



Original Article

Status of Teaching-Learning Environment in Hard-to-Reach Regions Secondary Schools in Bangladesh – a Report

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ABSTRACT The main objective of this study is to focus on the present status of the teaching and learning environment in hard-to-reach regions of secondary schools in Bangladesh. The study specifically addresses the status of the teaching-learning environment in hard-to-reach secondary schools in Bangladesh. The study approach is mixed methods, i.e., quantitative and qualitative. The qualitative approach is more focused in this study. Survey, observation, focus group discussion (FGD), and document study have been used for data collection. The sampling procedure of this study was first purposive and then random. A total of 6 head teachers, 49 teachers, and 549 students (statistically significant) from six high schools throughout Bangladesh were selected as a sample. The data were collected using three sets of survey questionnaires (teacher, head teacher, and student) for observation and a checklist for observation and FGD guidelines for FGD. Findings of the study reveal that the status of the teaching-learning environment in hard-to-reach regions' secondary schools is very vulnerable. Flood, thunder, adverse air weather conditions, and existing communication systems are the major hindrances in schools in haor regions. Frequent land erosion, shortage of teachers, lack of electricity, makeshift school establishment, and lack of teaching aids make the severe negative impact on schools in sand island regions. It is stated that the teaching-learning situation is better in easily accessible regions than in hard-to-reach regions.

Keywords: Hard-to-reach regions, Teaching-learning environment, Secondary schools

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1. Introduction

The teaching-learning environment in hard-to-reach secondary schools in Bangladesh faces several challenges, primarily due to natural disasters, geographical isolation, a shortage of teachers, a lack of teaching aids and electricity, and inadequate infrastructure. These schools struggle enormously with implementing modern educational practices and ensuring quality education. The study aims to explore the actual teaching-learning practices in hard-to-reach regions' secondary schools in Bangladesh.

Teaching and learning are the activities that take place in schools daily. An excellent learning environment is a well-balanced combination of physical, psychological, and service delivery aspects, such as well-maintained school buildings, small class sizes, well-organized classrooms, and efficient methods of teaching. Bangladesh is a country with a significant area hard to reach. There are *chitmohols* (enclaves), *haors* and *beels* (wetlands), and huge *char* (temporary land masses) areas across the country. There is no updated and accurate data available on how many secondary schools are in hard-to-reach regions and how many secondary school-aged (11-15 years) children are in these areas in Bangladesh. The majority of the people in those areas are living with enormous suffering. There is a massive difference from the mainstream people in terms of income, literacy rate, mode of physical communication, pattern of housing, occupation, and employment rate (Begum, 2019).

Secondary education is the key to a stronger workforce and can ensure a better quality of life for our citizens (NEP, 2010). Enhancing health, reducing poverty, and boosting the economy are all benefits of investing in education (UNESCO, 2007; Hannum & Buchmann, 2005; Herz & Sperling, 2004). Secondary education has played an important part in shaping students' lives since it provides the basis for their future success and equips them with lifelong learning abilities. The secondary education level's standard of excellence has a significant impact on possibilities for higher education. Hard-to-reach regions are equipped with special features. It needs to explore the existing school environment of those areas since it is considered a major influencing factor of the academic performance of the students, which accelerates their well-being in future life.

2. Research design

2.1. Statement of the problem

The commitment and determination of the Bangladesh government to provide education as a means of developing human resources cannot be overlooked. Over the years, the government has made several policy pronouncements and institutional changes aimed at improving the quality of education. The teaching-learning environment is the most important domain to ensure quality education. It depends on multiple factors in school, and it is very crucial for teaching and learning. There are well-established indicators related to teaching and learning (*what the researchers know*). What is the prevailing teaching-learning environments in hard-to-reach regions (*the researchers have identified*)? Are there any similarity and dissimilarity and extent of effect between teaching-learning environments among north-west hard-to-reach (sand island), north-east (haor) and easily accessible regions (plain land) in Bangladesh (*the status has been revealed*)?

This study is undertaken to explore the factors associated with teaching and learning in hard-to-reach areas where people are living with poverty, hunger, illiteracy, and all sorts of barriers for the betterment of life. It is a much-talked-about issue nowadays, as researchers, scholars, academicians, and even the layman are concerned regarding the teaching-learning environment and the quality of students in general and remote rural areas in particular. That is why a comprehensive, rigorous, and meticulous study is essential to address the issue, particularly to explore the facts and to ensure inclusive quality education. Therefore, the above-mentioned research study is selected: "Status of Teaching-Learning Environment in Hard-to-Reach Regions Secondary Schools in Bangladesh".

2.2. Rationality of the study

The geophysical traits of hard-to-reach areas are quite different from those of other parts of the country in Bangladesh. People who are hard to reach because they are socially excluded from opportunities such as adequate schooling and other facilities, have a poor and inadequate communication network, and natural disasters occur frequently, which exacerbates the poverty cycle.

Article 28 of the People's Republic of Bangladesh's Constitution prohibits discrimination based on race, religion, or place of birth. It also allows for affirmative action, or "positive discrimination," to benefit the "backward section of citizens." (Articles 28, 29).

A congenial teaching and learning environment attracts the children to do better in their academic performance. On the other hand, a non-friendly environment plays a negative role in academic achievement. There are a good number of areas in Bangladesh that remain under schooled and underserved. A remarkable number of first-generation learners from disadvantaged families are living in the hard-to-reach areas. The spirit of the Constitution of Bangladesh ensures equitable facilities for schooling for all children. Does it reflect reality?

