & Dembo, 1984; Enochs and Riggs, 1990). Teachers who have high efficacy beliefs intend to use various teaching methods and techniques in their classroom (Allinder, 1994). Very few studies in

our country have been conducted to measure Science teaching efficacy belief of primary teachers. This study therefore is an attempt to shed light on the issue.

Research Questions

1. To what extent the primary teachers in Bangladesh have science teaching efficacy belief?

2. How do male and female primary teachers differ in science teaching efficacy belief?

3. How does age influence science teaching efficacy belief of primary teachers?

4. How do rural and urban primary teachers differ in science teaching efficacy belief?

5. How does educational qualification influence science teaching efficacy belief of primary teachers?

6. How does teaching experience influence science teaching efficacy beliefs of primary teachers?

Theoretical framework

Science teaching efficacy belief scale

On the ground of Bandura's Social cognitive theory, Riggs and Enochs (1989) developed science teaching efficacy belief (STEB-A) instrument to use with in-service primary teachers which is used in this study. The scale consists of 25 items that represent two types of beliefs described by Bandura (1977). 13 items represent self efficacy belief, and 12 items represent outcome expectancy belief. This instrument is a 5-point likert scale that ranges from strongly agree to strongly disagree. Much research has been done using this instrument.

Variables affect science teaching efficacy belief

Numerous studies have been conducted to explore the effect of many variables on science teaching efficacy belief. Age, gender, experience, location, educational qualifications are some variables researchers considered.

Age: Say (2005) founds sufficient relationship between teachers' science teaching efficacy belief and their age. He found that Science teaching efficacy beliefs of teachers increase with their age. However, many studies have found no relationship between science teaching efficacy belief and age (Yenice, 2009; Oguz ve Topkaya, 2008, Kahraman, Yildiz, Bayrak & Gunes, 2014)

Gender: Gender difference in science teaching efficacy belief is another aspect researchers investigated. Many studies found that there is no significant difference in science teaching efficacy belief of male and female teachers (Yenice, 2009; Abkas & Celikkaleli, 2006; Saracoglu & Yenice, 2007; Cetin, 2007; Oguz & Topkaya, 2008). However, many studies found a positive correlation between teachers' science teaching efficacy belief and their gender (Cantrell & Young ve Moore, 2003; Say, 2005, Ekici, 2006)

Academic qualification: Hanson (2011) measured 117 science teachers' efficacy belief and impact of some variables (highest degree achieved, number of years as a teacher, number of years as a science teacher) on both of their personal teaching efficacy belief and outcome expectancy belief. He found teachers with a master's degree have higher personal efficacy beliefs. However, their outcome expectancy had not increased significantly.

Teaching Experience: Ekici (2006) found no significant difference in science teaching efficacy belief according to seniority. However, Yenice (2009) found teachers having 16 years of experience have better Science teaching efficacy beliefs than their juniors.

Science teaching experience: Hanson (2011) in his study found the number of years as a science teacher to be the greatest impact on personal efficacy belief. Those teachers' personal teaching efficacy beliefs have increased with their experience as a science teacher. However, the relationship between this variable and their outcome expectancy was not significant.

Geographic location: Knoblauch and Chase (2015) in their study found urban teachers have lower efficacy than rural teachers.

Methodology

This study is quantitative in nature. 151 teachers from different primary schools of Manikganj district have been selected randomly for the study. Data has been collected using a 5-point likert scale namely 'science teaching efficacy belief (STEB) version A originated by Riggs and Enochs (1989). Version A of this scale is approved to use with in-service teachers. Score 5 indicates high efficacy and score 1 indicates low efficacy. Demographic data including age, gender, location, highest degree, job duration and years of science teaching have been collected also. Descriptive data (mean and standard deviation) has been measured to find out primary teachers' science teaching efficacy belief level. Then to find out the significant difference, sample t test has been performed in case of gender and location of schools as these two variables have two categories and one way ANOVA has been performed in case of age, academic qualification, years of teaching experience and years of science teaching as these variables have more than two categories. Ethical issues have been maintained properly.

Findings and Discussions

Table 1: Science teaching efficacy belief

Items	Mean	SD
Science teaching Efficacy Belief (25 items)	3.74	1.049
Self-efficacy (13 items)	4.00	0.44
Outcome expectancy (12 items)	3.46	0.37

Overall mean score (3.74) indicates that the participant teachers have an average level of science teaching efficacy belief. These teachers are not confident enough to teach science effectively. This might impact negatively on their students' academic performance (Ashton, 1984, Goddard, Hoy and Woolfolk-Hoy, 2000). Mean score of self-efficacy belief (4.00) indicates that they have much confidence in their own capabilities that they can perform the necessary task to make a science class effective. Mean score of outcome expectancy belief (3.46) indicates that they have average level of confidence in the science process itself. Participants' self-efficacy belief is slightly better than outcome expectancy belief.

Table 2: Item wise Self-efficacy belief

Sl	Items	Mean	SD
1	I am continually finding better ways to teach science	4.52	0.710
2	Even if I try very hard, I do not teach science as well as I do in most subjects	3.83	1.176
3	I know the steps necessary to teach science concepts effectively	4.22	0.816
4	I am not very effective at monitoring science experiments	3.54	1.340
5	I generally teach science ineffectively.	4.03	1.259
6	I understand science concepts well enough to be effective in teaching science.	4.09	1.083
7	I find it difficult to explain to students why science experiments work.	3.60	1.127
8	I will typically be able to answer students' science questions.	4.06	1.041
9	I wonder if I have the necessary skills to teach science	3.37	1.105
10	Given a choice, I would not invite the principal to evaluate my science teaching	4.15	1.016
11	When a student has difficulty understanding a science concept, I am usually at a loss as to how to help the student understand it better.	3.70	1.244
12	When teaching science, I will usually welcome student questions.	4.74	0.522
13	I do not know what to do to turn students on to science.	4.14	0.864
	Total	4.00	0.44

Table-2 shows that primary teachers have an advanced level of self-efficacy belief (4.00). Mean score has been found highest (4.74) for the item 'when teaching science, I will usually welcome student questions' means primary teachers believe that they welcome students' questions well enough. The second highest mean (4.52) has been found for the item 'I am continually finding better ways to teach science. Mean score has been found lowest (3.37) for item 'I wonder if I have necessary skills to teach science'. No mean score has been found below that score.

Table 3: Item wise outcome expectancy belief

Sl	Items	Mean	SD
1	When a student does better than usual in science, it is often because the teacher exerted a little extra effort	4.44	0.726
2	When the science grades of students improve, it is often due to their teacher having found a more effective teaching approach.	4.34	0.749
3	If students are under achieving in science, it is most likely due to ineffective science teaching.	3.18	1.342
4	The inadequacy of a student's science background can be overcome by good teaching.	4.42	0.658
5	The low achievement of some students cannot generally be blamed on their teachers.	2.35	1.190
6	When a low-achieving child progresses in science, it is usually due to extra attention given by the teacher.	4.13	1.100
7	Increased effort in science teaching produces little change in some students' science achievement	2.48	1.076
8	The teacher is generally responsible for the achievement of students in science.	2.66	1.217
9	Students' achievement in science is directly related to their teacher's effectiveness in science teaching.	3.68	1.224
10	If parents comment that their child is showing more interest in science at school, it is probably due to the performance of the child's teacher.	3.95	1.133
11	Effectiveness in science teaching has little influence on the achievement of students with low motivation.	2.62	1.248
12	Even teachers with good science teaching abilities cannot help some kids learn science	3.30	1.253
	Total	3.46	0.37

Mean score of 2.48 on the item 'increased effort in science teaching produces little change in some students' science achievement' and 2.62 on 'effectiveness in science teaching has little influence on the achievement of students with low motivation' indicates that primary teachers have a negative attitude towards low achieving students. They believe that they have little to do to improve these students' performance in science. Moreover, they believe that the low achievement of some students cannot generally be blamed on their teachers as the study calculates a 2.35 score in that item. A similar item also indicates the same. Mean score for the item 'The teacher is generally responsible for the achievement of students in science' has been calculated 2.66.

Table 4: Analysis with respect to participants' gender

Variable	N	STEB			SE			OE		
		Mean	SD	Sig	Mean	SD	Sig	Mean	SD	Sig
Male	26	3.67	0.264	0.308	3.98	0.46	.871	3.48	0.38	0.118
Female	125	3.74	0.333		4.00	0.44		3.59	0.31	

Table-4 shows no significant difference found between male and female teachers science teaching efficacy belief. No significant differences were found between their self-efficacy beliefs as well as outcome expectancy beliefs. This finding is consistent with the study of Yenice, 2009; Abkas & Celikkaleli, 2006; Saracoglu & Yenice, 2007; Cetin, 2007; Oguz & Topkaya, 2008.

Table 5: analysis with respect to participants' age

Variable	N	STEB			SE			OE		
		Mean	SD	Sig	Mean	SD	Sig	Mean	SD	Sig
Less than 26 years	11	3.76	0.416	0.225	3.97	0.46	0.753	3.54	0.41	0.156
26-30 years	67	3.79	0.336		4.05	0.47		3.53	0.40	
31-35 years	54	3.69	0.300		3.96	0.43		3.41	0.37	
36-40 years	18	3.62	0.252		3.91	0.41		3.33	0.21	
40-45 years	01	3.59			4.00			3.17		

Table 5 shows that the self-efficacy belief and outcome expectancy belief of the participants do not vary significantly according to their age. Their overall science teaching efficacy beliefs also do not vary significantly with respect to their age. However, the mean score (4.52) for the first item regarding self-efficacy (I am continually finding better ways to teach science) is much higher. Thus, the findings are contradictory. Findings of this study are consistent with the findings of Yenice, 2009; Oguz ve Topkaya, 2008, Kahraman, Yilmaz, Bayrak & Gunes, 2014, but inconsistent with the findings of Say (2005).

Table 6: Analysis with respect to geographic location

Variable	N	STEB			SE			OE		
		Mean	SD	Sig	Mean	SD	Sig	Mean	SD	Sig
Urban	24	3.89	0.364		4.22	0.37		3.56	0.46	
Rural	127	3.70	0.306	0.007	3.95	0.45	0.007	3.44	0.36	0.146

Table-6 shows significant differences between urban and rural teachers' science teaching efficacy belief. Teachers from urban areas (mean score 3.89) have higher efficacy beliefs than the teachers from rural areas (mean score 3.70). However, those differences have been found only in their self-efficacy beliefs. Urban teachers have more confidence in their abilities than rural teachers. However, differences between their outcome expectancy beliefs are not significant.

Table 7: Analysis with respect to participants' academic qualification (highest degree)

Variable	N	STEB			SE			OE		
		Mean	SD	Sig	Mean	SD	Sig	Mean	SD	Sig
Masters (science)	07	3.87	0.285		4.08	.48		3.65	0.46	
Masters (non-science)	66	3.72	0.346		3.40	.45		3.43	0.42	
Honors (science)	01	3.75	....		3.92	.....		3.58	......	
Honors (non-science)	54	3.76	0.326	0.720	4.03	.46	.786	3.48	3.36	0.774
HSC (science)	02	3.77	2.44		4.07	.43		3.46	0.06	
HSC (non-science)	21	3.66	0.252		3.87	.40		3.44	0.3	

Table 7 shows that the participant teachers who have completed a master's degree with a science major have higher efficacy beliefs compared to others. However, differences among the teachers' beliefs with respect to their academic qualifications are not significant. These findings are consistent with the findings of Hanson (2011).

Table 8: analysis with respect to participants' job duration

Variable	N	STEB			SE			OE		
		Mean	SD	Sig	Mean	SD	Sig	Mean	SD	Sig
Less than 3 years	02	3.66	0.325	0.684	3.85	0.00	0.726	3.46	0.65	0.829
3-6 years	140	3.74	0.322		4.00	0.45		3.47	0.37	
7-10 years	09	3.65	0.350		3.90	0.43		3.39	0.41	

Participant teachers who have 3 to 6 years of teaching experience have slightly higher self-efficacy beliefs and outcome expectancy beliefs than other teachers. Their overall science teaching efficacy beliefs are also slightly higher. However, these differences are not significant. This result is consistent with the result of Ekici (2006).

Table 9: analysis with respect to participants' experience of teaching science

Variable	N	STEB			SE			OE		
		Mean	SD	Sig	Mean	SD	Sig	Mean	SD	Sig
0 years	39	3.40	0.392	0.668	3.88	0.55	0.218	3.51	0.42	0.649
1-2 years	85	3.72	0.296		4.02	0.39		3.43	0.37	
3-4 years	22	3.80	0.283		4.10	0.43		3.50	0.30	
5-6 years	05	3.77	0.378		4.12	0.31		3.42	0.48	

Table 9 shows no significant differences among participants' efficacy beliefs with respect to their experience of teaching science.

Conclusion

This study found primary teachers of Bangladesh having average level (3.74) of science teaching efficacy belief. Their self efficacy belief (4.00) is higher than the outcome expectancy belief (3.46). Therefore, it can be said that these teachers believe that they can teach science in a proper way. However, they also believe that they should not be blamed for the poor performance of some students. They have very little to do for these underachieving students. The STEB of primary teachers do not vary according to their age, gender, educational qualifications, job duration or years of science teaching but to geographic location. Urban teachers are more confident in their own abilities as their self-efficacy scores have been found to be significantly higher than those of rural teachers.

Implications

This study has great implications for stakeholders of education in our country. As it finds primary teachers having low outcome expectancy regarding less motivated or underachieved students, the result should be considered with priority in planning curriculum and training programs. How the negative views of these teachers can be transformed into positive views should be considered seriously as the teachers' negative view impacts negatively on students' performance.

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Alam, Hassan, Rahman and Haque

Factors Influence Performance Variation of the Students in Two Divisions at NSA 2022

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Abstract

The National Student Assessment (NSA) report is one of the most important pieces of evidence for measuring primary level students' performances in grade 3 and 5 for Bangla and Mathematics subjects. This qualitative study applied a descriptive method to investigate factors contributing to the performance variation of the students of Mymensingh and Sylhet division in the NSA report 2022. To explore the contributing factors, the researchers employed in-depth interview Schedules for Teachers, Headteachers, ATEOs, and FGD for students and parents. Thematic data analysis processes were applied to analyze collected data. The study revealed that teaching reading comprehension, using smart teaching aids and involving parental support are the influencing factors in some cases of Mymensingh division. This study suggests Sylhet division and other divisions to follow different strategies for NSA in some specific areas like reading comprehension skills, teaching geometric shapes, community engagement, conducting extra classes, engaging in mixed group activity and taking model tests, regular assessment and feedback which Mymensingh Division followed for better performances. This study also suggests conducting further studies to determine which factors are contributing to students' performance at what level.

Keywords: National Student Assessment (NSA), Influencing factors, students' performances.

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Background of Study

The government has implemented various initiatives to assess students' learning performances and educational scenarios nationwide, including the National Student Assessment (NSA) program. NSA was first launched in 2006 by the Ministry of Primary and Mass Education (MoPME). The NSA plays a critical role in evaluating student achievement in primary level, focusing on grades 3 and 5 for Bangla and Mathematics (NSA Report, 2022).

A key objective of the NSA is to generate accurate and timely data to inform educational decision-making, serving multiple purposes: a) Supporting Policy and Planning: Identifying strengths and weaknesses across divisions enables policymakers to develop targeted educational strategies and resource allocation plans; b) Enhancing Teacher Education Programs: The NSA data identifies areas for adjustments in teacher training programs to better address student learning needs; c) Improving Classroom Instruction: Educators can enhance teaching methods and curriculum design based on NSA results to improve student learning outcomes. A significant development occurred in subsequent assessment cycles (2011, 2013, 2015, and 2017) with the implementation of equating, ensuring valid comparisons across different years and providing a more accurate understanding of student performance trends over time (NSA Report, 2017).

The 2022 NSA revealed concerning trends where Mymensingh and Dhaka consistently exceeded the national average in Bangla and mathematics for grades 3 and 5, while the Sylhet division lagged all other divisions (NSA Report, 2022). The ongoing underperformance of the Sylhet division in the NSA requires comprehensive investigation. This study aims to uncover the factors behind Sylhet's low achievement and the factors contributing to Mymensingh's recent success.

According to NSA (2022) a massive variation in the performance level of students across divisions and districts was observed which is presented in the table below:

Table 1: Variation of performance level.

District	Subject	Advance and proficient performance level of student (%)		Basic or below basic performance level of student (%)	
		Class 3	Class 5	Class 3	Class 5
Mymensingh	Mathematics	61%	49%	39%	51%
	Bangla	68%	63%	32%	38%
Sylhet	Mathematics	25%	15%	75%	85%
	Bangla	38%	31%	62%	69%

It is clear from the table that the performance of the students of Mymensingh division is better than the performance of Sylhet division.

The study aims to identify factors influencing student achievement in both divisions, potentially highlighting disparities in educational environments, teaching methods, teacher training, and student support systems contributing to the achievement gap. The study's findings are expected to benefit stakeholders like schoolteachers, education officers, policymakers, and researchers significantly.

Research Objectives

The purpose of the study is to identify factors influencing student achievement and explore the underlying factors behind their performance variations. To achieve this purpose, the following research questions have been addressed:

1. What are the factors contributing behind the highest performance of the students of the Mymensingh division in NSA 2022?
2. What are the factors contributing behind the performance of the students of Sylhet division in NSA 2022?

Rationale of the Study

The NSA report (2022) reveals substantial variations in student performance across different districts, subjects, and grades. Understanding the success factors of certain divisions like Mymensingh is crucial for enabling other divisions to replicate their strategies and elevate their performance in the future. Conversely, pinpointing the root causes of consistently poor performance of the Sylhet division is equally crucial. By addressing the factors contributing to underperformance, policymakers can devise more effective strategies for improvement.

Literature Review

According to the National Education Goals Panel (1991) the National Assessment of Education Progress (NAEP) is a monitoring system that involves examining individual students with the hope that it will provide targeted study and instruction objectives, thereby raising the nation's achievement levels. A key purpose of the NSA is to provide accurate and timely data-driven information to support policy and planning, enhance teacher education programs, and improve classroom instruction to increase student learning (NSA, 2015).

Factors Influencing Students' Performance

There are a range of factors that affect the quality of performance of students (Waters & Marzano, 2006). These factors include variables representing inputs, processes and contextual factors that are expected to influence learning outcomes (Saurav Dev Bhatta & Sharma, 2019).

Ehrenberg & Brewer (1994) found that teachers' verbal ability as well as their academic skills, measured by scores in achievement tests, can also contribute to improving students' performance. NSA (2022) reveals that head teachers who have completed an M. Ed. Or only a C-in-Ed. Made a difference in performance in both subjects. Empirical evidence suggests that teachers´ instruction based on active learning and cognitive activation is positively related to student achievement (Papanastasiou, 2008).

For teaching reading comprehension teachers use different strategies. According to Johnson (2017), comprehension teaching and involvement include pre-reading, during, and post reading instruction. Certain cognitive processes are necessary for reading comprehension. such as prior knowledge, vocabulary, fluency, active reading, and critical thinking.

Bloom's Taxonomy is important when preparing examination questions since it measures the correct skills based on the hierarchy and order of the action verbs used. The system can be used for the allocation of marks and standardizing assessment questions (Banda et al., 2020). A large number of teachers do not have sharp knowledge about the use of blooms Taxonomy. In NSA (2022) the cognitive processing level (knowledge, understanding and application) were assessed I mathematics.

Teachers being friendly and providing feedback were associated with significant improvement along with being able to do classroom activities together (NSA, 2022). Feedback has been identified as a key factor in enhancing academic achievement and facilitating learning (Hattie & Timperley, 2007). Research indicates that successful feedback should be timely, clear, goal-oriented, accurate, nonjudgmental, specific, and build on prior accomplishments (O'Neill et al., 2019).

The use of teaching aids can facilitate the learning process by making it interesting and less time-consuming. Training on integrated learning and access to learning materials could also be associated with significant gains in student performance across grades and subjects (NSA, 2022). The use of teaching aids enables learners to use their hearing or seeing abilities and actively perform something while learning (Ordu, 2021). The emerging teaching aids involve other sense organs (Đurđanović, 2015).

Attendance is one of the most important factors influencing student performance, which has been widely studied in academic literature. One study by Gottfried (2010) found that student attendance has a significant positive effect on academic performance, particularly in the areas of reading and math. The study found that students who attended school regularly had higher test scores and better grades.

Parents' participation in school activities also made a positive difference in performance in general (NSA, 2022). Hattie (2009) found that when parents are involved in a student's educational journey, higher grades and better attendance are achieved. Additionally, Martin-Chang et al (2011) have established that parental involvement has a direct effect on the academic achievement of students.

Research Methodology

This section includes study design, sample and sampling techniques, data collection tools and analysis process of the study.

Study Design

This article is a part of the research done by the National Academy for Primary Education (NAPE) in FY 2023-2024 and the author of the article are the members of that research team.

This study employed a qualitative descriptive research approach to investigate the factors contributing to students' performance in the Mymensingh and Sylhet divisions. Descriptive research provides a detailed and accurate picture of the characteristics and behaviors of a particular population or subject. By observing and collecting data on a given topic, descriptive research helps researchers gain a deeper understanding of a specific issue and provides valuable insights that can inform future studies.(Sirisilla, 2023)

Population and Sampling

Considering the NSA sample and NSA report 2022, schools of different categories from both divisions were selected purposively for the study. Ten schools from each division which participated in NSA 2022 were selected. The research team tried to ensure the participation of all districts as well as upazilas of the two divisions considering NSA 2022. The table below shows the selected sample school according to categories:

Table 2: School sampling at a glance

| Division	District	GPS	NNPS	Madrasah	KG	Total
Mymensingh	4	7	1	1	1	10
Sylhet	4	5	3	1	1	10
Total	8	12	4	2	2	20

AUEO/ATEO, Head teacher, Assistant Teacher and students were selected as samples of the research for collecting primary data. Students who were in class 5 in 2022 completed the primary level and are out of range of primary schools. So, it was difficult for the researchers to reach them. Therefore, students who were in class three in 2022 and participated in NSA Examination were selected for the study. The table below shows the selected sample, sampling techniques and tools:

Table 3: Population, Sample, Sampling and tools at a glance

Population	Sample Technique	Sample	Tools
Students of **Grade 3** (Now in class 5) who participated in NSA 2022	Purposive	1 FGD 6 students (3 boys and 3 girls) each school **6 x 20 = 120 Students**	**FGD**
Assistant Teacher	Purposive	1 AT (Bangla) and 1 AT (Mathematics) (taught in class 3 during NSA) **2 x 20 = 40 ATs**	**In-depth Interview**
Head Teacher	Purposive	1 Head Teachers from each school **1 x 20 = 20 HTs**	**In-depth Interview**
AUEO/ ATEO	Purposive	1 AUEO/ ATEO from each cluster **1 x 20 = 20 AUEOs**	**In-depth Interview**
Parents/ Care Givers	Purposive	1 FGD 6 parents each school **6 x 20 = 120 Parents**	**FGD**

Data Analysis

The collected qualitative data was analyzed by following Barun & Clark's (2006) thematic analysis approach at a semantic level. Figure 1 shows the thematic analysis process following the approach.
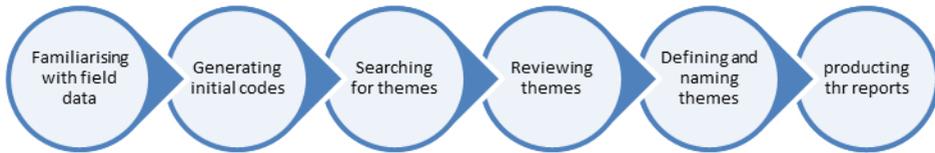
Figure 1: Barun & Clarke (2006) thematic analysis process

Coding

In qualitative data presentation, to protect privacy and confidentiality of the interviewed Assistant teachers, Headteacher, ATEO and FGD participant Students and parent's different codes were maintained by following tables:

Table 4:

Respondent	Code	
	Mymensingh	Sylhet
AUEOs	AUEOI^1-AUEOI^{10}	AUEOI^{11}-AUEOI^{20}
Head Teachers	HTI^1-HTI^{10}	HTI^{11}-HTI^{20}
Assistant Teacher Bangla	ATIB^1-ATIB^{10}	ATIB^{11}-ATIB^{20}
Assistant Teacher Mathematics	ATIM^1-ATIM^{10}	ATIM^{11}-ATIM^{20}
Parents	FGDP^1-FGDP^{10}	FGDP^{11}-FGDP^{20}
Students	FGDS^1-FGDS^{10}	FGDS^{11}-FGDS^{20}

Ethical Consideration

Ethical considerations were prioritized throughout the research process.

- Informed consent was obtained from all participants, and their confidentiality was ensured.
- Participants were informed about the study's objectives, procedures, and their rights to withdraw at any time.
- Data confidentiality and anonymity were maintained during data collection, storage, and analysis.

Major Findings

Bangla and Mathematics teachers in both divisions have received subject-based and long-term professional training for their skill development. Teachers in both divisions do not regularly follow the Teachers' Guide (TG) due to time constraints, workload and lack of TG in schools. Teachers in both divisions arrived unprepared in the classroom and showed less engagement with students in the classroom. For teaching reading comprehension teachers of Mymensingh division used different strategies like creating paragraphs, improving pronunciation, breakdown compound word, punctuation usage, and new word recognition with joining letters, which were not explicitly mentioned in the Sylhet data. For teaching grammar teachers at government primary schools of both Mymensingh and Sylhet division used the same techniques. In this regard teachers at kindergarten schools used separate grammar books and their own techniques. Students have a lack of clear understanding of basic mathematical operations and concepts in both divisions which affects their overall performance. In some cases, teachers of Mymensingh division use Olympiad techniques for teaching mathematics. Teachers of Mymensingh division were very much sincere about their students' preparation for NSA. On the contrary, teachers of Sylhet division were not aware of their student's preparation for NSA. Overall, scattered instruction, teachers' ambiguity about NSA process, lack of monitoring and parental involvement were found in Sylhet Divisions regarding NSA.

Results and Discussion

Teachers Professional Training and Skills

Teachers' higher academic and professional (Masters and M. Ed.) qualifications and teaching-learning strategy have a significant positive association with learner performance (NSA,2022).
Gamoran (2006) observed that teacher training led to better content delivery in classroom which consequently enhances student achievement. Though the teachers of Mymensingh and Sylhet divisions received subject-based training and long-term professional training, the education supervisors raised concerns about

teachers not fully utilising their training or consistently following the Teachers' Guides. One of the ATEOs of Mymensingh responded,

"Teachers are very much skilled in teaching Bangla and Mathematics as they received long-term professional training and also Subject- Based training on both Bangla and Mathematics, however, the teachers did not use Teacher's Guide for all the lessons and did not use relevant teaching aids regularly (AUEOI[1])". With some exceptions all of the AUEOs and teachers of both divisions provided a similar opinion regarding this issue. But Newly Nationalized school teachers and teachers of Haor areas are weaker than the teachers of Government Primary Schools (AUEOI[15], AUEOI[7]).

Teacher of Sylhet Division is skilled, but they are not cordial with their classroom activities (AUEOI[11], AUEOI[12], AUEOI[14]).

The education officers especially suggested that school closures due to COVID might have impacted teachers' skills and the need for refresher training (AUEOI[7]). These scenarios suggested a potential gap between teacher training and its practical application in the classroom.

Teaching Reading Comprehension Strategy

Effective teaching-learning strategies for developing students' language skills in a classroom setting involve a multifaceted approach (Shi, 2024). It is believed that the effective use of learning strategies is an important factor for successful language learning, and that students may need a range of strategies to regulate their own learning (Zimmerman & Martinez-Pons, 1990). Data revealed that for teaching reading comprehension Teachers at Mymensingh encouraged their students to break up their sentences into paragraphs, which they then used to create questions (ATIB[02]). Additionally, they concentrated on enhancing reading comprehension skills related to pronunciation, compound word and joint letter breakdown, punctuation usage, and new word recognition with connecting letters (ATIB[02]). They also gave access to additional reading materials, promoted the creation of questions, and conducted examinations regularly (ATIB[02], ATIB[06], ATIB[07]). To improve comprehension even more, some educators used question-and-answer exercises and predictive techniques. In addition, teachers offer additional reading resources (ATIB[07]).

The teachers of Sylhet division did not specifically highlight these activities. Teachers in Sylhet, on the other hand, use group work, peer work, reading after teacher and asking questions strategies for reading comprehension (ATIB[11], ATIB[12], ATIB[15], AITB[16] ATIB[20]). Besides that, teachers were largely concerned with assisting their weaker students to improve (AITB[19]).

Teaching Mathematics

To teach geometry, the teachers in both divisions employed manipulatives like origami, tangrams, and everyday objects for hands-on learning; the class teachers also drew shapes on the board and asked students to copy them. It is noted that the teachers of Mymensingh employed the Math Olympiad techniques for advanced learners. One of the respondent mathematics teachers replied that *"For teaching Mathematical concepts I use Olympiad training techniques such as Counting Stars, Numbers on Colored Paper, Tens Machine, Secret Number, Number Crocodile, Line Breaking, Line Drawing, etc (ATIM[2])."* While teachers of the Sylhet division relied more on traditional approaches like drawing on the board (ATIM[16], ATIM [17]). Overall, it is found that both divisions prioritize hands-on learning with manipulatives and practical activities.

Classroom Assessment Strategy

Teachers' understanding about assessment made a difference in student performance in Bangla (NSA, 2022). Regarding this Veldhuis & Heuvel-Panhuizen (2014) mentioned that Based on this Classroom assessment information teachers can adapt their teaching to their students' needs and create an ideal learning environment for them in their classroom. In both divisions, teachers used a combination of oral, written, and observational assessments during and after lessons, and they also conducted weekly/monthly exams. Teachers of Mymensingh give emphasis on monthly exams. In this regard, a responded teacher said, "*I conduct weekly and monthly exams and inform the status of the performance of the students to the parents/guardians. I also suggest the parents to take some initiatives in respect of remedial measures for some students* (ATIM[2])." While teachers of the Sylhet division didn't mention such type of initiative. Students of Sylhet division stated that teachers used to ask us to write after

reading and ask different questions; if someone couldn't do, he would explain. (FGDS[17], FGDS[12], FGDS[13]).

Domain Based Questions in Assessment

Bloom's Taxonomy is important when preparing examination questions since it measures the correct skills based on the hierarchy and order of the action verbs used. The system can be used for the allocation of marks and standardizing assessment questions (Banda et al., 2020). Developing competency and domain-based questions is an important skill for teachers. In the NSA, the students appeared the questions which are competency and domain based. In the study, it was found that the teachers in both divisions generally focused on the 'Knowledge, Understanding and Application" sub-domains of the cognitive domain in assessments. However, it is reported that some teachers in both divisions lacked the skill or practice to create questions across all domains. One of the respondents Headteacher stated, *"Teachers usually prepare questions from Knowledge, Understanding and Application sub-domains. From my interest in domain-based questions, I have observed this. (HTI[9])"* Some of the teachers of Sylhet division do not have clear concept of domain-based questions (ATIM[11], ATIM[12]). AUEOs of Sylhet Division mentioned that with some exceptions teachers do not practice domain-based questions in classroom activities (AUEO[11], AUEO[12], AUEO[14])

Learning Loss During Covid-19 and Its Remedial

The closure of schools and other institutions of learning has impacted 94% of the world's student population.(Zhdanov et al., 2022), this scenario is also common in both Mymensingh and Sylhet. Subjects like Bangla, Math, and Science were identified as particularly challenging, with students forgetting basic concepts, struggling with reading fluency, and facing difficulties with fundamental math operations. To address learning loss upon school reopening, both divisions implemented remedial plans. Mymensingh data suggests a potentially more comprehensive approach, with targeted interventions like extra classes, individual support, and the use of an 'Accelerated Learning Plan (HTI[3], HTI[5]). The

perceived effectiveness of these interventions seemed to be higher in Mymensingh, with reports of improved student performance (ATIM[6)]). While employing similar strategies in some areas, Sylhet acknowledged a more persistent learning gap (AUEOI[15]). Sylhet yet struggles to bridge the learning gaps with para-teachers (HTI[11]).

NSA Information Dissemination

According to NSA report (2022), "The study involved training field-level officials and capacity building for test supervisors and invigilators." The authorities tried to create a proper chain to disseminate information about NSA. Mymensingh provides NSA-related information in a more structured manner compared to the unclear information in Sylhet. Even some teachers of Sylhet do not have a clear understanding of NSA. One of the respondent assistant teachers of Mymensingh said, *"During training, it made clear what NSA is, who will participate, how and when the NSA will take place, who will be invigilators, etc* (ATIM[9])*."* Some of the teachers of the Sylhet division knew about NSA exam just a week before the exam. Head teachers of *Sylhet (HTI[18], HTI[14]) said "I informed that the test would be held just a week before the NSA test."*

Community Awareness for NSA

Adequate support from parents and their recognition of the efforts of teachers made the most difference across subjects and grades (NSA, 2022). Parents and SMCs of Mymensingh were actively involved in the NSA process for preparing students (HTI[3], HTI[7], HTI[8]). Even parents helped to complete homework compared to Sylhet. A teacher of *Sylhet* (ATIB[12]) said, *"Students didn't get good support from home. Moreover, people in this area didn't think about good jobs by studying well; they think about going abroad."* With some exceptions, Guardians of Sylhet divisions were not aware of their children's learning (HTI[12], HTI[19]). Most of the head teachers of Sylhet divisions agreed with this opinion.

Flood Immediate Before the NSA

A devastating flood occurred in Sylhet just a few months before the NSA examination, which impacted students' learning and preparation for NSA. The

devastating flood of 2022 and learning loss due to Corona affected the students' performance of Sylhet division (AUEO[16], AUEO[17]).

Model Tests for NSA

According to NSA (2022) "*Schools were encouraged to offer additional resources, aid, or interventions beyond regular school hours to assist students in succeeding academically.*" Regarding model tests, taking Model Tests in Mymensingh was more active than Sylhet for preparing students. Besides that, students of Mymensingh practiced following the supplied guidebooks on NSA more than the students of the Sylhet division. A student of Mymensingh (FGDS[9]), "*Within two months, we attended twelve model tests.*" On the other hand, a headteacher of Sylhet (HTI[15]) said, "*In my school, I arranged two special Model Tests for the NSA.*"

Guidebooks for NSA

Students of both divisions purchased guidebooks from the market and took preparatory exams (HTI11, HTI18). An AUEO (AUEOI[3]) of Mymensingh said, "*School supplied guidebooks to the students.*" Headteachers (HTI[3], HTI[7]) mentioned, "*Those NSA-related guidebooks were available in the markets, students bought them, and we taught them. Students got common questions during the exam.*" Students of the Sylhet division bought guidebooks from the market and took preparation *(HTI[11], HTI[18])*. Students from Sylhet have reported that they were asked to purchase Fulkoli guidebooks (FDGS[13]) and instructed to take part in Model Tests (FGDS[11-12]).

Socio-economic Background

Parental occupation (only government employment and private employment in a few cases) both had significant association with effect on student performance (NSA,2022). In Mymensingh financial status of guardians are comparatively better (HTI[2], HTI[6], HTI[9]), But some lives below poverty level (AUEO[3]). In Sylhet most of the guardians are day labor (HTI [11], HTI [12], HTI[13], HTI[17], HTI[20]), fisherman (HTI[15], HTI[16], HTI[18]) vegetable seller, rickshaw puller, farmers (HTI [12], HTI [17], HTI [16]: HTI [20], HTI[14], HTI[19]). Some of the guardians were expatriates (HTI [11], HTI [13], HTI[19]). *AUEOI[20] said, "Affluent parents think that government schools are for poor people. So, they didn't send their children. It impacts the performance of the NSA.*"

Effective Parent-teacher Communication

Hattie (2009) found that when parents are involved in a student's educational journey, higher grades and better attendance are achieved. The study compared parent-teacher communication in Mymensingh and Sylhet divisions. Both divisions initiate communication, involving parents in discussions about student attendance, exam details, and performance. Both use multiple communication channels, including meetings, phone calls, and informal interactions. Overall, with some exceptions, most of the participants of Mymensingh stated that Mymensingh appears to have a more established and active parent-teacher communication system. While in Sylhet most of the head teachers agreed with this that in some cases it became challenging to communicate with parents (HTI [15]).

Recommendations

General Recommendations

- As NSA is a representative examination. So, if the Sylhet division put emphasis on NSA like Mymensingh division the result of Sylhet could have been better.
- Sylhet and other divisions can follow the activities performed by Mymensingh Division for better performances (such as use of smart teaching aids, parental involvement, teaching reading comprehension and others).
- An effective monitoring system can be ensured in Sylhet divisions for smooth information dissemination and quality teaching learning.
- It should be ensured that all sampled schools of NSA will get NSA related information at the right time and the same way.

Recommendation for further research

- For the limitation of the objectives, it was not possible to find out the significance level of all factors influencing student's performances. As all the factors are not contributing to student's performances at the same level, so research can be conducted to find out "which factors are contributing to students' performance at what level."
- A study can be conducted to find out which factors are influencing literacy and numeracy skills development of the students.

- As the impact of academic factors on students' achievements is similar in most cases in both divisions, there must be some other factors which are liable for performance variation. These factors can be found through further research.

Conclusion

The intension of this study was to explore the factors which had impact on students' performances at NSA 2022. Through the lens of respondent ATEOs, Headteachers, Assistant teachers, Parents and Students it is found that in both divisions, students get similar types of academic support from their teachers as well as schools. In some cases, like teaching reading comprehension, using teaching aids teachers of Mymensingh are more advanced than the teachers Sylhet division. This study revealed an important factor that in some areas teachers of Sylhet division were not concerned about NSA like Mymensingh divisions. They did not get proper information about NSA in proper time, hence the preparation of the students for NSA was not sufficient. Besides, for the lack of sufficient monitoring officers, a regular monitoring system is also hampered. It has an impact on students' results also. This study is confined with only factors which are contributing to students' performances. There is much opportunity to conduct further research to find out which factors are contributing to students' performance at what level.

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Ahmed

Teachers' Understanding of Exploring Students' Prior Knowledge in Primary Science Teaching Practice in Bangladesh: A Case Study Approach

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Abstract

This study explored teachers' understanding of exploring students' prior knowledge in primary science teaching practice in Bangladesh. Using a multiple case study approach, data were collected from four purposively selected teachers in both rural and urban areas through classroom observations, interviews, focus group discussions, and document analysis. Each case involved the teacher, their students, and three key stakeholders: AUEOs, URC instructors, and PTI instructors. Science textbooks (TB) and Teachers' Editions (TE) were also reviewed. Findings show that teachers have a limited but emerging understanding of exploring students' prior knowledge. They rely on curriculum materials and receive varying levels of support from education officials. The study offers valuable insights for enhancing science education. It is particularly relevant for stakeholders such as MoPME, DPE, NCTB, and NAPE, offering guidance to enhance the quality of teaching practices in primary science classrooms across Bangladesh.

Keywords: Primary science teaching practice, teachers' understanding, exploring students' prior knowledge, rural and urban context.

Introduction

Prior knowledge, defined as the information and understanding individuals bring with them before encountering new concepts, is shaped by their personal, social,

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and cultural experiences (Top Hat, 2021). In the context of science education, activating students' prior knowledge is considered a foundational pedagogical strategy, as it enables learners to connect past experiences with new content, thereby deepening comprehension and retention (Chakraborty, 2024; Marzano, 2004). Research consistently shows that prior knowledge, particularly procedural knowledge, is a strong predictor of academic success and a critical tool for instructional design and curriculum planning (Alreshidi, 2023; Hailikari, Katajavuori, & Lindblom-Ylänne, 2008).

Teachers play a pivotal role in effectively leveraging students' prior knowledge. Studies indicate that teacher guidance in exploratory science education significantly enhances student learning outcomes (Heppt et al., 2022). Effective science instruction, therefore, depends not only on content knowledge but also on the teacher's ability to activate and build upon students' existing understanding (Akerson, Flick, & Lederman, 2000; Meyer, 2004).

In many developing countries, including Bangladesh, curriculum implementation is heavily reliant on textbooks and teachers. However, standardized textbooks mandated by national authorities often limit teachers' instructional flexibility (Sarkar, 2012). This dependence tends to promote rote learning and inhibits creative pedagogical approaches (Glasnović Gracin & Jukić Matić, 2021; Johansson, 2006). Teachers' Editions (TEs), as companion resources to textbooks, are intended to support educators by interpreting curricular goals and offering pedagogical guidance. Recent studies highlight TEs as essential tools for providing "educative support" and aligning classroom practice with curriculum intentions (Jukić Matić & Glasnović Gracin, 2020; Remillard, 2005).

In the Bangladeshi context, professional development infrastructure such as the Primary Teachers' Training Institutes (PTIs), Upazila Resource Centers (URCs), and Assistant Upazila Education Officers (AUEOs) plays a critical role in shaping classroom practices. These support systems are responsible for equipping teachers with the pedagogical knowledge necessary to implement the curriculum effectively, including strategies to explore students' prior knowledge.

The National Curriculum and Textbook Board (NCTB, 2012) emphasizes the importance of activating prior knowledge in primary science education. However, there remains a disconnect between curriculum objectives and classroom practices. Teachers' beliefs, understanding, and pedagogical content knowledge are key factors influencing how or whether prior knowledge is explored during instruction (Funda, 2009).

This study investigates teachers' understanding of exploring students' prior knowledge in the primary science teaching practice in Bangladesh. Using a case study approach, it compares practices across rural and urban contexts, aiming to uncover both commonalities and contextual differences. The findings are intended to inform teacher training programs and curriculum development efforts to enhance science education through more effective and meaningful use of students' prior knowledge.

Problem statement

Exploring students' prior knowledge is a key aspect of effective science teaching because it enables learners to link new concepts with what they already understand. However, many primary science teachers in Bangladesh lack the awareness and strategies needed to explore and utilize students' prior knowledge effectively, often relying on rote methods (Sharmin et al., 2020; Rahman, 2015). This issue is further compounded by contextual differences between rural and urban schools, where disparities in resources and teacher training influence instructional practices (Hasan & Akter, 2023; Alam et al., 2021). Despite its importance, limited research has examined how primary teachers in Bangladesh perceive and implement this practice across different settings, indicating a pressing need for context-specific insights.