What is the status of the teaching-learning environment of the schools in those areas? Are there enough classrooms for the students? Do the teachers follow student-centered teaching? Do they use teaching aids in the class? Do the teachers teach the students accordingly? Do the students have access to safe drinking water and hygienic toilet facilities? What is the status of the academic achievement of the students? Is there any discrepancy? If yes, what are the reasons? What is the attendance rate of the students in the class? This study is an attempt to examine the factors associated with teaching and learning and their effect on the academic performance of the students in hard-to-reach areas at the secondary level in Bangladesh.

This study identifies the exact factors that influence the teaching-learning environment in hard-to-reach secondary schools in Bangladesh. The findings of the study can help the major stakeholders, including the secondary and higher education division of the Ministry of Education (MoE), to find out the causes and effects of poor teaching-learning environments related to factors and reexamine the system. By taking appropriate action, teaching and learning in hard-to-reach regions can be improved. The findings of the study also help understand the implications of factors on the adverse impact on the teaching-learning environment. The study can be found useful to both educators and policymakers in giving guidance to the government on the necessary course of action to create a teacher- and student-friendly teaching and learning environment. It will help create the need for required intervention to develop the teaching-

learning environment in hard-to-reach regions.

The findings of this study may trickle down to the thinking of the policy-level people and can thus improve the teaching-learning environment, as well as improve the standard of secondary education. In addition to this, the study will also serve as a reference for researchers who are interested in conducting research in this field in the future. It may also serve as a point of reference for other researchers. Researchers think this study is important for the following reasons:

- To design strategies that may help to ensure a friendly academic environment at the remotest secondary schools in Bangladesh
- To provide ideas for teachers, head teachers, and policymakers to review their approach in a way that enhances the teaching-learning environment
- To point out the crucial factors that badly impact the teaching-learning environment with them solutions.

2.3. Research questions

The following research questions are intended to act as a guide for the study:

- What is the existing teaching-learning environment in the hard-to-reach areas of secondary schools in Bangladesh?
- What are the challenges and problems of teaching-learning environments in remote secondary schools?
- What are the differences between and among the hard-to-reach reasons (Haor and Sand Island) and easily accessible areas?

2.4. Objectives of the study

The overall objective of this study is to focus on the present status of the teaching-learning environment in hard-to-reach regions' secondary schools in Bangladesh.

The key specific objectives of this research are as follows:

- i. To find out the present status of the teaching and learning environment in hard-to-reach regions secondary schools;
- ii. To identify the challenges and problems of the teaching and learning environment in remote secondary schools;
- iii. To examine and contrast the educational environments of secondary schools in the remote north-west regions with those in the north-east, while also assessing the disparities between secondary schools in

hard-to-reach areas and those located in easily accessible regions.

2.5. Scope of the study

This study is designed to investigate the teaching-learning environment in the hard-to-reach secondary schools. The study is conducted covering six secondary schools from different hard-to-reach regions as well as easily accessible areas in Bangladesh. Two schools from haor regions under Sunamgonj district, two schools from sand islands in Chapai Nawabganj district, and two schools from easily accessible areas in Rajshahi district have been under the purview of this study.

2.6. Operational definition of the concepts

Teaching-learning environment:

A teaching-learning environment encompasses the physical, psychological, and instructional aspects of a classroom or learning space, aiming to create a conducive setting for effective learning and teaching.

Hard-to-reach regions: Inaccessible, remote, out-of-the-way, isolated, difficult-to-access, and unreachable areas

Secondary schools: A school consists of grades VI to X under general education.

2.7. Research hypothesis

Poor teaching-learning environments exist in hard-to-reach regions of secondary schools in Bangladesh.

3. Literature review

It is found in the existing literature that two types of school environments significantly affect the teaching-learning process. Such as the physical and the socio-cultural or behavioral environment. The physical environment means the infrastructure and location of the educational institutes-classrooms, furniture, and other interiors; teachers' rooms; toilets; playgrounds for students; teaching aids and materials; and transport, etc. However, from the following literature review, it may be clearly understood that the research gap and correlation between the teaching-learning environment and its impact.

The physical environment is directly linked to the teaching-learning process (Leithwood, 2006).

The key to the growth and transformation of learners is teaching them. The resources made accessible to support the process and influence the methods by which these resources are completed are likely to have an impact on the effectiveness of teaching and learning (UNESCO, 2005).

Vikoo (2003) has found in his study "Learning Theories and Instructional Methods" that the provision of appropriate instructional material would facilitate the process of teaching and learning. Students who do not have access to educational materials will therefore perform poorly academically. A positive correlation exists between the educational attainment of the teacher and job performance (Rogers, 1991). Similarly, Rao and Kumar (2004) have revealed that teachers with Master's degrees teach more effectively than teachers with Bachelor's degrees. On the other hand, Employees' educational qualifications and other skills work together to boost job success (Kasika, B.D., 2015).

The leadership initiatives in two very different rural schools have been combined into a descriptive study by Hasnat (2021) for his work "Schools Celebrating Place and Community: Study of Two Rural Schools in Bangladesh and New Zealand." In order to satisfy the needs of their students, both cases employ an innovative methodology. Both demonstrate the potential for a rich learning environment that arises from examining, addressing, and utilizing the needs, goals, and resources of the neighborhood and community. In both urban and rural environments, he has discovered that these two educational institutions offer valuable solutions to certain challenges in education.

Alia Ahmad et al. (2005), in their paper "Through an examination of household-level data from 60 Bangladeshi villages, "Inequality in the Access to Secondary Education and Rural Poverty in Bangladesh: An Analysis of Household and School Level Data, "have investigated the relationship between various levels of academic achievement and poverty. First of all, it illustrates the general pattern of both primary and secondary school enrollments from 1988 to 2000 and verifies the inequality. Second, to evaluate the influence of schooling in addition to other determinants, an income function analysis was conducted. Thirdly, the impact of education on the ratio of women/children as well as the percentage of male and female children enrolled in secondary school is examined. The education of

mothers have a greater influence on girls' secondary school attendance. Finally, the examination of data at the school level validates the results from the household survey, which include the fact that there is no gender gap in primary education and that there are more females in secondary education.