Rationale of the Study

Exploring students' prior knowledge is a crucial part of effective science teaching, as it allows learners to relate new concepts to their existing understanding. Despite its importance, this practice is often overlooked in Bangladeshi primary classrooms due to limited teacher awareness and training. Support personnel-such

as AUEOs, PTI, and URC instructors-play a key role in guiding teachers but may themselves lack a clear understanding of how to support prior knowledge exploration. Additionally, curriculum materials like the Teacher's Edition and Textbook offer minimal guidance on this practice. Rural-urban disparities in teacher preparation and classroom resources further impact how prior knowledge is addressed in teaching. This study aims to explore primary teachers' understanding of exploring students' prior knowledge in primary science teaching practice, while also examining the influence of curriculum and support systems. The findings will help inform future teacher training, curriculum development, and educational policy.

Purpose and Research questions of the study

This study aims to investigate how primary school teachers in both rural and urban areas of Bangladesh perceive and approach the use of students' prior knowledge in the context of science instruction. Specifically, it seeks to answer the following research question:

- How do teachers understand the exploration of students' prior knowledge in primary science teaching practices in Bangladesh?

Methodology

This study explored teachers' understanding of exploring students' prior knowledge in primary science teaching practices in Bangladesh. A multiple-case study design was employed within a qualitative, interpretive framework, enabling the investigation of real-life classroom contexts and the meanings participants attach to their experiences (Creswell, 2015; Creswell & Creswell, 2018; Denzin & Lincoln, 2018; Silverman, 2014). The multiple case study approach allowed for in-depth comparisons within and across cases, providing insights into both common and context-specific patterns (Yin, 2018).

Four cases were purposively selected to offer rich data for identifying both individual case themes and cross-case themes (Creswell & Poth, 2018). Four primary teachers were purposively selected- two from rural schools and two from urban schools. Each case consisted of one primary teacher (who teaches science)

along with their students, curriculum documents (textbooks and Teachers' Editions), and three key stakeholders: an Assistant Upazila Education Officer (AUEO), an instructor from a Primary Teacher Training Institute (PTI), and an instructor from an Upazila Resource Center (URC). Purposeful sampling ensured the inclusion of participants who could provide relevant and detailed information (Creswell, 2015; Creswell & Creswell, 2018). Data were collected through multiple methods:

- Lesson observations (four per teacher) using a structured observation schedule to record teaching practices in natural classroom settings (Adler & Adler, 1994; Angrosino & Pérez, 2000; Ary et al., 2018; Mulhall, 2003),
- Semi-structured interviews with teachers and stakeholders validate observed practices and explore underlying understandings (Fraenkel et al., 2015),
- Focus group discussions with students to gain insight into their learning experiences, and
- Document analysis of science textbooks and Teachers' Editions to assess curriculum guidance related to prior knowledge (Denzin, 1978; Yin, 2018).

Data analysis was conducted using thematic analysis (Braun & Clarke, 2022) and qualitative content analysis (Patton, 2015; Schreier, 2012). A cross-case analysis helped identify both converging and diverging themes across the four cases. Additionally, a Likert scale based on Vagias (2006) was used to assist in interpreting patterns in teacher understanding.

Ethical Considerations

Ethical integrity was upheld throughout the study. Informed consent was gathered from all participants, including teachers, students (via parental consent), and stakeholders. Participants were thoroughly informed about the purpose of the study, their voluntary involvement, and their right to withdraw at any time without any repercussions. Anonymity and confidentiality were guaranteed by assigning pseudonyms and securely storing all data. The research adhered to

institutional ethical guidelines and received approval from the appropriate academic ethics committee.

Results

The following results address the research question concerning teachers' understanding of how students' prior knowledge is explored in primary science teaching. Findings are drawn from lesson observations, interviews with teachers, stakeholders, and students, as well as analysis of relevant documents.

Teachers' lesson practices of students' prior knowledge exploration

Observations across all four cases revealed that while teachers generally made some effort to explore students' prior knowledge, this was often limited to brief questioning aimed at assessing recall of previous lessons. In many instances, teachers delivered multiple lessons within a single class period and proceeded with instructional activities without thoroughly investigating students' existing understanding. Table 1 illustrates one teacher's approach to exploring students' prior knowledge during classroom instruction.

Table 1: Exploration of Students' Prior Knowledge by a 5th Grade Teacher, Chapter: Information in Our Lives

ILO	Lesson in TE	Lesson title	Number of classes taken by the teacher	Prior knowledge exploring Q. given in TB	Prior knowledge exploring Q. given in TE	Question from the previous lesson given in TE	Exploring prior knowledge by the teacher
11.1.1	1	Importance of information sharing	1	-	*How can we collect information? *How can we exchange collected information?	-	*How can we collect information? *How can we exchange collected information?
11.1.1	2				-	What are the ways of exchanging information?	

Table 1 indicates that the teacher delivered two lessons within a single class session, with prior knowledge exploration limited to the first lesson. As such, the teacher's practice reflects a partial approach (somewhat) to engaging with students' prior knowledge. Table 2 provides a summary of how teachers explored students' prior knowledge across all four cases.

Table 2: Overview of Teachers' Classroom Practices for Exploring Students' Prior Knowledge

Case A		Case B		Case C		Case D	
Chapter, Lesson & no. of ILO in Grade three	Teacher's lesson practice	Chapter, Lesson & no. of ILO in Grade five	Teacher's lesson practice	Chapter, Lesson & no. of ILO in Grade four	Teacher's lesson practice	Chapter, Lesson & no. of ILO in Grade four	Teacher's lesson practice
Chapter:5 Lesson: 1,2,3	lessons-1: somewhat practiced	Chapter:10 Lesson: 1, 2	lessons-1: somewhat practiced	Chapter:6 Lesson: 1	lessons-1: somewhat practiced	Chapter:2 Lesson: 1	lessons-1: somewhat practiced
Chapter:5 Lesson: 4,5	lessons-2: somewhat practiced	Chapter:10 Lesson: 3,4,5,6	lessons-2: somewhat practiced	Chapter:6 Lesson: 2	lessons-2: somewhat practiced	Chapter:2 Lesson: 2,3	lessons-2: somewhat practiced
Chapter:6 Lesson: 1	lessons-3: somewhat practiced	Chapter:11 Lesson: 1,2	lessons-3: somewhat practiced	Chapter:6 Lesson: 3	lessons-3: somewhat practiced	Chapter:2 Lesson: 4	lessons-3: somewhat practiced
Chapter:6 Lesson: 2	lessons-4: somewhat practiced	Chapter: 11 Lesson: 3,4	lessons-4: somewhat practiced	Chapter:6 Lesson: 4,5	lessons-4: somewhat practiced	Chapter:2 Lesson: 5	lessons-4: somewhat practiced

Table 2 shows that teachers across all four cases made limited attempts to explore students' prior knowledge in science classrooms. Despite teaching multiple lessons within a single class period, they did not adhere to the Teacher's Edition (TE) guidelines, which outline structured instructions for each lesson. As a result, prior knowledge was not effectively explored.

Views on students' prior knowledge exploration

Prior knowledge significantly influences student achievement, with procedural knowledge being especially related to student success. Assessing prior knowledge can serve as a valuable tool for instructional design and curriculum planning, enabling educators to identify areas where students may need additional support (Hailikari, Katajavuori & Lindblom-Ylänne, 2008). This statement underscores

the critical role of prior knowledge in learning outcomes and highlights the value of assessing it to inform teaching strategies. Stakeholders were interviewed to know their views on students' prior knowledge exploration. To gain insight into stakeholder perspectives on this practice, interviews were conducted. In response to the question, *"What is the importance of exploring students' prior knowledge about the topic?"*, one Assistant Upazila Education Officer (AUEO) remarked:

Exploring students' prior knowledge is essential. Revisiting the previous lesson, even briefly, helps reinforce learning. Since today's topic is entirely new to students, only the teacher knows what and how it will be taught.

The AUEO's statement underscores the value of revisiting prior knowledge to reinforce previous learning. However, it also reflects a limited understanding of what effective exploration of students' prior knowledge truly involves.

The Teachers' Edition (NCTB, 2012) recommends that teachers connect students' prior knowledge to new lesson content. To understand stakeholders' perspectives on how prior knowledge exploration is addressed in both the Teachers' Edition (TE) and Textbook (TB), stakeholders were interviewed. In response, one AUEO stated:

The information might be in the TE and TB, but I haven't had enough time to review it closely. Each lesson in the TE includes 10–15 learning outcomes, which makes it difficult for teachers to cover in a 35-minute class with 50–70 students.

The statement suggests that the AUEO was not fully familiar with the content of the TB and TE, citing time constraints as a reason. Additionally, the number of intended learning outcomes (ILOs) mentioned by the AUEO is inaccurate.

Additionally, stakeholders were asked about classroom practices related to the exploration of students' prior knowledge. In response, one participating teacher shared the following perspective:

Prior knowledge involves two types: recalling the current lesson's title and reviewing the previous lesson to gauge retention. For example, today I sang a soil-related song to signal that questions on that topic will follow in future lessons.

In this statement, the teacher highlights the role of prior knowledge exploration in reinforcing previous learning and introducing new content. However, effectively linking prior knowledge to new lessons is crucial for achieving learning outcomes (NCTB, 2023). This response reflects the teacher's partial understanding (somewhat) of best practices in exploring students' prior knowledge. Table 3 presents the perspectives of teachers and relevant stakeholders on the exploration of students' prior knowledge.

Table 3: Stakeholders' Perspectives on Exploring Students' Prior Knowledge

Stakeholders	Stakeholders' understanding of students' prior knowledge exploration			Overall understanding
	Importance of prior knowledge exploration	Given information in TE & TB	Classroom practice of teachers	
Teacher	Somewhat understand	Somewhat understand	Somewhat understand	Somewhat understand
PTI instructor	Somewhat understand	Somewhat understand	Somewhat understand	Somewhat understand
URC instructor	Somewhat understand	Somewhat understand	Somewhat understand	Somewhat understand
AUEO	Do not understand	Do not understand	Do not understand	Do not understand

Table 3 shows that teachers and stakeholders generally have a partial understanding (somewhat) of students' prior knowledge exploration, though one participant lacked this understanding. Table 4 provides a summary of teachers' and stakeholders' perspectives across all four cases.

Table 4: Overview of Understanding of Students' Prior Knowledge Exploration Across All Four Cases

Stakeholders	Stakeholders' overall comprehension of exploring students' prior knowledge of the four Cases			
	Case A	Case B	Case C	Case D
Teacher	Somewhat understand	Somewhat understand	Somewhat understand	Somewhat understand
PTI Instructor	Somewhat understand	Somewhat understand	Somewhat understand	Somewhat understand
URC instructor	Somewhat understand	Somewhat understand	Somewhat understand	Somewhat understand
AUEO	Somewhat understand	Do not understand	Somewhat understand	Somewhat understand

The study's findings reveal that most teachers and stakeholders across all four cases possess a partial understanding of students' prior knowledge exploration, although one participant lacks this understanding.

Students' Response to FGD

Students were asked about how prior knowledge is explored in the classroom. One student responded,

> Usually, our class begins with reading a book. Sometimes the teacher asks questions about today's lesson, and other times about the previous lesson.

This response suggests that teachers explore prior knowledge only sporadically during lessons.

Instruction provided in the Textbook and the Teachers' Edition

Lessons within a textbook chapter are interconnected, each introducing new content. Therefore, it is essential to explore students' prior knowledge alongside reviewing previous lessons. As a result, the guidance for prior knowledge exploration in the Teachers' Edition (TE) is regarded as partially addressed. An example of instructions from the textbooks and TE in one case from this study is presented here. Analysis of observed lessons reveals that each teaching-learning activity is preceded by a brief introduction (Figure 1).

Teachers typically use the Teachers' Edition (TE) to explore prior knowledge, as confirmed by lesson observations and interviews. Analysis of the TE revealed that it includes questions targeting prior knowledge primarily in the first lesson of a chapter (Figure 2), while subsequent lessons focus on reviewing the previous lesson without explicitly addressing prior knowledge (Figure 3).

প্রাথমিক বিজ্ঞান

শিখনফল

২.২.১ উদ্ভিদ ও প্রাণীর মধ্যে পার্থক্য করতে পারবে।

উপকরণ

◆ উদ্ভিদ ও প্রাণীর ছবি/ চিত্র।
◆ উদ্ভিদের খাদ্য তৈরি, প্রাণীর খাদ্য গ্রহণ ও চলাচলের ছবি।
◆ পাঠসংশ্লিষ্ট অন্যান্য ছবি।

শিখন শেখানো কার্যাবলি

১। কুশল বিনিময়ের মাধ্যমে শ্রেণিকক্ষে শিখনবান্ধব পরিবেশ তৈরি করুন।
২। পাঠ শুরুর পূর্বে শিক্ষার্থীদের পাঠ্যপুস্তক বন্ধ রাখতে বলুন।
৩। বোর্ডে অধ্যায়ের নাম ও আজকের পাঠের শিরোনাম লিখুন।
৪। শিক্ষার্থীদের খাতায় পাঠের শিরোনাম লিখতে বলুন।

[ভূমিকা]

৫। প্রশ্ন করুন :
জীবকে আমরা কীভাবে ভাগ করতে পারি?
৬। শিক্ষার্থীদের কাছ থেকে উত্তর পাওয়ার জন্য ন্যূনতম ৫ থেকে ৭ সেকেন্ড অপেক্ষা করুন। ৪/৫

Figure 2: A snapshot of TE that presents questions exploring prior knowledge (NCTB, 2023)

শিখনফল

১১.১.১ ব্যক্তি, সমাজ ও রাষ্ট্রীয় জীবনে তথ্য আদান-প্রদানের গুরুত্ব ব্যাখ্যা করতে পারবে।

উপকরণ

◆ তথ্য বিনিময়ের ছবি
◆ পাঠসংশ্লিষ্ট অন্যান্য উপকরণ

শিখন-শেখানো কার্যাবলি

১। কুশল বিনিময়ের মাধ্যমে শ্রেণিকক্ষে শিখনবান্ধব পরিবেশ তৈরি করুন।
২। পাঠ শুরুর পূর্ব পর্যন্ত শিক্ষার্থীদের পাঠ্যপুস্তক বন্ধ রাখতে বলুন।
৩। পূর্বপাঠ নিয়ে আলোচনা করুন এবং প্রশ্ন করুন:
তথ্য বিনিময়ের উপায়গুলো কী কী?

[ভূমিকা]

৪। বোর্ডে অধ্যায়ের নাম এবং আজকের পাঠের শিরোনাম লিখুন।
৫। শিক্ষার্থীদের খাতায় পাঠের শিরোনাম লিখতে বলুন।
৬। শিক্ষার্থীদের উত্তরের সূত্র ধরে আজকের পাঠের উদ্দেশ্য ব্যাখ্যা করুন:

Figure 3: A snapshot of TE that presents questions for review of the preceding lessons (NCTB, 2023)

Sixteen lessons from the Teachers' Edition (TE) and Textbook (TB), observed across four cases, were analyzed. A summary of the instructions for exploring students' prior knowledge in both TE and TB is presented in Table 5.

Table 5: Status of Instructions for Students' Prior Knowledge Exploration in the Teachers' Edition and Textbook

Cases	Grade	Chapter, Lesson & no. of ILO practiced by the teacher	Instructions provided (Based on literature review)	
			In TB	In TE
Case A	Grade 3	Chapter:5; Lesson: 1,2,3	Somewhat addressed	Somewhat addressed
		Chapter:5; Lesson: 4,5	Somewhat addressed	Somewhat addressed
		Chapter:6; Lesson: 1	Somewhat addressed	Somewhat addressed
		Chapter:6; Lesson: 2	Not addressed	Somewhat addressed
Case B	Grade 5	Chapter:10; Lesson: 1,2	Somewhat addressed	Somewhat addressed
		Chapter:10; Lesson: 3,4,5,6	Somewhat addressed	Somewhat addressed
		Chapter: 11; Lesson: 1,2	Somewhat addressed	Somewhat addressed
		Chapter: 11; Lesson: 3,4	Somewhat addressed	Somewhat addressed
Case C	Grade 4	Chapter:6; Lesson: 1	Somewhat addressed	Somewhat addressed
		Chapter:6; Lesson: 2	Somewhat addressed	Somewhat addressed
		Chapter:6; Lesson: 3	Somewhat addressed	Somewhat addressed
		Chapter:6; Lesson: 4,5	Somewhat addressed	Somewhat addressed
Case D	Grade 4	Chapter:2; Lesson: 1	Somewhat addressed	Somewhat addressed
		Chapter:2; Lesson: 2,3	Somewhat addressed	Somewhat addressed
		Chapter:2; Lesson: 4	Somewhat addressed	Somewhat addressed
		Chapter:2; Lesson: 5	Somewhat addressed	Somewhat addressed

The findings in Table 5 indicate that instructions for exploring students' prior knowledge are only partially addressed in both the textbooks (TB) and Teachers' Editions (TE).

Overall remarks on the understanding of students' prior knowledge exploration in the primary science teaching practice

Across all four cases, teachers demonstrate a partial understanding of how to explore students' prior knowledge, which is reflected in their somewhat limited implementation of this practice in science classrooms. Similarly, concerned stakeholders also show a moderate grasp of prior knowledge exploration, which likely influences teachers' understanding and instructional methods. Additionally, the guidance for prior knowledge exploration provided in textbooks (TB) and Teachers' Editions (TE) is insufficiently detailed, further impacting both teachers' comprehension and classroom practices.

Discussion

Exploring students' prior knowledge is fundamental to effective science learning, as it enables learners to extend their understanding and apply concepts to new situations (Lee et al., 2019). Meyer (2004) found that expert teachers design lessons that encourage students to articulate their prior knowledge and apply it in novel contexts, aligning closely with Akerson, Flick, and Lederman's (2000) conceptualization of prior knowledge integration. When prior knowledge is meaningfully incorporated, it significantly enhances student learning opportunities. In this study, teachers demonstrated a partial understanding of prior knowledge exploration and implemented related practices to some extent. However, this limited understanding often results in missed opportunities to fully engage students' prior knowledge, thereby restricting their learning potential.

Prior knowledge, especially procedural knowledge, is strongly linked to academic achievement, serving as a vital component in instructional design and curriculum planning by helping educators identify areas where students need additional support (Hailikari et al., 2008). Moreover, Marzano (2004) and Schallert (2002) emphasize that activating students' prior knowledge aids in connecting previous

experiences with new information, promoting more effective teaching and learning. It remains one of the strongest predictors for the successful acquisition of new content. Teachers across all four cases demonstrate a partial understanding of exploring students' prior knowledge, but may lack the ability to design effective teaching strategies that fully enhance the learning process.

Previous studies have noted that many teachers recognize the importance of exploring prior knowledge and employ it to enhance teaching effectiveness (Sultana et al., 2019; Hasan et al., 2021). For instance, Chin (2007) and Osborne and Freyberg (1985) observed that teachers often use questioning techniques to activate prior knowledge at the start of lessons. Nevertheless, ongoing research highlights that some science teachers still lack awareness of their students' prior knowledge or view it as an obstacle rather than a resource for learning. This study's analysis aligns with this trend, revealing that although teachers show some understanding and practice of prior knowledge exploration, their approach often remains traditional and limited.

Islam et al. (2020) found that teachers rarely connect prior knowledge explicitly to new lessons, despite guidelines in the Teachers' Edition (TE) recommending such links to achieve learning outcomes. Similarly, this study shows that teachers tend to use prior knowledge mainly to check students' recall of previous lessons rather than to bridge it with upcoming content. Nespor (1987) and Tobin and McRobbie (1997) highlight that teachers' beliefs profoundly shape their instructional practices. In this study, teachers' partial understanding likely hinders their ability to design strategies that effectively connect prior knowledge to new learning, thereby impacting expected outcomes.

Professional support from human resources, such as Assistant Upazila Education Officers (AUEOs), instructors at Professional Training Institutes (PTIs), and Upazila Resource Centers (URCs), plays a role in teacher development through training and monitoring. However, the limited understanding observed among these supporting personnel may impede teachers' professional growth in exploring students' prior knowledge. Additionally, the somewhat inadequate

guidance in textbooks (TB) and Teachers' Editions (TE) further constrains teachers' capacity to implement best practices.

This study included four primary science teachers from both rural and urban settings to capture a diverse range of teaching practices. Yet, no significant difference was found in their understanding or implementation of prior knowledge exploration, suggesting that challenges in this area are widespread and not context-specific.

In conclusion, while teachers acknowledge the importance of exploring students' prior knowledge, enhanced training, improved instructional materials, and stronger professional support are necessary to deepen their understanding and enable more effective classroom practices that connect students' past learning with new science concepts.

Implications

The study found that primary science teachers in Bangladesh have a limited understanding of exploring students' prior knowledge. Similarly, supporting personnel-such as AUEOs, PTI, and URC instructors-also demonstrate a partial understanding. Curriculum materials (Teachers' Editions and Textbooks) provide some guidance on this aspect. These findings have implications for improving primary science education, which are categorized into three areas: knowledge, practice, and policy.

Implications for the Knowledge Gap
The study offers valuable insights for a wide range of stakeholders, including researchers, policymakers, curriculum developers, and textbook authors.

- It enriches the literature on primary science teaching in Bangladesh and provides a foundation for further research.
- Policymakers and science educators can use the findings to enhance teachers' understanding of effective science teaching practices.
- Curriculum developers can apply these insights to improve or revise curriculum documents.

Implications for Policy

The findings can inform policy decisions by key national bodies such as MoPME, DPE, and NCTB.

- MoPME can lead to the development of policies that promote targeted professional development for primary science teachers.
- Policymakers can enable DPE and schools to provide specialized training programs to improve teaching practices.
- Policies can guide NCTB in aligning curriculum resources with teachers' professional development needs.

Implications for Practice

At the practical level, the findings can guide improvements in teacher training and classroom practices. Institutions such as DPE, NAPE, PTI, URC, and school authorities can use this evidence to strengthen professional development efforts.

- DPE can organize training programs for teachers and support staff to address gaps in understanding.
- NCTB can revise curriculum materials to better support teachers and stakeholders.
- NAPE can design workshops, seminars, and training sessions for PTI staff and field officers.
- UEOs, AUEOs, and instructors at PTI and URC can use the findings to enhance their training and supervisory roles.
- School authorities can promote teacher development by facilitating access to quality training and hands-on classroom support.

Conclusion

Exploring students' prior knowledge is essential for effective teaching and learning, as it allows new concepts to be meaningfully connected to existing understanding. However, limited teacher understanding and classroom application of this approach can impede student learning in primary science. Additionally, the partial understanding of key support personnel-such as Assistant Upazila Education Officers (AUEOs), Primary Teacher Training Institute (PTI) instructors, and Upazila Resource Centre (URC) trainers-along with insufficient guidance in curriculum materials, including the Teacher's Guide (TE) and

Textbook (TB), may further constrain effective instructional practices. This study highlights the need to improve the knowledge of support staff and strengthen curriculum resources to enhance teachers' understanding and implementation of prior knowledge exploration in primary science education.

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Alam, Rahman, Hassan and Haque

Exploring Factors Influence on Students Performances in Kindergarten

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Abstract

There is a trend of some of the guardians of our country to admit their children to Kindergarten Schools for better performances. This study reveals different factors that influences on academic performances of grade three students at the kindergarten School of Bangladesh. The goals of the study were to evaluate the learning level of the students in different basic subjects and also to determine the factors contributing to improving students' performance. This research design employed explanatory sequential mixed-method approach, this mixed-method approach combines both qualitative and quantitative data collection. First quantitative data was gathered from achievement tests of Bangla and mathematics to identify the learning level of the students. Interview Schedules for headteachers and assistant teachers and classroom observation checklists were used for collecting qualitative data. The study highlighted influential factors that drive learner's performance such as: students' attendance, headteachers leadership, teaching techniques, teachers' training, clear instruction, motivational communication, feedback and remedial actions, family support, provision of meals, additional classes offered by teachers, coaching or tutoring assistant, involvement of School Management committee and level of communication between teachers and parents.

All these factors are associated with students' performance. The study suggested implementing a personalized learning plan according to the learning needs of the students, leadership training for headteachers, establishing study groups, and providing support to students during and after school hours. Thus, students' performances can be accelerated.

Keywords: Kindergarten Schools, Student performances, influencing factors.

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Background of Study

"Education can be thought of as the transmission of the values and accumulated knowledge of a society" (Arne Duncan, 2023). Primary education is seen as a key driver for economic growth and better living standards in developing nations (Suryadarma et al., 2006). There are 64122 government primary schools (GPS) and 20601 private kindergarten schools (KGs) which are covering respectively 50.6% and 16.3% of children in primary education (MoPME, 2016). The government primary schools of bangladesh offers full free primary education. On the other hand, private kindergarten school supplies primary education with tuition fees (Obaydullah, 2021).

Kindergarten is now widely seen as having the quality that was formerly associated with first grade. They have more formal schooling but less time to explore practice social skills or build relationships with peers and adults (Grane Elizabeth 2009 as cited in Rahman & Chowdhury, 2019).

In recent times, Bangladesh has made notable advancements in primary education regarding student enrollment and the widespread distribution of books to all students throughout the country (Rahman et al, 2024).

> According to APSC (2021) report, there are approximately 119,000 different schools in our country, among them there are roughly 65,000 government primary schools and around 28,000 kindergarten schools. Regarding students, the government primary schools have enrollments of approximately 13.5 million students out of the total 20.1 million, while kindergartens have enrollments of around 3.3 million students. In regarding teachers, the government primary schools employ approximately 359,000 teachers, and the kindergarten schools employ over 200,000 teachers. The teacher-to-student ratio in government schools stands at 1:35, whereas in kindergartens, it is approximately 1:20.

For this reason, parents now seek better performance for their children. They believe that it's the duty of the teachers to ensure quality education. Ehrenberg &

Brewer (1994) found that teachers who are good communicators and have strong academic knowledge (shown by their test scores) can help students do better..

In Bangladesh, there are 67 Primary Teacher's Training Institutes (PTIs) for providing BTPT, DPEd or long-term basic training to teachers. GPS teachers receive short-term professional development training from the Upazila Resource Center (URC) alongside their long-term training. However, there is a lack of similar institutions and training opportunities for the teachers of kindergarten schools. Obaydullah (2021) mentioned in his study that there is a still large demand for places at kindergarten school.

In recent years, KG schools in Bangladesh have demonstrated outstanding performance in both Bangla and Mathematics subjects at both Grade 3 and Grade 5, as evidenced by their top rankings in the National Student Assessment (NSA) in 2015 and 2017. Again, in the Primary Education Completion Examination 2016, GPS schools and kindergarten schools achieved comparable levels of performance, with GPS schools attaining a rate of 98.7% and kindergartens reaching an impressive 99.3%. The factors responsible are yet unveiled. The elements that influence students' performance must be understood by teachers, policymakers, and other stakeholders in the education sector.

Research Gap

In Bangladesh, only a limited number of research studies have been conducted to evaluate the quality of Education in government and private or KG schools. Previous research has primarily focused on teacher characteristics, teaching materials, weaknesses of student performance, learning losses caused by the Covid-19 pandemic, and classroom teaching-learning activities. However, there is a lack of comprehensive exploration into the broader factors that can influence student performance. This research aims to bridge this gap by investigating the influential factors that contribute to student performance at Kindergarten Schools. Conducting this research is significant for a better understanding of the determinants of student performance and for making informed interventions to improve educational outcomes.

Research Objectives

This study aimed to identify the learning level of the students at kindergarten schools to identify the highest and lowest performing schools, which will be helpful to identify factors influencing student achievement in that specific school in the second phase. Therefore, Specific objectives of this research are to-

     1. know the learning level of the students at KG Schools

     2. identify the factors influencing students' performances.

Rationale of the study

To ensure the flow of high-quality education, the Government of Bangladesh (GoB) regularly provides training and retraining for teachers in government primary schools to equip them with modern teaching and learning techniques. Besides, most government primary schools are renovated, saturated with well-qualified teachers and visibly, provided with adequate instructional facilities for teaching and learning (DPE, 2021). But it is commonly perceived by parents in Bangladesh that the teaching and learning in kindergartens are better than that of government primary schools. The first objective of this research is to assess the numeracy and literacy skills of students in government primary schools and kindergartens. This objective is important because it provides a baseline understanding of the academic proficiency of students of KG schools. Another objective of this study is to investigate the diverse aspects that affect student's performance within the educational context. This knowledge will enable educators, policymakers, and stakeholders to make decisions and implement effective strategies to improve academic proficiency of students.

Literature Review

There are a range of factors that affect the quality of performance of students (Waters & Marzano, 2006). These factors may be termed as student factors, family factors, school factors and peer factors (Crosnoe, Johnson & Elder, 2004). These factors include variables representing inputs, processes and contextual factors that are expected to influence learning outcomes (Saurav Dev Bhatta & Sharma, 2019). Ashraf (2013) categories into three areas and these are socio-

economic, psychosocial and environmental (home and school). NSA (2017) identified several factors associated with students' achievement such as Headteacher activities (monitoring classroom teaching, providing advice to teachers, and professional skills), school resources (teaching materials, school library, financial fund, teacher vacancy, school management committee), and other support (tutor, student motivation). Some of the factors that influence students' performances are mentioned below:

Teacher-Related Factors

Teachers capable of creating an ordered and quiet work environment and those applying effective control strategies to increase the time allocated to teaching and learning can ensure students´ progress (Opdenakker & Van Damme, 2006). Ehrenberg & Brewer (1994) found that teachers' verbal communication skills as well as their academic skills, measured by scores in achievement tests, can also contribute to improving students' performance.

It is a quality of a good teacher to take proper preparation before going to class. Welekwe et al. (2023) mentioned that there are some key areas for teacher preparation. These are content knowledge, lesson planning, materials and resources, differentiation and adaptation, classroom management, instructional strategies, assessment and feedback, reflection and adaptation.

Use of teaching aids also influences classroom teaching learning. April and Bouchamma, (2017) stated in their study that different teaching aids including images, video recordings, slides, flipcharts, etc., could make the difficult concept more visual and easier to grasp for students.

Clear instruction is also an important factor in ensuring effective teaching-learning. By providing clear instructions, teachers can manage classroom activities effectively, involve students and complete tasks (Gullo, 2013).

Head Teacher Related Factor

Head Teachers' leadership is considered as a key element in enhancing academic achievement in schools worldwide. Over the last two decades, more studies

focused on the effect of HT Leadership and found significant contributions to student achievement and enhanced the overall school climate and culture (Leithwood et al. 2008, Opande, 2013). HTL directly or indirectly influences student achievement (Dimopoulos, 2020).

Student Related Factor

Besides that, students' regular attendance in the school is also an important factor for good results. One study by Gottfried (2010) found that student attendance has a significant positive effect on academic performance, particularly in the areas of reading and math. The research showed that students who consistently attended school tended to get higher test scores and better grades.

Out of School Factors

Parental involvement influences students' performances. Hattie (2009) found that when parents are involved in a student's educational journey, higher grades and better attendance were achieved. Additionally, Martin-Chang et al (2011) have established that parental involvement has a direct effect on the academic achievement of students.

The habit of completing homework regularly has an impact on students' performances. Another study highlighted that homework and its influence on academic achievement are two key areas of better performance. Homework also helps to promote good study habits, independent learning, and metacognitive skills (Fernández-Alonso, 2017).

 In recent years, extra support from teachers has been identified as an influencing factor in helping students achieve academic success (San, 2022). Besides, extra support by teachers coaching or tutor support has become an important factor for students in recent years. One study conducted by Guryan et al. (2021) found that private tutoring can significantly improve student performance, particularly among low-performing students.

Community Related Factor

Leithwood et al. (2008) discovered that successful school management committee (SMC) correlates positively with better student performance. Their research highlighted various leadership strategies that notably enhance student learning, offer instructional assistance, and support to enhance a supportive and encouraging school atmosphere.

Parents-Teacher's communication plays a key role in student's performance. Kaptich, Kiplangat & Munyua, (2019) mentioned that teachers and parents communicate specific information on the student's development, attitudes, and academic achievement including disclosing updates on tasks, exams, and in-class activities, as well as any issues or successes.

In conclusion, all of the factors mentioned above have significant influence on students' performances.

Methodology

The study design, sampling procedure, data collection tools and analysis process of the study are described in this section.

Study Design

This study employed the explanatory sequential mixed method approach. In this study, quantitative data was first collected, analyzed and then qualitative data was analyzed in connection with the quantitative result. Both results were used to meet the research objectives.

Figure 1: Cresswell (2012) Explanatory Sequential Design
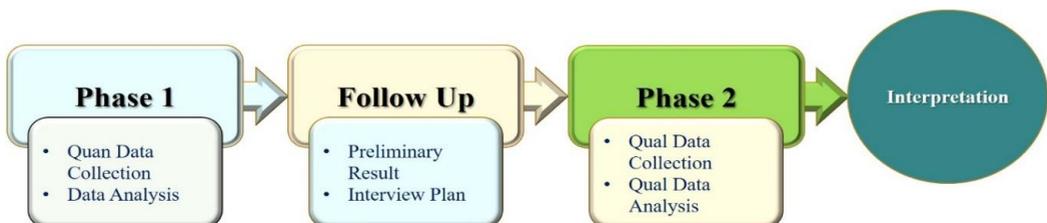
Strategies for phase 1

Phase 1 focused on quantitative data collection and analysis which led to determining the selection of sample and instrument for phase 2.

Sample and Sampling Techniques

In order to administer the achievement test, a representative sample size is necessary. Since the population is quite large (exceeding 20,000), the following formula was applied to calculate an appropriate sample size.

Sample size= $\frac{Z^2 \times P(1-P)}{e^2}$………………………………. (Equation 1)

Z=1.96 (for 95% confidence level), e=0.05, P=0.5

By solving the equation sample size was found to be 384. To avoid the risk the required sample size was determined 400. After collecting data, a total of 370 KG school students were found as sample to administer the test.

Table 2: Sampling Procedure at a Glance (for Quan. Data)

Division	District	Upazilla	KG Schools	Students
8	10	20	20	20x20=400

The sample, comprised of 370 grade three pupils from 20 Schools of 10 districts, has been selected using a multi-stage purposive sampling method encompassing both urban and rural areas. 10 boys and 10 girls from each school were selected following random sampling techniques as the targeted sample was 400 pupils. An achievement test tool was used for collecting quantitative data from this sampled pupil.

The best two scoring schools and the lowest two scoring schools of the achievement test were selected for collecting qualitative data to find out which factors were contributing to student's performance at KG schools.

Achievement Test Tool Development Process

The achievement test tools were developed considering the class-wise attainable competencies of grade 3 for literacy and numeracy skills. Twenty-five marks questions from four categories (sentence making with words, breaking joint letters, punctuation marks and completing fill-in-the-blanks) were included in the achievement tools for assessing literacy skills. Sixteen marks' questions for numeracy skills (place value, greater-smaller, four basic rules, multiply, fraction, angle, sign, distance and shapes) were included in the achievement tools. No additional papers were provided for the test. There was sufficient space on the test tools for writing answers. The team shared the developed tools with the NAPE experts. After getting feedback from them, the research team finalized the achievement test tools.

Quantitative Data Analysis

The research team input the collected data in Google Forms considering the quantitative data analysis process. To analyze the cleaned data, Pivot table tools of Micro Soft Excel were used. MS Excel was also used for data visualization like pie charts, bar charts, boxplots and lines with markers.

Data Code for Quantitative Data

For 20 kindergarten schools KG1-KG20 were used as code for analyzing quantitative to find out high and low-performing schools. Different data codes were used to analyze qualitative data which is explained in the qualitative part.

Strategies for Phase 2

For collecting qualitative data, the highest performing and lowest performing school were selected based on the achievement test results. Interviews with HT, AT and classroom observation were employed for data collection.

Qualitative Data Analysis

The collected qualitative data was analyzed following the deductive content analysis approach suggested by Elo & Kyngäs (2008). Figure 3.4.2 shows the following approach.

Figure 2

The process of deductive content analysis (Adapted from Elo & Kyngäs, 2008, p.110)
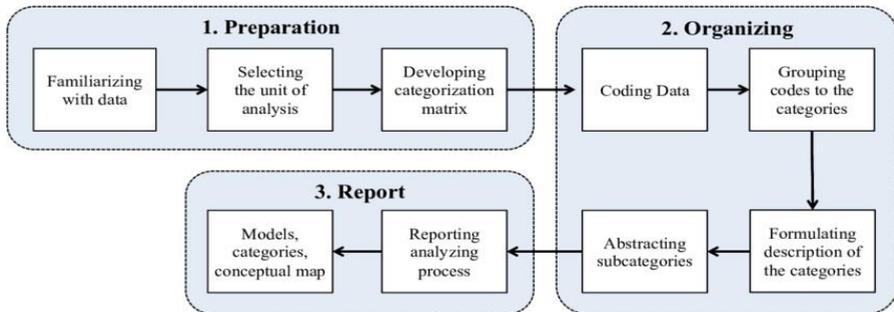
Data Coding for Qualitative Data

To preserve the anonymity and confidentiality of interviewees and observed classrooms, codes are used in the presentation of qualitative data as shown in the table below.

Table 2

Coding for Qualitative Data

| Area			Head Teachers	Assistant Teacher (Bangla)	Assistant Teacher (Math)	Classroom Observation (Bangla)	Classroom Observation (Math)
	KG	High-scoring schools	KHT_{01}, KHT_{02}	KBT_{01}, KBT_{02}	KMT_{01}, KMT_{02}	$KCOB_{01}$, $KCOB_{02}$	$KCOM_{01}$, $KCOM_{02}$
		Low-scoring schools	KHT_{03}, KHT_{04}	KBT_{03}, KBT_{04}	KMT_{03}, KMT_{04}	$KCOB_{03}$, $KCOB_{04}$	$KCOM_{03}$, $KCOM_{04}$

Ethical Consideration

Throughout the research, ethical principles were given the most importance. Every participant gave informed consent, and their privacy was protected. Participants were informed about the purpose of the study and their right to withdraw their opinion at any time. Throughout data collection, storage, and analysis, efforts were made to ensure confidentiality and protect their anonymity**.**

Findings and discussion

Figure 3

*School-wise students' performance in achievement tests for literacy skills*
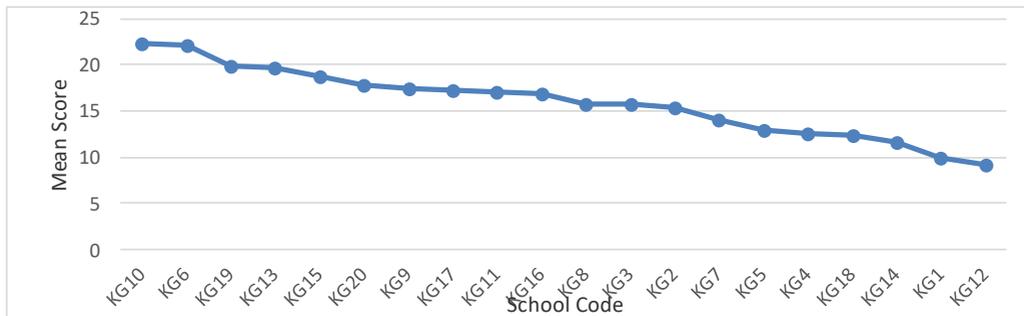
Mean score for literacy skills (N-370) for KG Schools

Literacy will play a very important role in turning the young population into potential human capital (Desai, 2012). To express the importance of literacy skills Owodally, 2015 (as cited in Barham et al., 2019) Research has demonstrated that literacy skills are closely linked to how children acquire reading and writing abilities and are essential for their overall literacy development. The accompanying graph displays the performance of students across different schools in literacy achievement tests for Kindergarten (KG) schools. KG10 achieved the highest average score of 22.4, while KG12 had the lowest at 9.2. The overall average score across schools is 16.0. Thus, it can be inferred that students in half of the schools scored below the average on literacy assessments.

Figure 4

School-Wise Students' Performance in Achievement Tests for Numeracy Skills
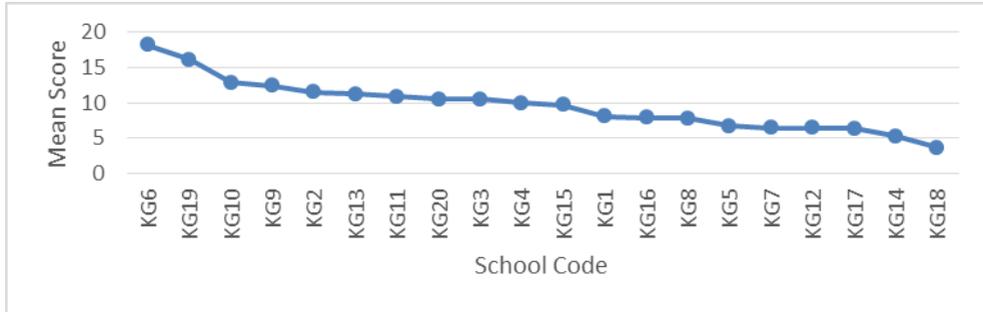

Mean score for numeracy skills (N-370) for KG Schools

The way to improve one's numerical skills in the real world is to improve one's mathematical knowledge (Deda et al., 2023). Numeracy is the knowledge, skill, and behavior students need to use mathematics in various situations, including introducing and understanding mathematics (Iswara et al., 2022). The graph above illustrates the performance of students in achievement tests for numeracy skills across different KG schools. KG6 recorded the highest average score of 18.2, while KG18 had the lowest at 3.7. The overall average score in mathematics is 9.5. Based on this, it can be concluded that students in half of the KG schools scored below the average in numeracy skills.