Begum et al. (2018), in their study "The Challenges of Geographical Inclusive Education in Rural Bangladesh," tried to determine some of the issues with inclusive education (IE) as well as the disparities between the education systems in rural and urban areas. The study considers the difficulties in advancing inclusive education in Bangladesh's remote, isolated rural areas. Findings show that in order to implement effective geographically inclusive practices in rural Bangladesh, factors including culture, the development of local resources, and the local context's climate must be considered while formulating applicable inclusive policies in rural Bangladesh.

Mousumi & Kusakabe (2020), in their study "School Education System in Bangladesh," have critically discussed Bangladesh's educational system has undergone substantial modifications. This study concentrated on the contributions made by various education stakeholders, as well as on primary and secondary education and non-formal education. Along with access, participation, transition, and other topics, it also covers curriculum and assessment, governance and management, and educational organization.

Malak et al. (2013) have focused on inclusive education in Bangladesh over the decades in their study "Inclusive Education in Bangladesh: Policy and Practice." Bangladesh is one of the signatory countries of international declarations of IE. Study findings indicate that the policy of IE in Bangladesh tends to be low-leverage. Further study is needed to understand the IE system in rural areas.

Moniruzzaman et al. (2021) have tried to explore educational inequality in Bangladesh in their work "Education and Inequality in Rural Bangladesh: A Longitudinal Study." Education helps people become more skilled and productive, which in turn gives them access to better jobs and greater financial incentives. This has an impact on the mean differences between income and consumption. Das et al. (2021) have categorically presented academic support and challenges of differently able students in their study "Transition of Students with Disabilities from Special School to Mainstream Inclusive

Education in the Bangladesh Context." Transitions are a major ecological shift that comes with a lot of challenges in terms of intellectual, social, emotional, and organizational functioning. It's a common misconception that students with autism and other special needs have a hard time adjusting to school.

Nevertheless, Bangladesh is still struggling with some issues in the case of quality education in the basic education system, which can be removed by inclusive education. The above findings of the literature discussed clearly revealed that the necessity of equal rights and opportunities is essential for effective inclusive quality education. It is a prime demand of the twenty-first century. So, no society can deny or overlook the importance of quality education. It has also been proved that a congenial teaching-learning environment is also significant. But most of the researchers found that this environment is not prevailing in all educational institutions in Bangladesh; rather, there is a huge gap between rural and urban area schools. It is not clearly established that these factors have an impact on the poor teaching-learning environment and students' academic performance as well as achievement.

The study highlights that effective curriculum implementation is significantly hindered by natural calamities, shortages and untrained teachers, adverse communication systems, lack of infrastructure and teaching aids, and overall poor teaching and learning conditions.

3.1. Research gap

The nature and characteristics of hard-to-reach regions vary from each other. There are a good number of education-related studies available in hard-to-reach regions. This study reveals the teaching-learning status specifically in secondary schools in Haor and Sand Island regions secondary schools in Bangladesh. Not only that, but researchers do not find any study comparing the teaching-learning status of hard-to-reach regions with easily accessible areas. The study highlights the persistent teaching-learning status gap in hard-to-reach regions, even as socioeconomic status varies from Haor regions in comparison to Sand Island regions. There is a need for further research to reveal the status of the teaching-learning environment in hard-to-reach regions of secondary schools in Bangladesh. Consequently, the research work has been conducted within the following conceptual framework to search and construct the two major variables.

3.2. Conceptual framework

Variables		Construction of the variables
Physical		Teaching-learning environment
<i>I.</i>	Physical infrastructure	
<i>II.</i>	Teaching aids	
<i>III.</i>	Hygienic Toilet	
<i>IV.</i>	Safe drinking water	
<i>V.</i>	Classroom cleanliness	
Behavioral/Cultural		
<i>I.</i>	Teachers' professionalism	
<i>II.</i>	Students' attendance	
<i>III.</i>	Teaching methods	
<i>IV.</i>	Time allocation for each session	
<i>V.</i>	Teacher's preparation before entering the session	
<i>VI.</i>	Presentation skills	
<i>VII.</i>	Assessment system	
<i>VIII.</i>	Feedback	

4. Methodology

The study is a non-experimental design and descriptive in nature. A mixed methods (qualitative and quantitative) approach has been adopted in this study to gather comprehensive data on the challenges faced in hard-to-reach secondary schools as well as easily accessible areas.

4.1. Study site

This study is administered in hard-to-reach regions, secondary schools in hard-to-reach regions, as well as easily accessible areas in Bangladesh. Two schools from the Haor region in Dharmapasha Upazila under Sunamgonj district and two schools from Sand Island in Shibgonj in Nowabgonj district. Two schools from easily accessible areas in Paba and Godagari Upazila in Rajshahi district.

Table 1. Distinct feature and geographical location of hard-to-reach regions and data collection

Region	Distinct feature	Geographical location	District	Upazila	Number of schools
Hard-to-reach	Haor	North-East part in Bangladesh	Sunamgonj	Dharmapasha	2
	Sand Island	North-west part in Bangladesh	Chapai Nowabgonj	Shibgonj	2
Easily accessible area	Plain land	North-west part in Bangladesh	Rajshahi	Paba	1
				Godagari	1

4.2. Sampling

All the secondary schools in hard-to-reach regions and all the teachers and students associated with those schools are treated as a population in this study. Four schools from hard-to-reach regions have been selected purposively. Joysree and Golokpur Schools have been selected based on the

geographical characteristics. Haor and Char Paka and Paka Narayan schools have been selected, focusing on Sand Island. Damkurahat and Rajabarihat High Schools have been selected based on easily accessible areas. Students of grades IX-X and teachers who teach in grades IX and X of those classes have been selected randomly.

Table 2. Sample size: Region and geographical character-wise head teacher, teacher and students

Region	Characteristics	District	Number of head teachers, teachers, and number of students		
			No of Head teacher	No of teacher	No of students
Hard-to-reach	Sand island	Chapai Nawabganj	2	20 (24.39)	140 (26.2%)
	Haor	Sunamganj	2	29 (35.37)	213 (39.9%)
Easily accessible	Plainland	Rajshahi	2	33 (40.24)	181 (33.9%)

4.3. Data sources

The researchers have analyzed the responses from six head teachers, 49 teachers, and 549 students from six schools in different geographical features in Bangladesh. Data have been collected mainly from primary sources in this study. Teachers who teach in

grades IX and X, working in the hard-to-reach region schools, concerned head teachers, and students of grades IX and X of those particular schools were respondents. Besides, secondary sources like published books, journals, newspapers, government circulars, research reports, and internet browsing were viewed as secondary sources.

Table 3. Research methods, objectives, instruments and respondents/sources of the data

Methods	Objective number	Instruments	Respondents/Sources
<i>i.</i> Observation <i>ii.</i> Survey	I	<i>i.</i> Observation checklist <i>ii.</i> Questionnaire	<i>i.</i> Teacher <i>ii.</i> Student <i>iii.</i> Classroom <i>iv.</i> School
<i>i.</i> Survey <i>ii.</i> Focus Group Discussion	II	<i>iii.</i> Questionnaire <i>iv.</i> FGD Guideline	<i>i.</i> Teacher <i>ii.</i> Teacher
<i>i.</i> Observation <i>ii.</i> Survey <i>iii.</i> Focus Group Discussion	III	<i>i.</i> Observation checklist <i>ii.</i> Questionnaire <i>iii.</i> FGD Guideline	A. Classroom B. School <i>i.</i> Student <i>ii.</i> Teacher

4.4. Data analysis

The data have been processed using both quantitative and qualitative methods. Inferential statistics and descriptive statistics have been adopted for analyzing data. Quantitative analysis has been done using proper statistical tools such as SPSS version 25. NVivo 12 was used for analyzing qualitative data. Besides, descriptive statistics are used in quantitative analysis to describe the general characteristics of the data.

5. Results

Every school has its own sanctioned post. Trained and non-trained teachers are working in different hard-to-reach regions of schools in Bangladesh. Table 4.1 reveals the existing scenario of working teachers, vacant positions, and trained and non-trained teachers in hard-to-reach regions as well as sampled, easily accessible areas in Bangladesh.

Table 4. Number of working teachers, vacant positions, and training status of the sampled schools

Communication characteristics	Upazila	Name of school	Number of working teachers and vacant positions, and training status				
			Sanctioned post	Working teachers	Vacant post	Trained Teacher	Non-trained Teacher
Hard-to-reach	Dharmopasha	Golokpur	22	17	5	10	7
		Joysree	15	12	3	9	3
		Subtotal	37	29	8	19	10
	Shibgonj	Char Paka	13	8	5	5	3
		Paka	12	8	4	5	3
		Narayanpur	12	8	4	5	3
Easily accessible		Subtotal	25	16	9	10	6
	Paba	Damkurahat	22	19	3	14	5
	Godagari	Rajabarihat	15	14	1	11	3
		Subtotal	37	33	4	25	8

Teacher vacancies and non-trained teachers have created a very negative impact in hard-to-reach regions in Bangladesh. Table 4 shows that 21.62% of posts have been lying vacant and 34.48% of teachers are non-trained in the Haor region in Bangladesh. In the Sand Island region, 36% of posts have been lying

vacant, and 37.5% of teachers are non-trained. In easily accessible areas, 10.81% of posts have been lying vacant, and 24.24% of teachers are non-trained. Educational qualifications of the teachers who are working in hard-to-reach regions as well as easily accessible areas have been reflected in Table 4.

Table 5. Education qualification of the teacher

Communication characteristics	Upazila	Name of school	Education qualification of the teacher				
			Masters	Honours	Graduate	Diploma	Total
Hard-to-reach	Dharmopasha	Golokpur	4 (40%)	2 (20%)	4 (40%)	0	10(100%)
		Joysree	6(66.7%)	0	2 (22.2)	1(11.1%)	9(100%)
		Subtotal	10	2	6	1	19
			(52.63%)	(10.53%)	(31.58%)	(5.26%)	(100%)
	Shibgonj	Char Paka	5(50%)	1(10%)	4 (40%)	0	10 (100%)
		Paka	2 (50%)	0	2 (50%)	0	4 (100%)
Easily accessible		Subtotal	7	1	6	0	14
			(50%)	(7.14%)	(42.86%)	0	(100%)
	Paba	Damkurahat	5 (71.4%)	1 (14.3%)	1 (14.3%)	0	7 (100%)
	Godagari	Rajabarihat	7 (77.8%)	0	2 (22.2%)	0	9 (100%)
		Subtotal	12	1	3	0	16
			(75%)	(6.25%)	(18.75%)	0	(100%)
Total			29	4	15	1	49
			(59.18%)	(6.78%)	(30.61%)	(2.04%)	(100%)

Table 5 discloses that 52.63% of master's degree holder teachers are working in the Haor region, and 50% of master's degree holder teachers are working in the Sand Island region. It is found in the table that 75% of master's degree-holding teachers are working in the easily accessible areas. Age is one

of the major demographic characteristics of the teacher. What is the age of the teachers working in the Sand Island and Haor region? Table-05 reveals the age characteristics of the working teacher in both regions.