Figure 5

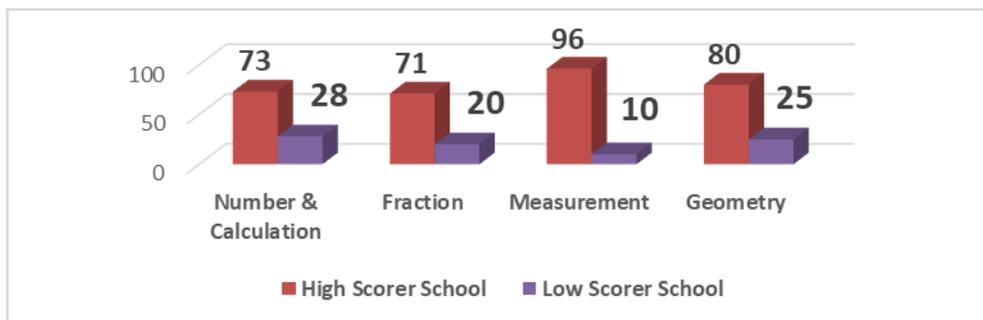*Total Achievement Score on Literacy Skills According to Test Item*
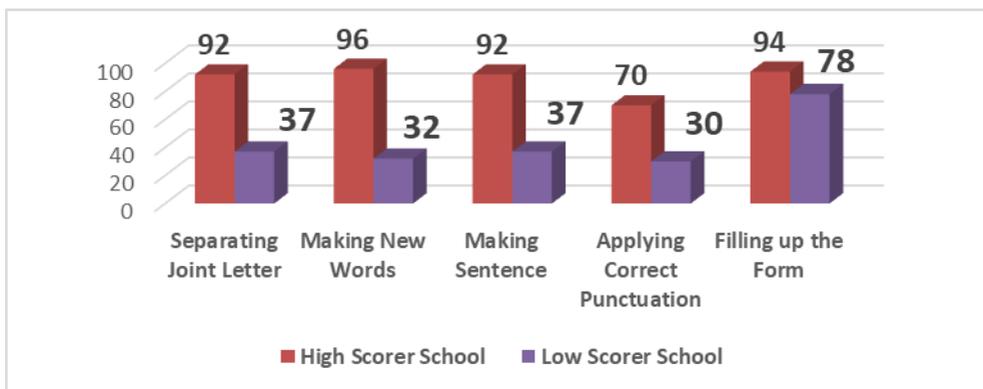
The total achievement score on literacy skills according to test item

Teaching Bangla joint letters in primary school is essential. Chowdhury et al (2018) mentioned a lot of activities to make the process of joint letter learning enjoyable. Regarding teaching new word meanings to students, Laufer & Shmueli (1997) stated that it's important to provide clear explanations and engage them in meaningful activities. The graph above illustrates the high-scorer and low-scorer Kindergarten students' results in separating joint letters, making new words, making sentences, applying correct punctuation, and filling up the forms. Students with high-scorer KGs' mean score is above 90% in separating joint letters, making new words, making sentences, and filling up the form, whereas low-scorer school students' performance is very low (below 40%) in all respects except filling up the form.

Figure 6

Total Achievement Score on Numeracy Skills According to Test Item

The total achievement score on numeracy skills according to test item

Fraction in mathematics is a fundamental concept, and students need a deep understanding of this. It's essential to ensure that students have an in-depth understanding of the concepts of geometry (Ray et al, 2024). The graph above demonstrates the high-scorer and low-scorer KG students' achievement scores on numeracy skills according to the test items. Students with high scorers KGs' mean score is 96% in measurement, 80% in geometry, 71% in fractions, and 73% in number and calculation, whereas low-scorer KG students' performance is very low in comparison with high-scorer KG. The highest score is 28% in number and calculating and the lowest is 10% in measurement.

Table 2

Highest and Lowest Score School on Achievement Tests

School Code	Literacy Mean Score (N-370)	School Code	Numeracy Mean Score (N-370)
KG6	22.1	KG6	18.2
KG10	22.4	KG10	12.9
KG18	12.3	KG18	3.7
KG12	9.2	KG12	6.5
Average of Total	**16.0**	**Average of Total**	**9.5**

Highest and lowest score school in achievement tests

KG10 achieved the highest average score in literacy (22.4), which suggests that students from this school performed the best in that area. On the other hand, KG12 had the lowest mean score (9.2). The data shows a large gap in numeracy skills between the top and lowest scoring schools, with KG6 scoring more than five times higher than KG18. The same pattern is seen in literacy skills, where KG10's average is more than twice that of KG12.

Qualitative Data Analysis

Teaching-Learning Strategies

The classroom atmosphere, along with the teaching and learning methods used by teachers, significantly influences students' academic performance. Tomlinson (2000) emphasized the importance of adapting instruction based on students' readiness, interests, and learning profiles. Suitable learning activities provided by teacher can stimulate students according to their abilities, which can result in higher levels of achievement. During interviews, the Bangla teacher (KBT01) mentioned that she ensures each student completes daily reading and writing assignments, assigns homework, has students read Bangla texts, and creates questions based on the assigned reading material. Regarding mathematics, KMT_{02}

said, "*I finish the daily lessons in the class every day. I give homework daily and provide feedback.*"

Teacher's Preparation

Teachers' preparation for classes has a great influence on students' performances. Darling-Hammond (2017) found in his study that teachers who consistently prepare for their classes and prioritize their professional improvement tend to be more effective in their instruction and students achieve better learning results. ATs (KBT_{01}, KBT_{02}, KMT_{01}, KMT_{02}) from high scorer kindergarten schools stated that teachers preparation before going to class is important for students' academic achievement. Regarding class preparation KBT_{02}, KBT_{03}, and KTM_{02} mentioned that they note down what they'll be teaching tomorrow in their diary. KBT_{03} said, "*I don't have training on how to teach. But I myself have a plan. Before going to class, I read what I will teach now.*"

Teacher's Clear Instruction

Teachers' clear instruction is very important to ensure quality education. Many studies have described aspects of teaching practice that are related to effective classroom learning and student outcomes (Brophy and Good, 1986; Wang, Haertel and Walberg, 1990). The researcher found that there is no proper training system for skill development of KG school teachers, Hence, they often find it difficult to deliver lessons based on pedagogy. A teacher (KHT_{03}) commented, "*There is no training system for kindergarten schoolteachers. However, the Kindergarten Association has recently started training for teachers. It is day-long training. However, one day in a week teacher discusses about the lesson problems.*"

Assessment

Derek Rowntree (2015) has defined, assessment is a method used to evaluate students' understanding and measure their progress in learning. Quality assessment can be mentioned as an essential component of effective teaching. Teachers (KHT_{02}, KMT_{01}, KMT_{02}, KMT_{04}, and KBT_{04}) also mentioned that after every lesson they assess students' learning through oral and written tests and give

necessary feedback to the slow learners. Besides, teachers of KG schools (KHT_{01}, KHT_{02}, KMT_{01}, and KBT_{03}) described that teachers assess students learning through class tests, weekly tests, monthly tests, model tests, terminal tests and early tests.

Remedial and Feedback

Feedback has been identified as a key factor in enhancing academic achievement and facilitating learning (Hattie & Timperley, 2007). ATs of Kindergarten school (KMT_{01}, KMT_{02}, KMT_{03}, KMT_{04}, KBT_{01}, KBT_{02}, KBT_{03}) said that feedback and remedial help teachers to understand whether students are interested in studies and attend to join classes regularly. It also helps students to achieve good 'academic results.

Student Diary

Student diary works as a bridge between the teachers and the guardians. By reading the student diary the guardians also can get the information properly and help their children in their studies. A study by Pham et al. (2018) also found that student diary was positively associated with academic performance. It is found from the research that student diary is regularly used in all the KG schools.

Headteacher's Leadership

Dimopoulos (2020) stated that it is important for Headteachers to monitor and supervise academic activities, talk with weak students, and build up good relationships with students, teachers and guardians for better academic performance; otherwise, the student's performance will decline. The research revealed that headteachers try to ensure academic routine strongly (KHT_{02}). To explain the activity of a headteacher one of the headteachers (KHT_{01}) said,

> *"I discussed with subject-based teachers about their preparation, observing their lessons and giving necessary feedback, ensuring teachers and students regular attendance, ensuring completing every student's homework and classwork, asking the teachers to identify slow learners and maintain an extra diary for them,*

> *communicating with guardians, students, teachers and community. Arrange extra classes after school hours and conduct meetings with teachers about students' results*."

Students Regular Attendance

One study by Gottfried (2010) found that student attendance has a significant positive effect on academic performance, particularly in the areas of reading and math. A study found that attendees students achieved higher test scores and better grades. In the study, the researcher mentioned that students of good-performing kindergarten school had better attendance than students of low-performance schools. KHT01 said, (*"In our school, Students' attendance is very good, and this regular attendance impacted their academic results."*) This statement was also observed during observations and in the achievement test scores of high performing kindergarten schools (KG6 and KG10).

Parental Support

Gherasim and Rusu (2021) found that parental involvement was an important factor in predicting student success. Study found that when parents become directly involved in their children's academic learning and provided all kinds of supports, Students usually achieve higher grades than those whose guardians were less engaged. Teachers of better performed KG schools mentioned the significance of parental support and the quality of support they get for their students. In response to these questions, they mentioned that it plays a vital role in achieving good performance to have guardians' support. A headteacher (KHT_{01}) stated,

> *"Subject teachers identify the weaknesses of the learners and inform their parents so they can take necessary steps. Similarly, when the parents face any problems in their children's studies, they inform the teachers, and the teachers take necessary steps to remove the problems."*

Teachers Extra Support

According to Huynh et al (2019), students who received extra support and guidance from their teachers had significantly higher test scores compared to those who did not receive extra help. It is also found in the study that the students of better-performing KGs sometimes got extra sessions from their teachers and sometimes take other remedial measures. Regarding this issue, a subject teacher (KMT_{01}) expressed, *"I arrange special sessions for the slow learners in the afternoon, use extra books beside the NCTB books for clear understanding, use teaching-learning materials which I get around me and use role play to give clear ideas to the learners".* Besides, teachers of low-performing schools were reluctant regarding the issue, and they usually did not conduct extra classes (KBT_{03}).

Coaching or Tutor Support

The teachers (KHT_{02}, KMT_{02}, KMT_{01}, KBT_{02} & KBT_{04}) of kindergartens also ststed that comparatively slow learners took private tuition so that they could get support in their learning. Regarding this factor, Guryan et al. (2021) noted that private tutoring can significantly improve student performance, particularly among low-performing students. Teachers also indicated that nearly 50% of the kindergarten students took private tutoring, which was very effective in achieving good academic results.

School Management Committee (SMC)

School-Based Management (SBM) is a concept that offers autonomy to schools to determine school policies to improve the efficiency, effectiveness, equity and quality of education to accommodate the wishes of the community and the government.(Osei & Kwame, 2012). Although head teachers of both low-scorer and high-scorer Kindergarten school emphasized the significance of SMC for the students' academic performance. However, during the interview, KHT_{01}, KHT_{02}, and KHT_{03} said that formally there is no committee to run the kindergarten school in the name of SMC. It is just a private ownership institute. Instead, there is a director and he himself makes all the decisions here.

Teacher-Parent Communication

In this research, it is found that the KHTs and the Students of high-scoring Kindergarten schools were aware of parents' communication for enhancing students' performance. Parents' communication especially helps students in filling up learning gaps and preparing the homework at home. Regarding the factor, Kraft & Dougherty (2013) stated that students' academic achievements can be improved by involving parents in their children's schooling.

In the present study, KG school teachers were asked how they manage parental support for students. In response teachers informed them that they contact with parents, sometimes parents come to school, and during parents' gatherings, they discuss the issues and needs of their children. Another effective and useful way of parental communication was student's diary, which are mainly used in KG schools. A principal (KHT_{01}) commented, *"In our school, we communicate with the parents through students' dairy. In the parent's comments section of the dairy, parents also write the children's further support or needs."*

Recommendation

This study is just an initial stage for knowing the factors which are influencing students' performances. The following recommendations have been drawn from the study.

Recommendation for Teachers:

- Teachers (GPS and others) should strictly maintain diaries like KG schools.
- Teachers (GPS and others) should establish strong parent-teacher communication for better performance of the students.
- Kindergarten teachers can follow the teacher's guide for better performance.

Recommendation for Policy Makers:

- Training programs for kindergarten teachers need to be arranged for quality teaching and learning.

- Most of the kindergarten schools have do not have a School Management Committee (SMC) and have less community involvement. To ensure more community involvement SMC should be formed.
- The active academic leadership of the Headteacher needs to be ensured by providing training.
- There is no monitoring and supervision system for kindergarten schools. For this reason, teachers do not have any strict accountability from administration. So, KG schools should be brought under proper supervision and monitoring.
- Further research can be conducted to identify how much each factor influences student performance.

Conclusion

In this study, the researchers wanted to uncover the factors that influenced the academic performance of the students at Kindergarten Schools. For this study, an achievement test was taken by the researchers to assess students' numeracy and literacy skills for grade three. Based on achievement tests results, the researchers selected the top two best scorer schools and lowest scorer schools. Then the researchers collected qualitative data from the students of top and low scorer Kindergarten schools to determine the influencing factors. The researchers coded all data considering their theme. The researchers highlighted several factors that impact students' performance, including headteacher leadership, student diaries, consistent student attendance, teacher preparation, and parental support. Additionally, the study revealed various gaps that should be explored through further research.

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Tanny, Shafiq

Barriers and Prospects of Inclusive Education for Children with Disabilities in Rural Bangladesh: A Post-Pandemic Analysis

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Abstract

This study explores prospects and barriers in implementing inclusive education for the children with disabilities in rural primary schools of Bangladesh after COVID-19 pandemic. The study approach collected data mainly from teachers and parents along with observation of school facilities of 44 government primary schools in the Habiganj district following a mixed method approach. Findings show several persistent barriers including low retention rate, inadequate teacher preparedness, inaccessible infrastructure and social stigma. Teachers generally possess a positive attitude and moderate level of self-efficacy to inclusion of children with disabilities along with some areas of improvement. Lack of adequate training on contemporary inclusive practice like universal design of learning and insufficient facilities in school and classroom exacerbate the challenges. Socioeconomic constraints including community perception and pandemic disruption further exaggerates exclusion. The study recommends enhanced teacher training on contemporary inclusive practice, community engagement, policy reformation and targeted investment to ensure inclusion of children with disabilities in rural and remote areas.

Keywords: Inclusion of children with disabilities, school and teacher readiness, barriers of inclusive education, inclusion in rural primary schools.

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Introduction

Inclusive education (IE) is one of the key focus areas of primary education in Bangladesh to ensure accessible access to education for marginalized groups including children with disabilities (CwD). Over the years, Bangladesh has made significant progress to integrate inclusive education in mainstream primary education by adopting progressive policies and program, improving infrastructure, teacher capacity development, advocacy and community engagement (Malak et al., 2013; UNICEF, 2021; Ahsan & Mullick, 2013). Adoption of universal design of learning (UDL) as a key pedagogy in primary school has further strengthened these efforts by enhancing teacher's skills to address diverse needs of the learners. Despite progressive improvement in integrating inclusive practice in primary education still challenges persist particularly for CwD in rural and remote areas due to some systematic barriers. Studies identified systematic issues such as insufficient resources, lack of disability friendly facilities and assistive devices, inadequate infrastructure, inaccessible classrooms, and limited teacher readiness as major barriers for effective implementation of inclusive education (UNICEF, 2021; Bushra et al., 2018). The COVID-19 pandemic further exacerbated these challenges by disrupting educational progress and disproportionately affecting marginalized learners due to schools remaining closed for a long time.

Research underscores the importance of teacher professional development in advancing IE. Programs like the Primary Education Development Program (PEDP) have provided teachers with basic training. However, teachers often lack relevant knowledge, skills and attitude to address diverse needs of the learners and societal stigma due to lack of in-depth, and contextual orientation and training on IE that hinder effective inclusion of CwD in mainstream schools. Besides, lack of follow-up and further support for further work as obstacles (Malak & Khanam, 2010).

The rationale of this study lies in addressing the persistent challenges faced in implementing inclusive education for children with disabilities (CwD) in rural government primary schools of Bangladesh, particularly in the post-pandemic context. Despite policy progress and efforts to promote inclusion, barriers such as

inadequate infrastructure, limited teacher preparedness, social stigma, and economic constraints continue to hinder meaningful participation of CwD. The COVID-19 pandemic has further deepened these challenges, widening learning gaps and reducing access for marginalized children. This study was undertaken to explore these issues, identify gaps, and provide evidence-based recommendations to strengthen inclusive education practices in rural settings.

In the above mentioned context, the study aimed to explore the current status of participation of children with disabilities (CwD) in rural government primary schools in Bangladesh after the pandemic. It examined teacher preparedness, school infrastructure, and classroom readiness for inclusive education. The study also identified key barriers that hinder inclusion and assessed how COVID-19 worsened these challenges.

Literature Review

Inclusive education is one of the key focuses of primary education in Bangladesh to address educational disparities and ensure equity for all learners including CwD. Over time, various policies, programs and initiatives have been taken in integrating inclusive practice in mainstream primary schools. This part reviews key research works to summarise the understanding of inclusive education practices, teacher capacity development and challenges regarding inclusion of CwD in primary education in Bangladesh.

Inclusive education practices in Bangladesh

Inclusive education has evolved significantly in Bangladesh through gradual policy and program reformation being rooted in international frameworks such as the Salamanca Statement and Education for All (EFA). Policies like the National Education Policy (2010), Rights and Protection of Persons with Disabilities Act (2013) and Special Education Needs and Disability (SEND) Framework (2022) provide a strong foundation to ensuring equity and access for all learners, including children with disabilities (CWD). Inclusive education practices aim to integrate marginalized groups into mainstream education. Key initiatives like the Primary Education Development Program (PEDP) have laid the groundwork by

emphasizing teacher training, infrastructure development, and inclusive curriculum adjustments (Malak et al., 2013; UNICEF, 2021).

Despite these efforts, fragmented implementation limits their impact and challenges persist (Sarker & Unzum, 2023). Inadequate infrastructure, rigid curricula, lack updated teacher training and insufficient adaptation of policies to local contexts impede effective implementation of inclusive practice (Malak et al., 2013). Schools often lack relevant facilities for the CwD such as ramps, suitable classroom settings, adapted furniture and specialized teaching-learning materials, assistive devices and accessible wash blocks (UNICEF, 2021; Ambia & Rahman, 2021; Amran & Obaydullah, 2019; Azim & Hasan, 2014; Begum et al., 2019)). Furthermore, existing hierarchical approaches to policy implementation restrict to address the unique needs of rural communities (Sarker & Unzum, 2023).

Teacher professional development

Development of a teacher's capacity is instrumental for practical application of inclusive education. The Ministry of Primary and Mass Education (MoPME) provides training to the school teachers to equip them with foundational knowledge and skills of inclusive pedagogy under PEDP. However, research shows that teachers fail to address practical challenges in the classroom such as use of sign language, Braille or apply universal design of learning (UDL) due to lack of specialized training (Malak & Khanam, 2010; UNICEF, 2021). Furthermore, delivery of too brief and theoretical training instead of contextual comprehensive and hands-on training limits teacher's ability to apply the training in schools. (Ahmmed & Mullick, 2014). Additionally, lack of follow-up support and collaborative platforms for sharing best practices hinder continuous improvement of teaching practice (Malak et al., 2013).

Sociocultural acceptance and stigma

Collaboration between school and community is recognized as a critical component for effective implementation of inclusive education in school (Sarker & Unzum, 2023). However, social and cultural attitudes towards disability often restrict community engagement and their support. Persistent stigma and

misconception about disabilities often discourage families to enroll their CwD in school and deject community people to accept them in school. The situation creates an unfriendly environment for the CwD and hinder their participation in school. (Ahmed & Kashem, 2015; Naznin, Akter & Islam, 2023; Malak & Khanam, 2011; Hasan, Hossain & Ahmed, 2017).

While existing studies provide valuable insights into these challenges, there is limited research examining the post-pandemic realities of IE in rural government schools, leaving critical gaps in understanding how to effectively address these persistent obstacles.

Methodology

This study combines qualitative and quantitative approach simultaneously to explore persistent challenges in rural government primary school of Habiganj that makes it convergent parallel mixed method research design. Mixed methods research offers a comprehensive view of social phenomena by integrating numerical data and qualitative insights (Robson, 2011; Cohen, Mannion, & Morrison, 2011). The study used opinion surveys, school observation, in-depth interviews, focus group discussions, and document analysis. Additionally, secondary data was used to triangulate findings with primary data (Cohen et al., 2011).