Table 6. Class wise number of students in sampled schools

Geographical District	Name of school	Class and sex wise number of students															Grand Total
		VI			VII			VIII			IX			X			
		B	G	T	B	G	T	B	G	T	B	G	T	B	G	T	
Haor	Golokpur	70	66	136	61	57	118	61	66	127	53	53	106	45	44	89	576
	Joysree	92	101	193	69	76	145	65	71	136	27	17	44	38	38	76	594
Sub Total		162	167	329	130	133	263	126	137	263	80	70	150	83	82	165	1170
Dand Island	Char panka	58	102	160	57	79	136	39	69	108	59	71	130	43	35	78	612
	Panka Narayanpur	21	56	77	27	42	69	21	35	56	10	24	34	8	12	20	256
Sub Total		79	158	237	84	121	205	60	104	164	69	95	164	51	47	98	868
Easily accessible Areas	Damkurahat	80	84	164	70	81	151	62	70	132	83	70	153	56	53	109	709
	Rajabarihat	130	82	212	135	72	207	136	81	217	77	69	146	105	74	179	961
	Sub Total	210	166	376	205	153	358	198	151	349	160	139	299	161	127	288	1670
Grand Total		451	491	942	419	407	826	384	392	776	309	304	613	295	256	551	3708

The number of students in the haor region is a bit less than in the easily accessible areas. It is disclosed that the number of students in the sand island area is the least. It is very alarming that the girl students are decreasing remarkably in number from lower grades to upper grades in Sand Island areas. Table-06 discloses that in the two sampled schools of the Haor region, the number of enrolled students is 1170, and the number of girls is 589. In the sand island region,

we sampled two schools. The number of students is 868, and the number of girls is 525. In easily accessible areas, the total number of students is 1670, and the number of girls is 736.

The educational qualification of the father is one of the determining factors of the academic arena. Table-06 shows the feature of the students' fathers' academic qualifications in different hard-to-reach regions as well as easily accessible areas in Bangladesh.

Table 7. Teaching-learning status of hard-to-reach and easily accessible areas

Characteristics	Name of School	Indicators (5-point Likert scale mean)								
		Classroom cleanliness	Washroom cleanliness	Drinking water	Play ground	Library	Co-curricular activities	Use teaching aids	Electricity supply	Use digital content
Haor	Golokpur	3.40	3.07	2.73	0	0	1.87	1.92	5	1.13
	Joysree	2.84	1.72	3.25	0	0	2.16	1.69	5	1.41
	Charpaka	2.40	0	0	0	0	1.29	2.34	0	0
Sand island	Paka	1.16	1.72	2.88	0	0	1.64	1.32	0	0
	Narayanpur	1.16	1.72	2.88	0	0	1.64	1.32	0	0
Easily accessible areas	Damkurahat	3.86	3.36	4.80	5	2.66	3.86	2.37	5	1.39
	Rajabarihat	3.63	3.44	4	5	1.24	3.63	3.27	5	1.66

Table 7 reveals the intrinsic teaching-learning practices in hard-to-reach and easily accessible areas. The table shows that teaching-learning status is very, very appalling in the Sand Island region. At Charpaka High School in the Sand Island region, no washroom, no drinking water facilities, no library, and no electricity facilities existed. In the Haor

region, it is also unsatisfactory. There are no playgrounds or library facilities in the sampled schools of this region. In easily accessible areas, the teaching-learning environment is better than that of hard-to-reach regions. The teacher almost conducts no session using digital content. Teaching-learning status in hard-to-reach regions is the worst, especially in the Sand Island region.

Table 8. Teaching-learning status of hard-to-reach and easily accessible areas

Characteristics	Name of School	Indicators (5-point Likert scale mean)								
		Help the students to understand	Opportunity of asking question	Previous class knowledge test	Complete class on time	Punctuality of teacher	Presentation technique	Learner centered teaching	Inclusive class management	Assessment
Haor	Golokpur	3.14	3.39	3.56	3.16	3.86	3.42	3.39	2.50	2.49
	Joysree	3.59	3.95	3.21	3.47	3.29	3.01	2.86	2.69	2.24
Sand island	Charpaka	3.30	3.38	3.25	3.42	3.55	3.17	2.65	2.75	2.94
	Paka Narayan pur	3.56	3.80	3.64	3.16	2.84	3.48	3.84	2.50	3.29
Easily accessible areas	Damkura hat	3.74	4.37	3.73	3.59	3.09	3.28	3.64	4.27	3.31
	Rajabari hat	4.02	4.01	3.58	4.13	4.15	3.80	3.28	3.53	3.97

Table 8 highlights that teaching-learning status in hard-to-reach regions is worse than in easily accessible regions. On a 5-point Likert scale, inclusive class management in two schools in the Haor region is rated 2.50 and 2.69, respectively. In assessment, the mean values are 2.49 and 2.24, respectively. In Sand Island, inclusive management in two schools is 2.75 and 2.50. In assessment, it is 2.94 and 3.29, respectively. It is found that in easily

accessible regions in plain land, inclusive management systems in two schools are 4.27 and 3.53. In assessment, it is 3.31 and 3.97, respectively. The parents' monthly income is associated with the teaching-learning environment. Table-08 discloses the parents' monthly income status of hard-to-reach as well as easily accessible regions in Bangladesh.

Table 9. Independent sample t-test between sand island and haor region

Variables	Assumption	t value	Sig (2-tailed)	Comment
Education qualification of the teacher	Equal variance assumed	0.048	0.962	Equal variance assumed
	Equal variance not assumed	0.050	0.961	assumed
Teaching experience	Equal variance assumed	0.567	0.575	Equal variance assumed
	Equal variance not assumed	0.568	0.575	assumed
Punctuality of teacher	Equal variance assumed	1.045	0.305	Equal variance assumed
	Equal variance not assumed	1.288	0.215	assumed
Complete class on time	Equal variance assumed	0.460	0.649	Equal variance assumed
	Equal variance not assumed	0.566	0.579	assumed
Presentation technique	Equal variance assumed	0.803	0.429	Equal variance assumed
	Equal variance not assumed	0.903	0.374	assumed
Use teaching aids	Equal variance assumed	1.430	0.164	Equal variance assumed
	Equal variance not assumed	1.761	0.096	assumed
Use digital contents	Equal variance assumed	0.892	0.380	Equal variance assumed
	Equal variance not assumed	0.792	0.440	assumed
Lesson plan	Equal variance assumed	0.566	0.576	Equal variance assumed
	Equal variance not assumed	0.578	0.568	assumed
Class preparation	Equal variance assumed	0.000	1.0	Equal variance assumed
	Equal variance not assumed	.000	1.0	assumed
Inclusive class	Equal variance assumed	1.116	0.274	Equal variance assumed
	Equal variance not assumed	1.374	0.187	assumed

In Table 9 every variable contains a value which is greater than .05 ($p > .05$). The researchers can make a decision above mentioned variables indicate that there are no differences between sand island and

haor region. Every hard-to-reach region bears a unique characteristic. Table-09 reveals the dissimilarities between the haor and sand island regions. It also reveals the scenario between hard-to-reach and easily accessible areas.

Table 10. Dissimilarities among north-east and north-west hard-to-reach and easily accessible areas

Considering factors	Hard-to-reach		Easily accessible
	North-east (Haor)	North-west (Sand Island)	Plainland
School establishment	School establishment is permanent	School establishment is frequently shifted	School establishment is permanent
Contact hour (10 AM- 4 PM)	Schools do not maintain the contact hour	Schools do not maintain the contact hour specially in summer	Schools maintain the contact hour
Natural calamities	Thunderstorms and rainy weather in the monsoon are threats for the teachers and students	Land erosion and extremely hot weather in the summer are the threats for the stakeholders	No visible adverse climate impact is found
Vacant post of the teacher	Teaching post has been lying vacant 22%	Teaching post has been lying vacant 36%	Teaching post has been lying vacant 11%
Vacant post of the head teacher	One head teacher post is lying vacant	One head teacher post is lying vacant	Not a single post is lying vacant
Teachers' absenteeism	Remarkable teacher absenteeism	Remarkable teacher absenteeism	Moderate teacher absenteeism
Living status of the teacher	A good number of teachers live in a distant place	A good number of teachers live in a distant place	Most of the teachers live in the school's catchment areas
Availability of electricity	Electricity is available	Electricity is not available	Electricity is available
Playground	No playground	No play ground	Having playground
Drinking water	Available	Not available	Available
Number of students	1170 students enrolled in two schools	868 students enrolled in two schools	1670 students enrolled in two schools

It is revealed in Table-10 that there are many similarities and dissimilarities found between haor and sand island regions. In both regions, natural calamities hinder teaching-learning drastically and the school authorities do not maintain the contact hours guided by the government. Teachers' posts have been lying vacant for years in both cases. In Sand Island, there is no electricity connectivity, but in the haor, electricity connectivity is available. In both cases, most of the teachers live in distant places. In an easily accessible region, the teaching-learning status is better than that of a hard-to-reach region. Moreover, in this study, six Focus Group Discussions (FGDs) have been conducted with teachers of six selected schools who teach in classes IX and X after

synthesizing their opinions, and researchers observed the following results.

5.1. Findings of the Focus Group Discussion (FGD)

Region: Hard-to-Reach

5.1.1. Geographical characteristics: Sand Island

Name of school: Char Paka High School (FGD 1)

-Shifting school frequently: Land erosion is a common feature in hard-to-reach regions for secondary schools. Schools are being shifted frequently due to land erosion. Charpaka School has been shifted five times since its establishment.

- *No electricity*: No electricity is available in the catchment area of the school, and the school remains without electricity.
 - *Shortage of teachers*: Five teacher posts have been lying vacant for years; this hampers teaching.
 - *Structural problem*: The school is makeshift. Government policy does not allow the establishment of a brick building due to frequent land erosion.
 - *Impact of natural calamities*: Flood and river erosion adversely affect the system of education provision.
 - *Communication problem*: In this area, there is an acute communication problem. Boats in the rainy season and bicycles and on foot are the only means of communication.
 - *Lack of awareness of the guardians*: The guardians of this area are not very aware of education.
 - *Lack of education materials*: Teaching aids are not available in the school
 - *Non-trained teacher*: A good number of teachers do not have any formal training.
 - *Poverty*: This is a poverty-driven area.
 - *Dropout*: The dropout rate is too high due to poverty, early marriage, and river erosion.
- No washroom, no library, no laboratory, and no drinking facilities exist: There is no washroom, library, or laboratory, and no drinking facility exists in this school.
- *Lack of punctuality*: Teachers and students are frequently absent from the school.
- Multimedia class: There is no arrangement of multimedia classes in the school.

Paka Narayanpur High School (FGD 2)

- *Natural calamity*: Land erosion, floods, and excessively hot temperatures are the common features of Paka Narayanpur High School. The school has been affected four times by river erosion. The last river erosion occurred in 2018.
- *Lack of accommodation of teacher students*: There are no hostel facilities for the students. The students refrain from school frequently due to adverse climate impact.
- *Absence of laboratory, library, and playground*: There is no laboratory, library, or playground in this school.

5.1.2. Geographical characteristics: Haor

Name of the school: Joysree High School (FGD 3)

- *Adverse impact of natural calamities*: Floods, adverse air waves, and thunder hamper the teaching-

learning practice in this school.