The study was conducted in rural areas of three sub-districts (Nabiganj, Chunarughat and Habiganj Sadar) of Habiganj district in Bangladesh that surveyed 44 randomly selected government primary schools and their catchment areas. Respondents of the study were parents of CwD, assistant teachers, and head teachers of the visited schools. The study employed multiple methods of data collection including school observation, child survey in catchment area, opinion survey of assistant teachers, KII with head teachers, and FGD with parents. The data sources of the study were chosen based on study objectives e.g. child survey and parents FGD helped to understand participation of the CwDs in school and persistent barriers, opinion survey of the assistant teachers and interview with the head teachers helped to understand their preparedness including their attitudes and self-efficacy towards inclusive practice in school, school observation assist

investigating school infrastructure and classroom readiness for implementation of inclusive practice in the sample schools. To measure teacher preparedness, the survey questionnaire consisted of a demographic questionnaire and two standardized scales: Teacher Attitudes towards Inclusion Scale (TAIS) and Teacher Self-efficacy in Implementing Inclusive Practices (TSIIP) Scale. These tools were designed to disaggregate data by gender, age, disability, and vulnerability status. Additionally, secondary data sources, including policy documents, research reports, and planning records from government and development organizations were systematically reviewed. This provided contextual insights and supported the triangulation of primary data.

The study adhered to strict ethical standards, including child safeguarding policies and informed consent protocols. Participants were assured of confidentiality, and their identity was protected through a cultural and gender sensitive data collection.

Data analysis combined quantitative and qualitative techniques. While quantitative data was analyzed using statistical tools for descriptive and inferential statistics, qualitative data underwent thematic analysis, following the framework suggested by Braun & Clarke (2006), and Creswell, (2012) where six steps of data analysis were used to generate themes and interpret the themes started from data familiarization. The themes were then presented aligning with the study objectives e.g. barriers in implementation of inclusive education. Mixed-methods analysis allowed the integration of findings, with quantitative results contextualized through qualitative insights.

Findings

Participation of CwD in education

In this study, a total 210 CwD aged 6-10 years were identified through the household survey of the school catchment area, where 152 (76.7%) were enrolled in school and 58 (23.3%) of them never enrolled in schools. The data highlights notable gender disparities and challenges in accessing and continuing education though national level data in primary education shows balanced gender parity.

Among male children, 22.64% were never enrolled in school, compared to a higher percentage of 32.70% for females, indicating significant barriers for girls with disabilities in accessing education. Similarly, the dropout rate for females (21.15%) exceeds that of males (16.04%), reflecting challenges in retaining female students in the education system. While 61.32% of male children are currently continuing their education, only 46.15% of female children remain enrolled, resulting in an overall continuation rate of 53.81%. This disparity suggests that cultural, social, or systemic barriers disproportionately affect female children with disabilities, limiting their educational opportunities.

Table 1

Status of the children

Status of going to school	Sexual identity of the respondents		
	Male (n=106)	Female (n=104)	Total (n=210)
Never enrolled	22.64	32.70	23.33
Dropped out from school	16.04	21.15	18.57
Continue education	61.32	46.15	53.81
Total	100.0	100.0	100.00

School Readiness and Teachers' Preparedness

The survey on teacher preparedness revealed diverse demographic characteristics among respondents. Slightly more males (56.8%) than females (43.2%) participated. Regarding professional roles, assistant teachers comprised 52.3%, while 47.7% were Headteachers, demonstrating a balanced mix of teaching and leadership positions. In terms of professional development, 38.6% of teachers held a B.Ed or equivalent, and 27.3% had a C-in-Ed certification, but only 2.3% held an advanced M.Ed degree. Alarmingly, 31.8% lacked any professional degree, highlighting significant gaps in access to training and development. The data reflects a teaching workforce with moderate professional preparedness, emphasizing the need for enhanced opportunities for professional growth to meet the demands of inclusive and modern education.

Table 2

General demographics of the participants

		N	%
Sex	Male	25	56.8
	Female	19	43.2
Position	Head Teacher	21	47.7
	Assistant teacher	23	52.3
Professional Degree	No professional degree	14	31.8
	B. Ed or Equivalent	17	38.6
	M. Ed or Equivalent	1	2.3
	C-in-Ed	12	27.3

The success of inclusive pedagogical practice solely depends on how prepared the teachers are in terms of their attitudes and their skills. The data on teachers' orientation towards disability and inclusion reveals significant gaps in preparedness and exposure. A majority of teachers (79.5%) reported having students with disabilities in their schools, highlighting the immediate need for inclusive education practices. However, their training on inclusive education is notably inadequate. Most teachers (65.9%) reported having no training on inclusive education, while 29.5% had only attended short orientations lasting 1-3 days, and a mere 4.5% received partial training of 1-2 weeks. Alarmingly, no teacher had undergone moderate (1-2 months) or higher training (over 3 months) on inclusive education.

Teachers' knowledge of disability and inclusive education related national and international policy and directions plays a vital role in practicing inclusive pedagogy in their classrooms. Data shows that knowledge about disability-related policies is also insufficient among the surveyed teachers. Nearly half (45.5%) admitted to having no knowledge of such policies, and 15.9% reported having very little knowledge. While 38.6% claimed average knowledge, no teacher rated their knowledge as good or very good.

This analysis underscores a critical gap in teacher preparedness for IE, both in terms of training and policy awareness, despite the prevalence of CwD in schools. Comprehensive professional development programs and awareness initiatives are urgently needed to equip teachers with the skills and knowledge for inclusive classrooms.

Table 3

Disability related information of the participants (teachers)

Category	Response	N	%
Students with disability in school	Yes	35	79.5
	No	9	20.5
Inclusive education training	No training	29	65.9
	Short orientation (1-3 days)	13	29.5
	Partial training (1-2 weeks)	2	4.5
	Moderate length (1-2 months)	0	0
	Higher training (> 3 months)	0	0
Disability related policy Knowledge	Nil	20	45.5
	Very little	7	15.9
	Average	17	38.6
	Good	0	0
	Very good	0	0

Teacher Attitudes towards inclusion of CwD

The study assessed teachers' preparedness for inclusive education through two internationally standardized scales—Teacher Attitudes towards Inclusion Scale (TAIS) and Teacher Self-efficacy in Implementing Inclusive Practices (TSIIP)—and an observation checklist for infrastructural facilities for students with disabilities. The TAIS scale measured teachers' attitudes toward including students with disabilities in regular classrooms using a six-point Likert scale, where scores between 3.5-4.5 indicated lower positive attitudes, 4.5-5.5 moderate positive attitudes, and 5.5-6 higher positive attitudes. Data were collected from 44 teachers across 22 schools.

Finding shows that teachers possess positive attitudes towards inclusion, recognizing both social and academic benefits and valuing the professional

growth opportunities that come with teaching diverse learners. The variation in standard deviation across items indicates differing levels of consensus among teachers on specific aspects of inclusion. In the result, six out of eight TAIS items had mean scores between 4.5 and 5.5, reflecting a moderate level of positive attitudes toward inclusion. Notably, Item 7 ("Inclusion will make me a better teacher") scored the highest (M=5.11, SD=1.12), followed by Item 2 ("Inclusion benefits students socially") (M=5.09, SD=1.13), and Item 8 ("Happy to include students needing assistance") (M=5.05, SD=1.43). However, Items 1 ("All students should be taught in regular classrooms") (M=4.05, SD=1.68) and 3 ("Inclusion benefits students academically") (M=4.43, SD=1.59) scored lower, indicating weaker attitudes toward the core aspects of inclusion, such as classroom integration and academic benefits for students with disabilities. These findings highlight areas needing focus to enhance teachers' attitudes toward inclusive practices.

Table 4

Teachers' attitude towards inclusion of the children with disability

SL	Statements	Mean	SD
1	I believe that all students regardless of their ability should be taught in regular classrooms.	4.05	1.684
2	I believe that inclusion is beneficial to all students socially.	5.09	1.137
3	I believe that inclusion benefits all students academically.	4.43	1.591
4	I believe that all students can learn in inclusive classrooms if their teachers are willing to adapt the curriculum.	4.80	1.231
5	I am pleased that I have the opportunity to teach students with lower academic ability alongside other students in my class.	4.91	1.411
6	I am excited to teach students with a range of abilities in my class.	4.86	1.340
7	I am pleased that including students with a range of abilities will make me a better teacher.	5.11	1.125
8	I am happy to have students who need assistance with their daily activities included in my classrooms.	5.05	1.430

Statistical tests did not find any significant difference between teachers' attitude due to their difference in sex, age, education level, training, professional degree or

professional degree. However, an independent sample t-test revealed a statistically significant difference in the mean scores of attitudes between the teachers who experienced children with disabilities in their schools and those who did not (t(42) = 3.519, p = .001). The mean difference was 1.04, with a 95% confidence interval ranging from 0.44 to 1.64, indicating that teachers who experienced children with children demonstrated significantly more positive attitudes than the teachers who did not. This result highlights that teachers who possess less positive attitude towards inclusion of CwD in government primary might change their attitude if they get a chance to experience the CwD.

Table 5

Independent Samples Test of Attitude scales of teachers who had CwD and who did not

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tail.)	Mean Diff.	Std. Error Diff.	95% Confidence Interval of the Difference	
									Low.	Upp.
Mean score of all attitude scales	Equal variance assumed	1.18	284	3.519	42	.001	1.042	.296	.444	1.639
	Equal variance not assumed			.585	9.45	028	1.042	403	0.136	1.947

Teacher Efficacy

The findings indicate that teachers generally hold a moderate level of self-efficacy in implementing IE, as reflected in mean scores between 4.5 and 5.5 on most

items of the self-efficacy scale. The highest-rated item was related to assisting families in supporting their children's academic success (M = 5.39, SD = 0.831), followed by abilities to manage disruptive behaviors (M = 5.25 and M = 5.23). However, several critical areas of IE revealed lower levels of perceived self-efficacy, with mean scores below 5.00. These include using diverse assessment strategies, designing tasks to accommodate students with disabilities, collaborating with professionals on educational plans, and informing others about inclusion laws and policies. Items related to core aspects such as inclusive assessment and classroom adaptation (e.g., Items 1 and 3) particularly highlight gaps in teacher preparedness. These findings suggest that while teachers exhibit moderate confidence overall, addressing these specific areas is essential to equip them for creating an inclusive learning environment.

Table 6

Teacher Efficacy on inclusion of students with disabilities

SL	Statements	Mean	SD
1	I can use a variety of assessment strategies (e.g., portfolio assessment, modified tests, performance-based assessment).	4.05	1.509
2	I am able to provide an alternate explanation/ example when students are confused.	5.20	.954
3	I am confident in designing learning tasks so that the individual needs of students with disabilities are accommodated.	4.16	1.397
4	I can accurately gauge student comprehension of what I have taught.	4.98	1.089
5	I can provide appropriate challenges for very capable students.	4.57	.846
6	I am confident in my ability to get students to work together in pairs or in small groups.	5.09	1.074
7	I am confident in my ability to prevent disruptive behavior in the classroom before it occurs.	4.91	1.137
8	I can control disruptive behavior in the classroom.	5.23	.985
9	I am able to calm a student who is disruptive or noisy.	5.25	.781
10	I am able to get children to follow classroom rules.	4.93	.974
11	I am confident when dealing with students who are physically aggressive.	4.91	1.030
12	I can make my expectations clear about student behavior.	5.20	.954
13	I can assist families in helping their children do well in school.	5.39	.813
14	I can improve the learning of a student who is failing.	4.66	.963
15	I am able to work jointly with other professionals and staff (e.g., aides, other teachers) to teach students with disabilities in the classroom.	4.55	1.372
16	I am confident in my ability to get parents involved in the school activities of their children with disabilities.	4.50	1.372
17	I can collaborate with other professionals (e.g., itinerant teachers or speech pathologists) in designing educational plans for students with disabilities.	3.55	1.946
18	I am confident in informing others who know little about laws and policies relating to the inclusion of students with disabilities.	3.02	1.635

Statistical tests did not find any significant difference between teachers' self-efficacy due to their difference in sex, age, education level, training, professional

degree or professional degree. However, an independent sample t-test revealed a statistically significant difference in the mean scores of attitudes between the teachers who experienced children with disabilities in their schools and those who did not (t (42) = 2.890, Sig. = .006). The mean difference of 0.59929, with a standard error of 0.20739, reflects that the teachers who experienced CwD in their schools scored higher in self-efficacy. The 95% confidence interval (0.18077 to 1.01782) confirms that the difference is positive and unlikely to be due to chance. The results suggest that experiencing CwD helps teachers to improve their self-efficacy regarding managing and teaching CwD in an inclusive classroom.

Table 7

Independent Samples Test of Self-Efficacy scales of teachers who had CwD and who did not

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Diff.	Std. Error Diff.	95% Confidence Interval of the Difference	
									LLow.	UUpp.
Mean score of all efficacy scales	Equal variance assumed	2.184	.147	2.890	42	.006	.599	.207	.181	1.018
	Equal variance not assumed			3.811	20.2990	.001	.599	.157	.272	.927

School Readiness

As mentioned earlier in the methodology section that data has been collected from 44 government primary schools in the study area, it also explored the institutional facilities for CwD. Findings show that only 4 of the institutions had wheelchair, no institute had braille books, only one-third institutes had 3D learning materials

for students, 29 institutes had multimedia classrooms, 16 institutes had audio-visual materials, 6 had audio recorder, 4 had multisensory materials, 21 institutes had special sitting arrangements for CwD etc.

The survey findings reveal major infrastructural gaps in accessibility for CwD in the surveyed schools. While a few schools have made efforts to include facilities such as wheelchair access ramps (with 22 schools found), the usability of these ramps remains problematic, as many schools either disagreed or reported no service. Entrance and playground access showed mixed progress, with barriers persisting. Facilities for visually impaired students were minimal, and safety railings were inconsistent. Critically, most schools lacked wheelchair-accessible toilets, underscoring significant challenges in creating an inclusive environment.

Table 8

Infrastructural facilities in school for inclusion of students with disabilities

Sl.	General accessibility	Response (N)				
		Strongly Agree	Agree	Disagree	Strongly Disagree	No Service
1	It is easy to get through the main entrance of the school	2	10	20	10	2
2	The school has a wheelchair access ramp at the entrance	12	10	4	2	6
3	The ramp for wheelchair access is usable	6	12	4	8	4
4	The school playground is accessible to all students including those with disabilities	4	20	12	6	2
5	The school building has facilities for students with visual impairment for their mobility	4	6	4	6	24
6	The school has railing on the stairs / verandah for safety of students with disabilities	6	6	6	4	2
7	The school has toilets where students with disabilities can enter with wheelchair	0	2	6	16	20

The survey results highlight significant gaps in classroom accessibility for CwD in the surveyed schools (N=44). Most classroom doors (N=33) are not wheelchair

accessible, posing a major physical barrier, while seating arrangements are inconsistently suitable, with 21 respondents finding them appropriate and 23 not. Similarly, only 18 respondents noted adequate space for CwD, including wheelchair users, while 26 reported insufficient space. On a positive note, 31 respondents confirmed front-row seating arrangements for students with disabilities, and a strong majority (N=39) indicated that these students are seated with advanced learners, promoting inclusivity. Despite these efforts, the findings emphasize the need for improvements in physical accessibility, spatial arrangements, and infrastructure to ensure equitable and supportive classroom environments for all students.

Table 9

Accessibility in classroom

Sl.	Accessibility in classrooms	Response (N=44)	
		Yes	**No**
1	Are the classroom doors wheelchair accessible?	11	3
2	Is the seating arrangement suitable for students with disabilities?	21	3
3	Is there enough space (including wheelchairs) for the students with disabilities?	18	6
4	Is there a seating arrangement in front of the classroom for the students with disabilities?	31	3
5	Do students with disabilities have seating arrangements with advanced learners?	39	5

Barriers to inclusion of CwD

The inclusion of children with disabilities (CwD) in government primary schools in Bangladesh faces numerous barriers, both systemic and contextual. Infrastructure remains a critical concern, as many schools lack wheelchair-accessible facilities such as ramps, toilets, and adequately spaced classrooms. Even when ramps are present, they are often poorly constructed or maintained, rendering them unusable. As one head teacher expressed, *"We have a ramp, but*

it's so steep that even adults find it hard to use." Classrooms are similarly ill-equipped to support CwD, with inadequate seating arrangements and limited space for wheelchairs. Findings from the literature review confirm this, noting that most government primary schools in rural areas fail to meet basic accessibility standards (UNICEF, 2021). These infrastructural deficiencies make it physically challenging for CwD to attend school, much less participate meaningfully in classroom activities.

Teacher preparedness is another significant barrier to inclusion. Findings show that while most teachers possess positive attitude and aware of the importance of inclusive practice in school, a significant portion are not aware of inclusion in education. Result shows that most of the teachers lack the training to implement it effectively. Only 34% of surveyed teachers had participated in short-term training programs on inclusive practices, leaving the majority ill-equipped to address the diverse needs of students. One assistant teacher noted, *"We try to help the children with disabilities, but we do not have supportive materials and adequate training to manage a class with children who have different needs. I got a very short training delivered mostly in lectured method and this theoretical knowledge hardly helps to address my contextual problems."* This aligns with existing literature, which emphasizes that inadequate professional development is a widespread challenge in Bangladesh, particularly regarding specialized pedagogies like UDL (Ahmmed & Mullick, 2014).

Unsupportive perception of community people including parents is another challenge for inclusion of CwD. As one parent shared, *"People tell us our child doesn't belong in a regular school, so we hesitate to send them. Even my family members are not convinced that my son with disabilities will be able to continue his learning."* Such attitudes, reinforced by limited community awareness, create a hostile environment for CwD, both within and outside the classroom. This finding is supported by prior research, which highlights the role of stigma in perpetuating educational disparities for marginalized children (Bushra et al., 2018).

An economic constraint is another barrier for families who have CwD and many parents face difficulties to afford transportation, assistive devices, or additional educational resources due to their financial insolvency. A parent stated that, *"it is a burden for me to continue additional expenses for my child as I need additional materials and transportation costs."* These economic challenges have further exacerbated the families due to reduction of family income and rise of educational costs in post-pandemic situations. Schools also struggle with limited or no budgets to invest in accessible infrastructure and inclusive learning materials. A head teacher said, *"We do not have a separate budget for preparing or collecting accessible materials for the CwD. Only a budget allocated for assistive devices, but we do not have any budget for buying or collecting other accessible materials."*

After COVID-19 the challenges were amplified for the CwD. According to the schools, the majority of the CwD could not attend in teaching-learning activities due to transition of learning from in-person to online modality during school closures. The CwD was also affected due to a lack of access to digital devices and internet connectivity. One assistant teacher reflected, *"During the pandemic, we couldn't reach many of our students with disabilities, and they've fallen behind even further."* Due to absence of tailored support during and after the pandemic period, the learning gap of the CwD was further widened that kept many children isolated and less likely to return to school. Literature corroborates this, noting that the pandemic disrupted essential support services, such as therapy and specialized instruction, critical for the development of CwD (UNICEF, 2021).

Discussion

This study revealed that only 53.81% CwD of the catchment areas of surveyed schools continue their education where percentage of male and female children was 61.32% and 46.15%. It is the gross enrolment rate; net enrolment rate would be much lower as most of the CwD were found to enroll in school at older age compared to the children without disabilities. National data support the result that shows that grossly 53.02% CwD were enrolled in primary where net enrolment rate was 41% (BANBEIS, 2022). However, national data shows no significant

difference between male and female children while in current study a significant gender difference is found that emphasizes the need for a tailored program for the CwD with additional support for the girls.

The study underscores significant barriers to implementing IE in rural Bangladesh, particularly for CwD. The findings on infrastructure limitations, such as inaccessible classrooms, lack of disability-friendly facilities, and inadequate teaching materials, reflect a critical gap in creating an inclusive learning environment. Similar observations have been noted in prior research, where the absence of ramps, assistive technologies, and Braille books disproportionately affects CWD, restricting their access and participation (Bushra et al., 2018; Kazi et al., 2013; Zulfiqar, Shahinujjaman & Hossain, 2018). Overcoming these barriers requires investment in infrastructure, and assistive resources, especially for the rural areas.

Teacher preparedness emerged as another pressing issue. The study revealed that most teachers lacked comprehensive training in inclusive practices, with many receiving only short-term orientations. This aligns with findings by several studies done on teacher perception (Ahmmed and Mullick, 2014; Ahmmed, Sharma & Deppeler, 2012; 2013; 2014) who highlighted that pre-service and in-service training in Bangladesh often fails to provide practical skills for managing diverse classrooms. Enhanced professional development programs focusing on UDL and other inclusive pedagogies are essential. For instance, integrating disability-specific training, such as sign language or Braille, into teacher education programs could significantly improve classroom inclusivity (Naher, Maitles & Chowdhury, 2020; Siddik & Kawai, 2020).

Teachers' perceptions and attitudes significantly influence the success of IE initiatives. Findings of this study reveal that generally teachers possess a positive attitude towards inclusion of CwD in mainstream schools. The findings also show that teachers with prior experience working with CwD tend to exhibit more positive attitudes, suggesting that exposure and practical engagement can shift perceptions that are supported by the literature (Ahmed & Kashem, 2015).

Negative biases, particularly towards the abilities of CwD, are common, often reflecting societal stigma and misconceptions and findings that illustrate it exist in the study site. Persistent stigma and misconceptions about disabilities were identified as significant barriers, discouraging families from enrolling their children in school that was also suggested by existing literature (Šiška & Habib, 2012; Das & Ochiai, 2012). This aligns with Ahmed and Kashem's (2015) findings, which emphasized the need for community engagement to address deep-seated biases. Awareness campaigns and parent-teacher collaborations could play a pivotal role in transforming societal perceptions and fostering a more inclusive culture.

Economic challenges further aggravate these barriers. The study highlighted financial constraints faced by families and schools, which limit access to necessary resources for IE. Previous studies have similarly noted that poverty is a critical factor in educational exclusion, particularly for marginalized groups (Sarker & Unzum, 2023). Policy interventions that provide financial incentives, such as stipends for CWD or subsidies for assistive devices, could help lighten this problem.

The COVID-19 pandemic has amplified these challenges, with the transition to online learning disproportionately affecting CWD due to the digital divide and lack of tailored support. The pandemic exposed the fragility of inclusive education systems, emphasizing the need for resilience planning to ensure that marginalized students are not left behind in future crises (UNICEF, 2021).

Policy Implications

To address these challenges, the following policy recommendations are proposed:

- *Infrastructure Development:* Allocate dedicated funds for constructing accessible facilities, such as ramps, disability-friendly toilets, and assistive technology in schools.
- *Teacher Training:* Revise teacher education programs to include practical, hands-on training in inclusive pedagogies, with a focus on UDL principles and disability-specific skills.

- *Community Engagement:* Implement awareness campaigns to combat stigma and encourage parent and community involvement in inclusive education initiatives.
- *Financial Support:* Introduce targeted subsidies for families of CWD to reduce economic barriers, and provide grants to schools for inclusive education resources.
- *Resilience Planning:* Develop contingency strategies for inclusive education during emergencies, ensuring continuity of learning for CWD.

Conclusion

The inclusion of CWD in government primary schools is hindered by infrastructural inadequacies, insufficient teacher training, societal stigma, and economic constraints. The COVID-19 pandemic has deepened these challenges, disrupting educational progress and widening existing inequities. Addressing these barriers requires systemic reforms, targeted investments in infrastructure, and comprehensive teacher training, along with community-based efforts to combat stigma and promote the value of inclusive education. By prioritizing inclusive policies and practices, Bangladesh can move closer to achieving equitable educational opportunities for all, ensuring that no child is left behind.

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Experiences of Accelerated Remedial Lesson Plan in Primary Education: Challenges and Successes in Bangladesh

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Abstract

The COVID-19 pandemic significantly disrupted the education system in Bangladesh, leading to prolonged school closures that hindered the learning of millions of primary school students. In response, the Ministry of Primary and Mass Education developed the Accelerated Remedial Learning Plan (ARLP) to address the educational setbacks. This study evaluates the implementation of ARLP and their experiences, identifying the level of adherence, challenges faced, and necessary initiatives to mitigate learning loss. Utilizing a quantitative methodology, data were collected from teachers and students across various districts. Findings indicate high availability and awareness of ARLP among teachers, yet many faced challenges, including time constraints and insufficient content connection. The study highlights the need for syllabus adjustments, enhanced teacher training, and structured support systems to improve implementation outcomes. Recommendations also stress the importance of psycho-social support and health measures in schools. This research serves as a crucial documentation for future educational emergencies.

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Background

One of the most disruptive events in the history of human civilization is COVID-19 pandemic. The sudden halt in global activities has prompted experts, educators, thinkers, and scientists worldwide to reconsider many aspects of life. The longstanding educational practices were abruptly brought to a standstill, and like many other countries, Bangladeshi education system was severely affected. The closure of educational institutions from March 17, 2020, to September 12, 2021, greatly impacted primary education. Due to the prolonged closure of primary schools for over a year and a half, the learning of primary school students was significantly hampered.

Reports from UNICEF and UNESCO (2021) revealed that since the onset of the COVID-19 pandemic in early 2020, the education of approximately 37 million children in Bangladesh and about 800 million children across Asia, including South Asia, Southeast Asia, and East Asia, has been severely disrupted. This dire situation has not only impacted children's education but also led to various other detrimental effects, including mental health issues, lack of regular school meals and vaccinations, increased dropout rates, child labor, and early marriage (UNICEF and UNESCO, 2021). To mitigate the educational losses incurred by students, effective and coordinated remedial measures are essential.

While various Asian countries adopted online education for students, this approach faced significant challenges and reached only a limited number of students. In Bangladesh, for example, during the pandemic-induced school closures, only one in three students from pre-primary to higher secondary levels could access online education (UNICEF, 2021). The primary reasons for this limited reach included a lack of material resources and technological support, an unsuitable home environment, increased household chores, and the necessity for many children to work outside the home.

As the severity of the pandemic waned, UNICEF and other organizations called on governments to reopen educational institutions and implement extensive measures to help students recover from their educational setbacks. Following the decline in COVID-19 cases, the Government of Bangladesh decided to resume in-

person classes in all primary schools from September 12, 2021. However, due to the prolonged disruption in direct teaching and the significant increase in learning gaps, there was substantial deliberation on how to present certain subjects in classroom instruction. Based on input from various stakeholders and under the instructions of the Ministry of Primary and Mass Education (MoPME), the National Curriculum and Textbook Board (NCTB), with support from the National Academy for Primary Education (NAPE), developed the Accelerated Remedial Lesson Plan-2021 (ARLP-2021).

The plan involved analyzing the primary curriculum and categorizing subject-specific competencies into three levels: must learn, should learn, and nice to learn. For the limited timeframe, the focus was on the **must-learn** competencies—those essential for students to acquire in order to progress to the next grade level. The development of ARLP involved the Directorate of Primary Education (DPE), the NCTB, NAPE, various field-level primary education officers, and classroom teachers. With the assistance of NAPE, the DPE introduced this plan to teachers online within a short period, and it was implemented under the supervision of field-level officials.

To evaluate the extent to which this ARLP was implemented in primary schools and their experiences, identify any implementation challenges, and determine further actions needed for effective execution. It needs to know whether ARLP was fit or not. At the same time, it also helps to archive government initiatives for Primary Education in Emergencies (EiE).

The purpose of this study is-

  a) to explore the experiences of the stakeholders.

  b) to identify the problems with the implementation of ARLP.

  c) to identify ways to adopt necessary initiatives to meet learning loss.

Literature Review

COVID-19

COVID-19 is a newly identified viral disease (Prakriti Basu, 2020). It is an infectious disease for humans caused by a type of virus known as Severe Acute

Respiratory Syndrome Coronavirus 2 (SARS-CoV-2). The term "coronavirus" refers to a family of viruses that includes many different viruses. The latest discovered virus in this family is called the 'novel coronavirus.' The disease caused by this virus is known as 'COVID-19'.

The COVID-19 pandemic has brought changes to almost every aspect, the most notable is the shift in teaching methods. On 31st December, 2019, a strain of coronavirus was detected in Wuhan, China, and the World Health Organization officially named the virus '2019-nCoV' (Novel Coronavirus) (Basu, 2020). Globally, COVID-19 led to school closures in over 190 countries, affecting nearly 1.6 billion learners—about 94% of the world's student population (UNESCO, 2020). This disruption required governments to quickly devise strategies for learning continuity. However, the digital divide remained a major barrier to effective remote learning in many countries, including Bangladesh.

Accelerated Remedial Lesson Plan (ARLP)

Due to the prolonged closure of educational institutions for over a year and a half during the COVID-19 pandemic, at MoPME, following the decision of an inter-ministerial meeting held by the Cabinet Division, instructed the NCTB to formulate the "Accelerated Learning Recovery Plan 2021- (ARLP)". The ARLP primarily aims to address the learning gaps caused by the pandemic within a short period. This effort involved aligning the curriculum with the annual lesson plans through a detailed curriculum analysis.

Bangladesh has been following a competency-based curriculum in primary education, where every part of the textbook is deemed necessary for student learning. However, the curriculum analysis revealed partial repetitions of the same subjects across different grades. Therefore, certain content has been excluded from the ongoing ARLP to ensure a comprehensive study of the curriculum within the limited time available. The curriculum content has been categorized into three parts:

Must Learn: Essential content that must be studied.

Should Learn: Important content that should be taught, though it is less critical than the Must Learn content.

Nice to Learn: Repetitive content found across different grades. This can be taught if additional time is available during school activities (NAPE and Room to Read, 2021).

The COVID-19 pandemic has brought changes to almost every aspect, the most notable is the shift in teaching methods. Following the identification of the coronavirus in Bangladesh, all educational institutions ceased direct teaching activities from March 17, 2020 (Li, Sharma, & Matin, 2021). Despite occasional reopening, schools ultimately remained closed for about 18 months, severely disrupting the education of approximately 37 million students in Bangladesh (UNICEF, 2022).

The prolonged closure of schools for nearly 18 months (Li, Sharma, & Matin, 2021) led to an increased dropout rate among students, with higher rates observed in upper grades. The dropout rate was 13% among girls and 14% among boys. The pandemic heightened concerns about increased dropout rates, particularly among girls from poor and marginalized communities. This poses a significant setback to the gains in female enrollment achieved over the past few decades (UNICEF, 2021). When schools reopened for direct education in 2021, two-thirds of the parents of dropout students had decided against sending their children back to school (Li, Sharma, & Matin, 2021). However, this digital learning was insufficient compared to the need, with significant disparities in access between urban and rural areas. While 76% of urban homes had televisions, only 32% of rural homes did (Li, Sharma, & Matin, 2021). In addition to technological barriers, home learning environments were often unconducive to learning, with students facing distractions, lack of space, and added responsibilities such as household chores and caregiving (Anderson & McLeish, 2020). These factors further widened the learning loss during the school closures.

As COVID-19 infections declined, lockdown measures were eased in Bangladesh, similar to other countries. From September 12, 2021, fifth-grade students were allowed to participate in direct classroom activities daily, while students of other

grades could attend one or two days per week (Salam and Elahi, 2022). Following the recommendations of the National Technical Advisory Committee (NTAC) on COVID-19 and decisions from an inter-ministerial meeting on reopening educational institutions, the MoPME instructed NCTB to think about learning loss and develop ARLP.

A key feature of this plan, developed by NCTB, was to connect the current grade's lessons with those of the previous grade (NCTB, 2021). This plan was implemented from September 12 to December 20, 2021 (NCTB, 2021). Due to the staggered approach in reopening schools (Salam and Elahi, 2022), there were 72 school days available for fifth grade and 13 days for other grades. Given the limited time, it was almost impossible to cover both the current and previous grade's learning gaps. Therefore, the plan focused only on essential lessons and competencies for each subject (NCTB, 2021).

Although the plan included all subjects, it primarily emphasized literacy, language skills, and mathematical skills (NCTB, 2021). The critical considerations for the Accelerated Learning Recovery Plan included presenting grade-specific content with necessary support, prioritizing higher-level skills and content, adopting creative teaching methods, starting with current grade content despite gaps from previous grades, identifying and integrating the most important content and competencies into learning activities, and providing appropriate guidance and support to ensure all students achieve learning outcomes (Short and Hirsh, 2020). Considering these aspects, the "ARLP 2021" developed by NCTB is an ideal remedial and accelerated learning plan.

To successfully implement the ARLP, five key strategies were identified. The first and fifth strategies are: (1) Determining Acceleration Strategies: Establishing, implementing, and maintaining communication for the school's ARLP with representatives of all stakeholders; (5) Involving All Stakeholders in the ARLP: Identifying the types of support students can receive from parents and other helpers to effectively implement accelerated learning and engaging them in this process (Short and Hirsh, 2020). The NCTB provided guidelines to ensure the participation of both teachers and parents in implementing this plan. As part of

this effort, parents were given necessary learning skills to assist their children with homework (NCTB, 2021).

The second and third strategies for implementing plan are: (2) Providing Suitable Establishment for Effective Accelerated Learning: Supplying high-quality course materials, assessments, and essential skills guidance for each course in every class; (3) Focusing on the Holistic Development of the Child: Selecting learning content from the child's culture and familiar environment and providing academic and psychosocial support according to each child's needs (Short and Hirsh, 2020).

Accelerated Education principles, as recommended by INEE (2017), emphasize flexible age-appropriate curricula, psychosocial support, and teacher training—all of which are embedded in ARLP. This approach has been used in conflict-affected regions and proved effective in crisis contexts (Shah, 2015).

To successfully implement the ARLP, five key strategies were identified:

1. **Determining Acceleration Strategies**: Establishing, implementing, and maintaining communication for the school's ARLP with representatives of all stakeholders.

2. **Providing Suitable Establishment for Effective Accelerated Learning**: Supplying high-quality course materials, assessments, and essential skills guidance for each course.

3. **Focusing on Holistic Development**: Selecting culturally relevant content and providing psychosocial support to meet diverse student needs.

4. **Providing Necessary Support to Teachers**: Planning essential training and providing opportunities for experience sharing.

5. **Involving All Stakeholders**: Engaging parents and community members to support students at home (Short & Hirsh, 2020; NCTB, 2021).

To implement the "ARLP 2021," NCTB developed an implementation guide that included instructions for providing psychosocial support to help students overcome trauma and guidance for teachers on connecting current lessons with previous ones (NCTB, 2021).

Theoretical Framework

The Accelerated Remedial Learning Plan (ARLP) in the context of Bangladesh during the post-COVID-19 educational recovery can be understood through several educational and crisis-response theories. For this reaseach Education in Emergencies (EiE) Framework (INEE, 2010, & UNESCO 2021) is suitable to meet the objectives. UNESCO and INEE emphasize that during emergencies, education systems must ensure continuity, protection, and psychosocial well-being. The ARLP embodies EiE by integrating mental health support, rapid assessments, and streamlined content delivery. The study documents Bangladesh's first structured response to an educational emergency, placing it within the broader discourse of global crisis-responsive education.

Key Components of the EiE Framework

    1. Access to Education

    Ensuring that all children, particularly the most vulnerable, have access to safe learning environments. In the context of ARLP, reopening schools and designing a national plan for recovery were essential.

    2. Quality and Relevance
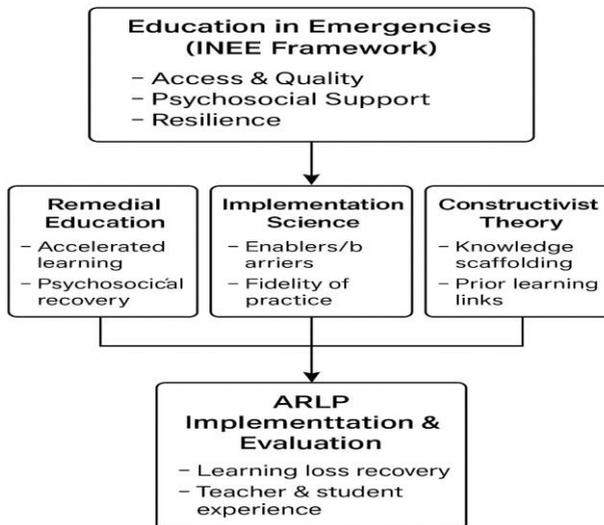
Focuses on the provision of quality education, which includes trained teachers, appropriate curricula, and effective assessments. ARLP addressed this by prioritizing 'must-learn' competencies and conducting rapid assessments.

3. Psychosocial Support and Well-being

Supports the emotional and mental well-being of learners. The ARLP implementation included activities and teacher roles that directly addressed students' psychosocial needs after extended school closures.

4. Equity and Inclusion

Promotes inclusive education for marginalized groups. The study ensured representation from char, haor, coastal, and hilly regions, highlighting the equity-based outreach of the ARLP.

5. Preparedness, Response, and Resilience

Encourages systems to build resilience through planning and implementation strategies that can withstand future crises. Documenting the ARLP implementation supports institutional memory and preparedness.

The EiE framework is appropriate for analyzing the ARLP as it aligns with core pillars of emergency education response. This theoretical lens helps understand how Bangladesh's primary education system responded to an unprecedented crisis, and how such mechanisms can inform future Education in Emergency (EiE) practices.

This study is anchored in the Education in Emergencies (EiE) Framework, which emphasizes the need for access to quality, inclusive, and supportive education during and after crises. The Accelerated Remedial Learning Plan (ARLP) is evaluated as a response mechanism aligned with EiE's pillars—especially in ensuring foundational learning, psychosocial support, and resilience-building in the education system post-COVID-19.

Complementing this are Remedial Education theories, which justify the targeted instructional design of ARLP. These theories focus on enabling students to regain essential competencies through focused content, prioritizing "must-learn" areas that were disrupted during school closures.

The research is further supported by Implementation Science (Fixsen et al., 2005), which helps analyze the fidelity, enablers, and constraints in the real-world execution of ARLP across diverse school contexts in Bangladesh.

Methodology

Though data were collected for this study in 2024 based on the documents provided by DPE policies and guidelines, ARLP was the topmost issue during COVID in 2020 in Bangladesh.

Research Design

This study follows a quantitative, descriptive survey design to examine the implementation, challenges, and stakeholder experiences related to the ARLP in primary schools across Bangladesh. A multistage cluster sampling method has been followed to select districts, upazilas, and Government Primary Schools (GPS) in different stages from each division of Bangladesh. Considering the Geographical conditions of Bangladesh, from 8 divisions, a total of 16 districts were selected, and from these 16 districts, a total of 32 upazilas have been selected: 22 upazilas from plain land, 3 from hilly areas, 3 from haor (low land), 2 from char (wetland) and 2 from coastal areas. Among these 32 upazilas, 16 upazilas were from city areas, and 16 were from rural areas. Within the upazila, schools were selected purposely. Six students from each school were selected through Systematic Random Sampling. Data was collected from a total of 384 students in the study. Information has been collected from 2 teachers (one Headteacher, one Assistant Teacher) who were scheduled in the ongoing routine of each school (total teachers 128), and 1 class activity of each school has been observed.

Table 1
Sample selection

Division	District	Upazila	School	Students	Teachers	Classroom
8	8x2=16	16x2=32	32x2=64	64x12=384	64x2=128	64x1=64

Data Collection Tools

Three main instruments were used, all piloted and refined before full-scale data collection:

1. Questionnaire – Administered to headteachers and assistant teachers; included both structured and semi-structured questions.
2. Interview Schedule – Used to gather student perspectives on ARLP experiences and support.
3. Observation Checklist – Assessed classroom practices, hygiene measures, and routine compliance using a binary (Yes/No) scale.

These three tools were piloted in 2 GPSs of Mymensingh city. After piloting, the researchers finalized the tools.

Data Collection Period

The data were collected in 2024, though the ARLP was implemented during the school reopening phase (Sept–Dec 2021) after COVID-19 lockdowns.

Data Analysis

Descriptive statistics (percentage and frequency) were used to analyze:

- Teacher and student perceptions of ARLP availability and implementation.
- Health, hygiene, and psychosocial support practices in schools.
- Lesson connectivity, routine adherence, assessment methods, and school readiness.

Findings

ARLP Implementation Insights

An analysis of teacher feedback (N=128) on the Activity-based, Result-oriented Learning Program, highlighting key successes and areas for improvement.

Figure:1.1 Availability and Support
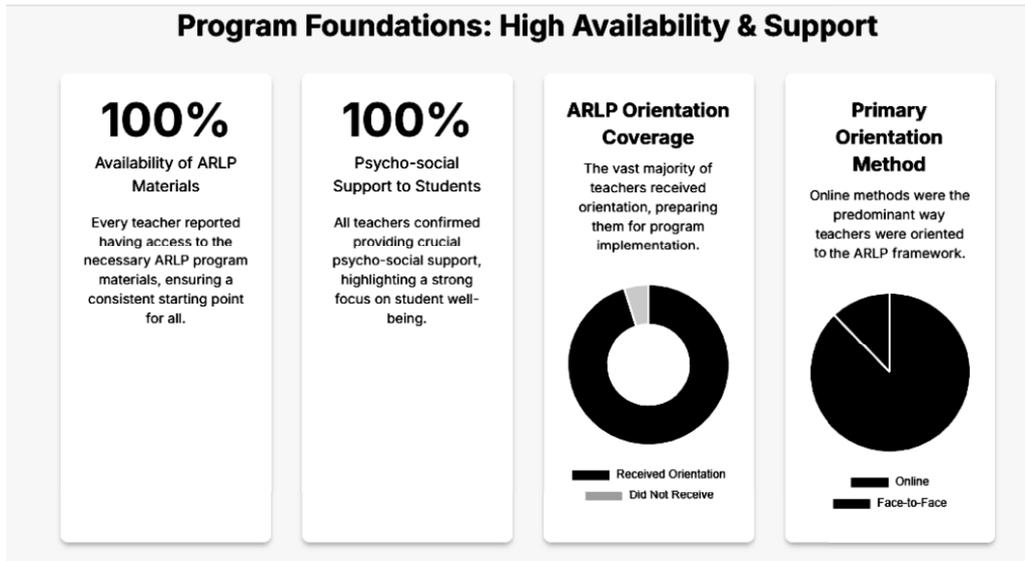
Every teacher reported having access to the necessary ARLP program materials, ensuring a consistent starting point for all. All teachers confirmed providing crucial psycho-social support, highlighting a strong focus on student well-being. The vast majority of teachers received orientation, preparing them for program implementation. Among them, 95.10 percent got orientation training, and 87.93 percent of teachers got orientation through online following the ARLP framework.