- *Communication problem*: In the rainy season, a boat is the only means of transportation. There is no boat owned by the school. Local administration supplies only a big boat without fuel and a boatman's salary. Four boats, or at least two boats, are required to maintain transportation.
- *No hostel facilities*: The Haor region is a secluded area from the main part. Students remain frequently absent from the school due to transport problems. Hostel facilities can enhance the attendance rate of the students.
- *Shortage of teachers*: Three teaching posts have been lying vacant, which creates a negative impact on the teaching-learning process.
- *No accommodations for the teachers*: Most of the teachers live in distant places, and there is no accommodation for them. Teachers remain absent frequently because they live in distant places.
- *Absence of laboratory, library, and playground*: There is no laboratory, library, or playground in this school.
- *Inadequate teaching aids*: Inadequate teaching aids hamper the teaching-learning in this school.

Name of the Institute: Golokpur Hazi Abdul Hafez School & College (FGD 4)

- *Adverse impact of natural calamities*: Floods, adverse air waves, and thunder hamper the teaching-learning practice in this school.
- *Communication problem*: In the rainy season, a boat is the only transportation. There is no boat owned by the school. Local administration supplies only a big boat without fuel and a boatman's salary. Four boats, or at least two boats, are required to maintain transportation.
- *No hostel facilities*: The Haor region is a secluded area from the main part. Students remain frequently absent from the school due to transport problems. Hostel facilities can enhance the attendance rate of the students.
- *Shortage of teachers*: Five teaching posts have been lying vacant, which creates a negative impact on the teaching-learning process.
- *No accommodations for the teachers*: Most of the teachers live in distant places, and there is no accommodation for them. Teachers remain absent frequently because they live in distant places.
- *Absence of laboratory, library, and playground*: There is no laboratory, library, or playground in this school.
- *Inadequate teaching aids*: Inadequate teaching aids hamper the teaching-learning in this school.

Region: Easily accessible region**5.1.3. Geographical characteristics: Plainland****Name of school: Rajabari Hat High School (FGD 5)**

Number of students is more: The number of students is more than the ideal class size.

- *Formative assessment is impossible:* Since the number of students is huge in every class. As a consequence, it is almost impossible to evaluate every student following formative assessment.
- *Lack of teaching aids:* There is no multimedia, sound system, or whiteboard in the school. Only chalk and a blackboard are used.
- *Use of mobile phones:* The students rampantly use mobile phones during school hours.
- *Lack of proper surveillance:* Since the number of students is huge, the teachers cannot monitor the use of mobile phones properly.
- *Absence of digital lab and library:* There is no digital lab and library in this school.
- *Infrastructural problem:* There are not enough classrooms to conduct classes.
- *Shortage of fans in the classroom:* There is a shortage of fans in the classroom.
- *No arrangement of extracurricular activities:* There are hardly any arranged extracurricular activities in this school.
- *Local pressure for admission:* There is local pressure for admission of the children of the local people.

Name of school: Damkura Hat High School (FGD 6)

Inadequate teaching aids: There is a scarcity of teaching aids.

Old Building: The school building is old. It needs some portion of new construction.

Catchment area: The catchment area is vast.

The financial status of the guardian: The financial status of the Santal students is very poor.

Absenteeism: More absenteeism prevails in seasonal cultivation.

Challenges in the teaching-learning environment in hard-to-reach regions**A. Geographical vulnerability**

- Land erosion
- Natural disaster
- Transport and communication

B. Socio-Economic and Cultural Challenges

- Poverty

- Parental education

- Early marriage

C. Infrastructural barriers

- Lack of required and permanent infrastructure
- Lack of resources
- Lack of electricity, internet, library, and laboratory facilities
- Lack of modern equipment

D. Curriculum Implementation Challenges

- Vacant teacher posts
- Teachers' absenteeism
- School closed due to floods and excessive heat
- Lack of qualified teachers and training

5.2. Major findings

The purpose of this study is to find out the status of the teaching-learning environment in hard-to-reach regions secondary schools in Bangladesh. In this study, the influence of the variables on the teaching-learning environment has been examined. There are 23 variables that have been measured by the head teacher, 15 variables have been measured by teachers, and 25 variables have been measured by students. The study looks into how the set variables relate to and influence the teaching-learning environment in hard-to-reach schools in Bangladesh. It is disclosed that all the set variables have an impact on the teaching-learning environment.

Do not maintain contact hours: In hard-to-reach regions, schools do not maintain contact hours (10 A.M. to 4 P.M.).

Teachers and students' absenteeism: Teachers and students' absenteeism is remarkably high.

Natural calamities: There is an adverse impact on teaching-learning due to natural calamities. In the monsoon in haor regions, floods, thunder, and adverse weather hinder the attendance of teachers and students in this region. In the Sand Island region, in summer, extremely hot weather prevails in the Sand Island regions, and schools close before lunch.

Frequently shifting schools: In the Sand Island region, schools have been shifted frequently due to land erosion.

No permanent school establishment: There is no permanent school establishment that has existed in the Sand Island region.

Teaching position vacancy: In the Haor region, 21.63% of posts of teachers have been lying vacant; in the Sand Island, 36% of posts have been lying

vacant; and in plain land, 10.91% of posts have been lying vacant.

Lack of trained teachers: In the Haor region, 34.48% of teachers are untrained; in the Sand Island, it is 37.5%, and in plain land it is 24.25%.

Teacher absenteeism: Teachers are remarkably absent in hard-to-reach region schools.

In the absence of electricity, a playground, a library, and a laboratory: There is no electricity, playground, library, or laboratory in hard-to-reach region schools.

Lack of teaching aids: Lack of required teaching

aids hampers teaching and learning in hard-to-reach region schools.

Hygienic toilet facilities and pure drinking water: Hygienic toilet facilities and pure drinking water are absent in some schools in the Sand Island regions.

Lengthy complex procedure in opening section(s): In the plain land, a large number of students study in a single class, but the school administration has to face huge difficulties due to a lengthy procedure for opening a new section.