Fidelity of Implementation: Adherence & Assessment

Routine and Assessment Adherence

Teachers demonstrate strong adherence to the program's core structural components, including routines and assessment
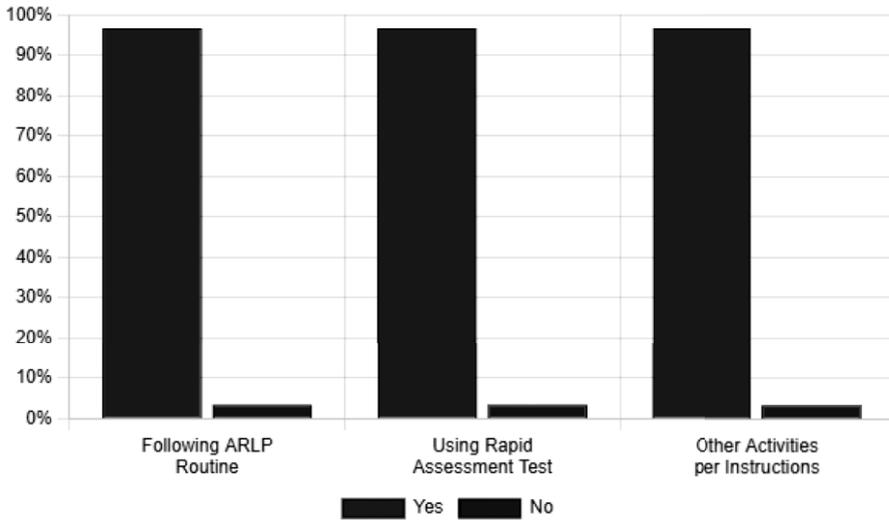
96.72 percent conducted the teaching-learning activities following the ARLP routine. According to the instruction of ARLP, 96.72 percent of teachers recognized that they had conducted rapid assessment tests. 96.7 percent of teachers said that besides ARLP, they had continued mobile communication with the students and parents, instructed the students to watch TV or listen to the radio, visited, and encouraged the students to come to school.

Preferred Assessment Mode

Oral questioning is overwhelmingly the preferred method for conducting rapid assessments.

At the same time, 91.80 percent of teachers said that they conducted rapid assessment tests orally. Only 26.3 perc ent of teachers could complete the lesson within the fixed time given in the ARLP routine.

Classroom Reality: Pacing and Cohesion Gaps

Despite high adherence, significant challenges emerge in the day-to-day execution of lessons, particularly regarding time management and creating logical connections between topics.

Challenges in ARLP Implementation

A majority of teachers report facing difficulties while implementing the program.
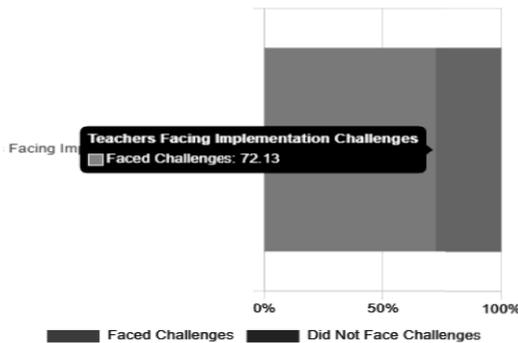
Though most of the teachers had received orientation training on ARLP, 72.13 percent said they faced problems during implementation, such as having more content in a single period, time constraints, inefficient for weak students, more challenging to achieving learning outcomes, insufficient sessions (periods) except grade 5, difficult to connect the lessons, problem with routing of English, BGS and primary science, multiple lessons in a single lesson, lack of coordination among the teachers, no structure instructions for homework.

Key Implementation Gaps

The most critical gaps are in completing lessons on time and linking them to previous content.
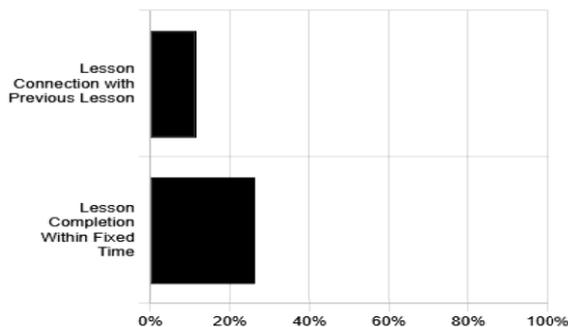
Only 26.3 percent of teachers could complete the lesson within the fixed time given in the ARLP routine. Most teachers (88.5%) didn't connect the lesson with the previous one.

School Readiness & ARLP Implementation: A Data Snapshot

An insightful look into how 64 schools are preparing their environments and implementing the Activity-based, Result-oriented Learning Program (ARLP), based on recent feedback. This analysis aims to highlight key successes and pinpoint areas requiring focused intervention for optimal educational outcomes.

Foundational Readiness: Health & Hygiene Measures

Schools are generally well-prepared, focusing on creating a safe and clean learning environment for students. Key health and hygiene measures show strong adoption rates, though some areas indicate room for improvement in practice.

Overall School Preparation

Prepared
Not Prepared

A high percentage (70.3%) of schools report overall readiness, indicating a solid foundational start. However, nearly 30% of schools still need to improve their preparedness, suggesting targeted support might be beneficial for these institutions.

Core Health & Hygiene Practices
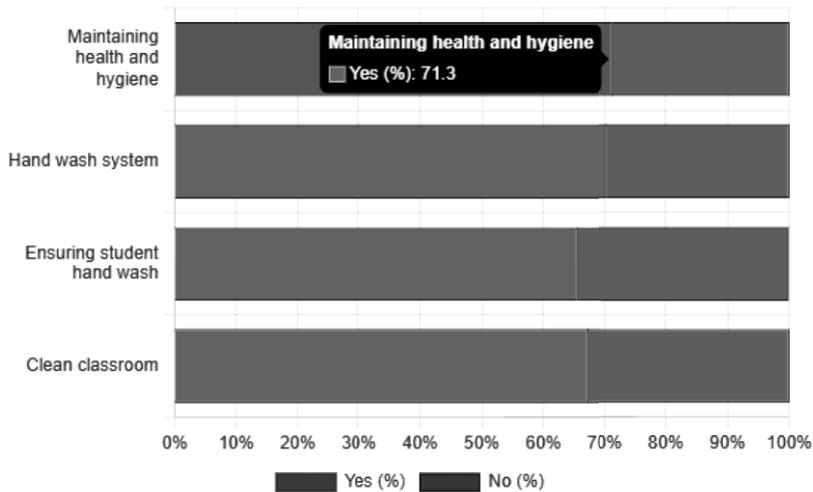
Schools demonstrate good adherence to maintaining health and hygiene (71.3%), providing hand wash systems (70.3%), and maintaining clean classrooms (67.2%). The primary area for improvement here is 'Ensuring each student's hand wash after entering the school compound,' which stands at a slightly lower 65.5%, indicating a need for more consistent enforcement or facilities for student handwashing.

Specific Safety Measures
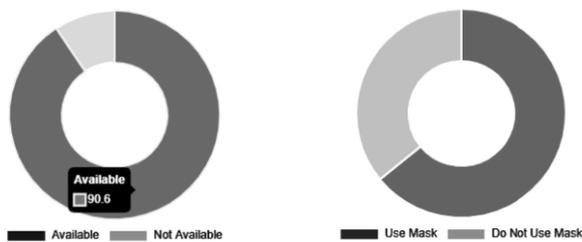
Hand sanitizer facilities are widely available in schools (90.6%), showing a proactive approach to germ control. However, student mask usage is considerably lower at 64.1%. This discrepancy suggests a potential gap in policy adherence or awareness campaigns regarding personal protective measures among students.

ARLP Program Adherence & Support

Teachers are largely following the ARLP routine and receiving instructions, with strong support for student learning needs and psychosocial well-being, indicating a positive integration of the program's core directives.

Psycho-social Support Provided

Support Provided
□ 90.6

■ Support Provided
■ No Support
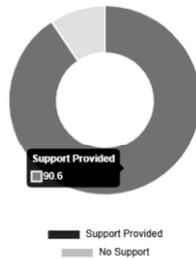
A significant majority of schools (90.6%) are providing essential psycho-social support to students. This high rate highlights a commendable commitment to addressing students' emotional and mental well-being alongside academic learning, which is crucial in any educational setting.

ARLP Routine & Instruction Adherence
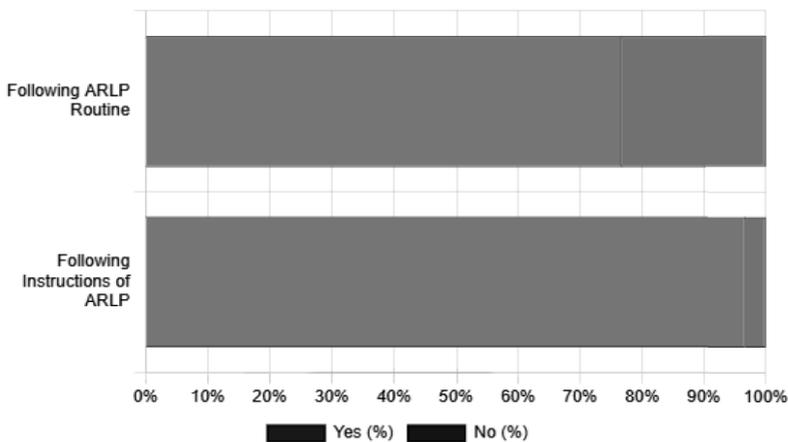
Adherence to ARLP instructions is exceptionally high at 96.72%, demonstrating teachers' commitment to the program's guidelines. Following the ARLP routine is also strong at 76.7%, indicating a generally good integration of the program into daily teaching practices, though there's still a quarter of schools that may need support in consistent routine adherence.

Learning Focus Areas
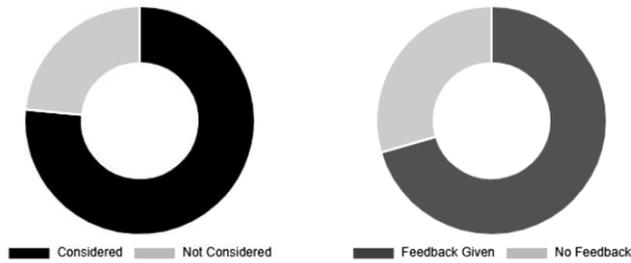
Most schools (76.6%) are considering student learning needs, which is vital for adaptive teaching. Additionally, a solid 70.5% of schools are providing feedback on homework. These figures suggest that teachers are largely responsive to individual student requirements and engaged in continuous assessment processes to aid progress.

Critical Gaps in ARLP Execution

Despite strong foundations, significant challenges persist in the practical execution of lessons. These gaps, particularly in time management and lesson connectivity, are crucial areas for intervention to ensure effective learning continuity and deeper comprehension.

Lesson Completion within Fixed Time
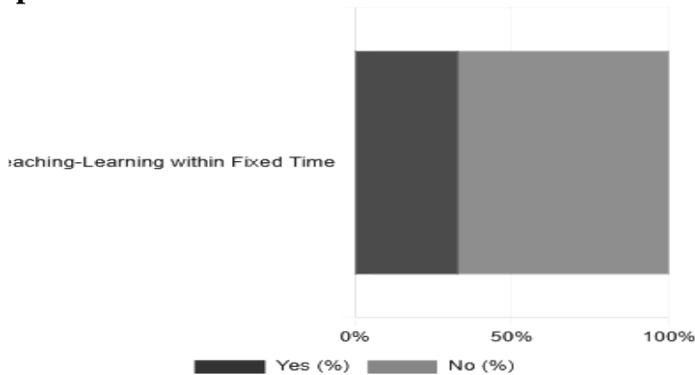
A significant challenge for teachers, with only 32.8% reporting successful completion of teaching-learning activities within the fixed time. This suggests that the curriculum or pacing might be overly ambitious or that teachers require more support in time management strategies within the ARLP framework.

Lesson Connection with Previous Lesson
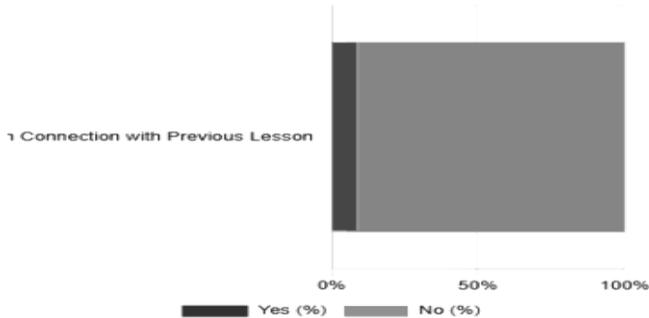
This represents the most critical structural gap in ARLP implementation, with only 9.4% of teachers reporting effective lesson connection. A lack of conceptual flow between lessons can severely hinder students' cumulative learning and understanding, making this a prime area for curriculum review and teacher training on pedagogical continuity.

Strength: Remedial Support for Weak Students

An outstanding performance in providing remedies for weak students highlights a key strength in addressing individual learning needs within the ARLP framework, showcasing a strong commitment to inclusive learning outcomes and ensuring no child is left behind.

98.3% Remedy for Weak Students during ARLP

This remarkably high percentage indicates that almost all schools are actively implementing measures to support struggling learners. This strong commitment to remedial education is a powerful asset for the ARLP, demonstrating responsiveness to diverse student needs and a dedication to improving learning outcomes for all.

School Readiness, ARLP & Support: A Comprehensive Data Snapshot

This infographic provides a comprehensive analysis of school preparedness, the implementation of the Activity-based, Result-oriented Learning Program (ARLP), and crucial support aspects, based on feedback from 64 schools and 384 respondents. It highlights key successes, identifies critical gaps, and pinpoints areas requiring focused intervention to optimize educational outcomes and student well-being.

**Student Experience & Support System**

This section delves into how students perceive their school environment and the various support mechanisms in place, based on a larger sample of 384 respondents. The data paints a picture of largely positive student experiences and consistent school operations, though areas for enhancement remain.

Students' Feelings After Coming to School

A vast majority of students (65.9% "Very Good" and 32.8% "Good") felt happy after coming to school. This overwhelmingly positive sentiment stems from their excitement to meet friends and teachers, engage in class activities, and have opportunities to play, indicating a welcoming and stimulating school environment.

Psycho-social Support for Students (Respondents)
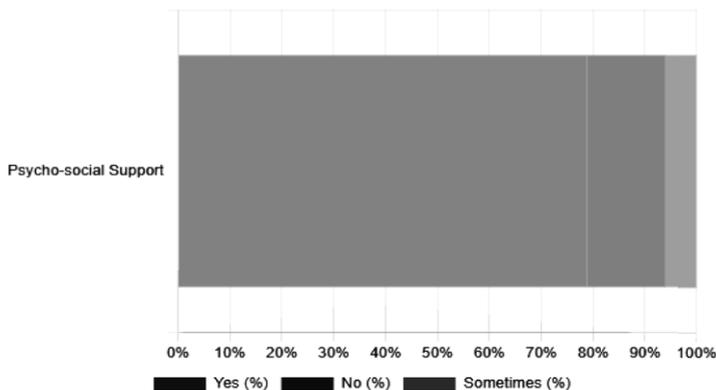
A strong 78.88% of students reported receiving regular psycho-social support from their teachers. While this indicates a significant effort, 15.10% reported no such support, and 6.12% indicated it's provided only "sometimes." This highlights

a need to ensure consistent and universal access to these vital services, bridging the gap for the nearly one-quarter of students not receiving consistent support.

100% School Opens Every Day

This critical indicator shows perfect consistency in school operations, ensuring uninterrupted access to learning for all students. Significantly, all students expressed a desire to come to school every day, reinforcing the importance of this foundational reliability.

Lesson Quality in Class
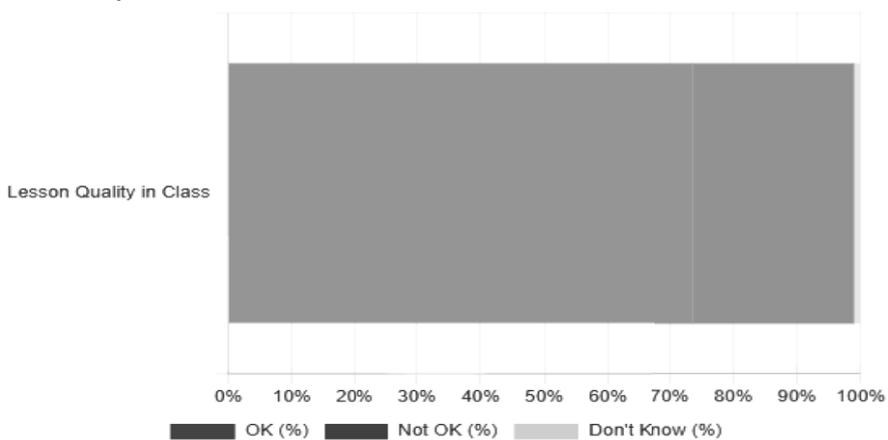
Most respondents (73.7%) found the lesson content in class to be "OK," suggesting a generally acceptable level of delivery. However, a significant 25.3% found them "not ok," and 1% were unsure. This points to a substantial portion of the student body potentially struggling with lesson delivery or content, warranting closer examination and pedagogical improvements to enhance the learning experience for all.

Activities Besides ARLP
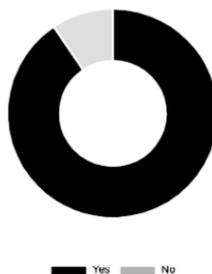
A high percentage (90.0%) of respondents confirmed that various activities, such as communicating with teachers, watching TV, and listening to the radio, are conducted besides the core ARLP instructions. This indicates a rich and varied learning environment beyond the curriculum, significantly contributing to holistic student development.

Homework Completion
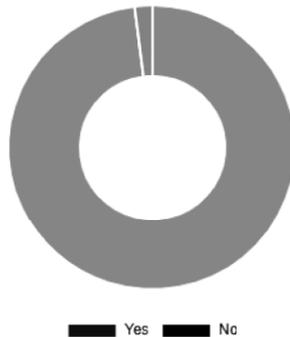
Almost all students (97.99%) are consistently completing their assigned homework. This high rate is significantly supported by family involvement: 36.98% by mothers, 26.56% by brothers and sisters, 22.12% by fathers, and 14.34% by others. This highlights strong student discipline and effective family engagement in reinforcing learning outside the classroom.

Conclusion and Recommendations

The findings of this study clearly reflect the significant efforts made under the Accelerated Remedial Learning Plan (ARLP) to recover learning losses caused by the prolonged closure of schools during the COVID-19 pandemic. The data collected from teachers across diverse regions of Bangladesh reveal that while awareness and availability of ARLP materials were high, multiple challenges hindered full implementation. These include time constraints, difficulties in connecting lessons, insufficient content coverage, and the need for psychosocial support. The analysis also highlighted areas where improvements can be made to strengthen the overall effectiveness of ARLP and ensure better preparedness for future education emergencies. Based on these insights, the following recommendations are proposed.

Recommendations

To reduce the burden on both teachers and students, it is important to adjust the syllabus by focusing only on the core competencies that are critical for academic progression. Simplifying the curriculum will allow more time for deeper understanding and mastery. Furthermore, subjects that are typically difficult to complete within the restricted time frame should be accompanied by clearer and more self-explanatory instructional guidelines.

Comprehensive and hands-on training should be provided to all teachers. These trainings should focus not only on ARLP guidelines but also on strategies for time management and lesson integration. Additionally, continuous professional support and follow-up guidance are essential to help teachers resolve issues during the implementation process.

The assessment system should be improved by developing clear and uniform guidelines for evaluating student performance. These guidelines should incorporate a mix of oral and written formats to effectively measure diverse learning abilities. A structured system for assigning and reviewing homework will also help monitor students' progress outside of class.

Flexibility in the ARLP routine is necessary to accommodate the varied learning needs of students across different schools and regions. Time allocations and lesson structures should be revised, with special focus given to foundational subjects like Bangla and Mathematics that are vital for cognitive and academic development.

Recognizing the emotional toll the pandemic has had on students, it is recommended to institutionalize psychosocial support mechanisms in all schools. Teachers should be equipped through training to identify signs of distress and provide appropriate emotional support to students.

Health and hygiene practices must continue to be a priority in schools. Compliance with World Health Organization (WHO) guidelines on sanitation, including hand-washing and use of sanitizers, should be strictly maintained.

Regular inspections and monitoring can ensure consistent adherence to these standards.

Lastly, to keep students motivated and actively engaged in learning, schools should use interactive teaching approaches that spark curiosity and enthusiasm. Stronger collaboration between schools and families is also necessary. Parents should be encouraged and supported in playing a proactive role in their children's education, particularly in facilitating homework and maintaining learning continuity at home.

The extreme uncertainty and stagnation in every sphere of human life worldwide due to the impact of the Covid-19 pandemic had similarly affected primary education in Bangladesh. After one and a half years, the school was reopened and "Accelerated Remedial Learning Plan-2021" was formulated to meet the learning gap.

Bangladesh has never faced Education in Emergency (EiE) before. Therefore, it is important to keep a record of the steps taken to deal with EiE for the first time so that the previous experience can be implemented in such situations in the future. With that goal in mind, the research team was to identify the problems as well as the necessary ways during the implementation of ARLP at the field level.

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