Acute poverty of the Santal: The Santal, an ethnic minority, students in plain land face acute poverty as a result; they are irregular in school.

Table 11. Hypothesis testing result

Region	Name of School	Variable	Mean value of 5-point Likert scale	Result
Sand Island	Charpaka	Washroom cleanliness	0	Supported
		Safe drinking water	0	Supported
		Electricity supply	0	Supported
		Playground	0	Supported
		Use of digital content	0	Supported
		Library	0	Supported
	Paka Narayanpur	Washroom cleanliness	1.72	Supported
		Safe drinking water	2.88	Supported
		Electricity supply	0	Supported
		Playground	0	Supported
		Use of digital content	0	Supported
		Library	0	Supported
Haor	Joysree	Washroom cleanliness	1.72	Supported
		Safe drinking water	3.25	Supported
		Electricity supply	5	Not supported
		Playground	0	Supported
		Use of digital content	1.41	Supported
		Library	0	Supported
	Golokpur	Washroom cleanliness	3.07	Supported
		Safe drinking water	2.73	Supported
		Electricity supply	5	Not supported
		Playground	0	Supported
		Use of digital content	1.13	Supported
		Library	0	Supported

The result supports the hypothesis that the teaching-learning environment in hard-to-reach regions is poor. The results also reveal that the teaching-learning status of all hard-to-reach regions is not the

same. It is disclosed in this study that the teaching-learning status is worst in the northwest region, which is geographically identified as the sand island region, and the status is a bit better in the haor region.

6. Discussion

From the findings of the study, it is clearly shown that natural disasters and a lack of teaching materials, methods and physical and cultural phenomena make it difficult for secondary schools to integrate the national curriculum. In secondary schools that are difficult to reach, the lack of skilled and qualified teachers is one of the biggest challenges, as the data shows and respondents admit that teachers do not attend school on time and even fail to maintain school hours due to unfavorable physical and environmental situations, as it has been found in the qualitative analysis part in Chapter Four. Pedagogical training, expertise and skills are also not up to the mark and are urgently needed to use contemporary teaching strategies, like incorporating 21st-century skills into the curriculum, which are often lacking among teachers in remote areas. The lack of professional development options, especially in technology-enhanced teacher-learning approaches, contributes to this teacher capacity gap is clearly found in this study.

Lack of resources like computers, internet connection, and instructional aids makes it more difficult to use creative teaching strategies and restricts students' achievement up to international standards and even the performance of the students in easy-access area schools. On the other hand, teacher's qualification specially their postgraduate degree and training in various fields, are also lack behind with the easy access area schools, which also hamper students' academic achievement.

Conversely, the educational background and other abilities of employees combine to increase their job performance; these indicators are also poor, as most of the teachers are from back ward section of society, as they are born and live in remote rural areas of Bangladesh. The teaching-learning environment in Bangladeshi secondary schools located in remote areas was impacted by parental poverty. Finally, it is noted that students from low-income families do not consistently attend class or stay in school. Natural disasters that affect school attendance include floods, thunderstorms, and high air temperatures, as it is presented. Besides these few more things, i.e., students' motivation, proper evaluation and other reinforcements, rewards and so on, have not been discovered which are also affecting factors in teaching-learning performance. So, a comprehensive study is urgently needed. However,

from this study, it is firmly concluded that there are clear disparities and difficulties in terms of teaching-learning status and student achievement which require special attention to address these issues to overcome the existing adverse situation.

6.1. Suggestion for further research

The study is limited due to its descriptive survey study design. It is focused on the prevailing teaching-learning status of the hard-to-reach secondary schools in Bangladesh. This study can provide a useful foundation for further research, and the study area is limited only to the sand island and haor regions in Bangladesh. Many other sorts of hard-to-reach regions exist in Bangladesh. The researchers are dealing with limited and specific variables in this study, but future researchers may focus on different variables or a combination of those variables in his/her study. In this study, the researchers try to find out the major variables of and their association with the teaching-learning environment at hard-to-reach secondary schools. Future researchers may concentrate on those focus factors in primary or higher education.

6.2. Recommendation

• Recommendation for the Sand Island region

- Address socio-economic disparities by taking on a project
- Introduce a mid-day meal and stipend program
- Special allowance for the teachers
- Fill up the vacant positions:
- Provide teachers' training
- Ensure available teaching aids
- Invest in teacher training
- Improve infrastructure
- Establish toilets and tube wells
- Set up laboratory and library

• Recommendation for the haor region

- Infrastructure development, especially hostel facilities
- Establish a hostel
- Ensure enough boats in monsoon
- Special allowance for the teacher
- Appoint a teacher immediately
- Provide teachers' training
- Set up laboratory and library

7. Conclusion

The goal of this study is to assess the teaching-learning environment in hard-to-reach secondary schools in Bangladesh. The study, after doing different analyses of the research objectives and based on the major findings, makes the following conclusions:

A very appealing teaching-learning environment exists in the remotest areas in Bangladesh i.e. sand islands and haors. It is revealed in this study that the teaching-learning situation varies from each hard-to-reach region. Drastic land erosion frequently shifted the school establishment in sand island regions. Heavy land erosion and excessive temperature in the sand island region affect the presence in school and severely affect the teaching-learning environment. The school authority runs the academic activities without maintaining the contact hours. Teacher posts have been lying vacant for years due to remoteness, which hampers the academic activities of the students. There is no electricity, playground, or library in those schools.

In the Haor region, in the rainy season, rainy weather and thunder make a negative impact on teachers and students' presence in school. Teachers live away from the catchment area. Teachers' absenteeism is significant. Teachers' positions have been lying vacant for years. Lack of trained teachers and acute scarcity of teaching aids hinder teaching-learning.

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