

Enhancing Knowledge and Building awareness of Youth about Sustainable Safe Water Management and Climate Change Adaptation

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Executive Summary

Climate change has crucial impacts on water resources and other environmental components. Its intensity impacts are increasing day by day which is leading to increased scarcity of safe water availability. Bangladesh is one of the most climate vulnerable countries of the world. Climate changes and its impacts have been showing alarming adverse effects on safe water resources. But, safe drinking water is the basic right of every citizen and is a vital resource for improving health. In adopting the UN Sustainable Development Goals (SDGs), countries have pledged to universal and equitable access to safe and affordable drinking water for all by 2030. Successful climate change adaptation and mitigation of its adverse impacts are necessary for making these pledges successful and requires application of appropriate knowledge and skills and bringing about behavioral change which can be achieved through education.

The study was implemented by EPRC with financial assistance from Bangladesh Water Partnership and Global Applied Research Network- South Asia (GARNET-SA). This is a small study to improve knowledge and to build capacity about the impacts of climate change and its adaptation and mitigation in safe water management and its use perspectives of school going youths of selected four secondary schools of Matlab Uttar Upazila at Chandpur district. The study arranged building of capacity through an essay competition and information exchange workshop on “climate change adaptation and sustainable safe water management” among the selected school students. In some essays students included information on safe water technologies and their O&M during flood and normal situations. The integration of workshop and essay competition encouraged the students to further study the books as well as think about the lectured materials and collect information from other sources to prepare the essays.

School text books include basic knowledge about the issues and have limited information about the real local contexts. The rates of improvements, however, varied disproportionately over the various issues. The rate of improvement was low on some important issues, such as operation and maintenance of the safe water technologies, CC adaptation and other related issues. Overall, about 1095 students were directly and indirectly benefited by the educational intervention of the project.

BWP-GWP and other development partners should be encouraged to undertake this kind of educational intervention in all parts of the country.

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List of Abbreviations

AWP	Area Water Partnership
BWP	Bangladesh Water Partnership
CN	The Chitra-Nabaganga
COP	The Conference of the Parties
DEO	District Education Officer
EPRC	Environment and Population Research Centre
GARNET-SA	Global Applied Research Network-South Asia
GHG	Green House Gas
GWP	Global Water Partnership
IPCC	Intergovernmental Panel on Climate Change
MDG	Millennium Development Goal
MoEF	The Ministry of Environment and Forest
NAPA	The National Adaptation Programme of Action
NGO	Non Government Organization
REDD	Reducing Emissions from Deforestation and Forest Degradation
SMC	School Management Committee
UNFCCC	United Nations Framework Convention on Climate Change
USEO	Upazila Secondary Education Officer

Introduction

1.1 Background

Climate change and its adverse impacts are realities for Bangladesh. Water, which is mainly used for drinking and other domestic purposes, has been affected badly with other important sectors like agriculture, industry etc. It may be mentioned here that in Bangladesh the water has been experiencing massive problems from the world's worst arsenic contamination of groundwater, trans-boundary water sharing and over population. The climate change impacts have increased significantly the rates and magnitude of: salt water intrusion, water quality deterioration, water scarcity, poor availability of safe water sources, flood inundation, droughts, river bank erosion, damage of water sources from cyclones and tornadoes etc. The IPCC scientists have provided tangible evidences on climate change due to increased human activities and development. The average number of disasters caused by natural hazards has increased in the last 20 years from 200 a year to more than 400 and this is predicted to increase by as much as 320 percent in the next 20 years(Reliefweb, 2009,). There are two main strategies to address climate change: mitigation and adaptation. Mitigation focuses on interventions to reduce greenhouse gas (GHG) concentrations through measures that cut GHG emissions or move carbon out of the atmosphere, which can range from investment in clean energies to forest conservation. On the other hand, adaptation – reducing the vulnerability of natural and human systems to the impacts of climate change and adapting to a changing climate through adjustments in social, ecological or economic systems – is also essential (Allison, 2010 and Das, 2010). The SDG target-13.3 for “improved education, awareness-raising and strengthening human and institutional capacity on climate change mitigation, adaptation, impact reduction and early warning by 2030” also needs to be considered.

“Education alone cannot achieve a more sustainable future; however, without education and learning for sustainable development, we will not be able to reach that goal” –UNESCO.

Youths are powerful agents of change, and studies have found that many of them can be extraordinarily resilient in the face of significant climate change impacted challenges. Empowering youth with relevant education on disasters and climate change in a youth-friendly school environment can increase their resilience to disasters while contributing to sustainable development for their communities. Goodman et al. (2011) suggested implementation of REDD (Reducing Emissions from Deforestation and Forest Degradation) projects as a critical strategic opportunity in this respect. They recommend school-based integrated educational approaches which empower young people to build better future through life-sustaining values, practical skills and knowledge (HEART, 2013). Successful climate change adaptation and mitigation require appropriate knowledge, skills and behavior change that education can provide. Specifically, education can enable individuals and communities to make informed decisions and take action for climate resilient sustainable development. Two major climate treaties, the United Nations Framework Convention on Climate Change (UNFCCC) and the Kyoto

Protocol, have articles calling on governments to support education for climate change from secondary school level. This has to be complemented by the increased focus on education and knowledge as a priority for risk reduction within the Hyogo Framework for Action (Allison, 2010).

There are approximately 70,000 primary schools and 17000 secondary schools in Bangladesh. More than 20 million students are enrolled in the primary school. According to an UNICEF assessment in primary schools about 53% have functional safe water tube well and the rest does not have any option or have non-functional options. Moreover, there are alarming questions about the quality of drinking water (arsenic, salinity, bacteriological and other contamination) and hygienic practices existing in many schools of Bangladesh ([Hoque *et al.*, 2011]).

Safe drinking water is the basic right of every citizen and is vital for improving health and in alleviating poverty. In adopting the Sustainable Development Goals (SDGs), countries have pledged to universal and equitable access to safe and affordable drinking water for all by 2030” -SDG 6.1. Bangladesh is a diarrhea epidemic prone country and contaminated water related epidemics are common. Health Statistics indicate that approximately 342 children are dying every day for causes which are associated with exposure to contamination risks related to lack of safe drinking water. Therefore, it is important and urgent that climate change adaptation related to sustainable safe drinking water be promoted in all sectors and through all major partners/institutions. Schools have been identified as a main partner in promoting surface water and drinking water, health and other basic issues, in addition to the fact that it needs of capacity building.

This report presents results of a rapid assessment of “Improving knowledge and awareness build up on safe water management and climate change adaptation through secondary school students in Matlab Uttar Upazila, Chandpur”.

1.2 Objectives

The objective of the study is to improve knowledge and enhance awareness of school youths focusing gender response Climate Change adaptation towards sustainable water management.

The specific objectives are:

- i) Facilitate assessment of knowledge through essay competition among the school students; and
- ii) Disseminate the outcome of specific objective through a district level workshop.

Methodology

2.1 Design

The project design adopted educational intervention based on observational longitudinal method. The selected safe water management and climate change which issues included: climate change (CC) and its impacts, adaptation to CC impacts, sustainable safe drinking water, water safety and its management, methods of water disinfection during flood etc. Combined qualitative and quantitative methods of data collection were implemented. Field activities of the project were carried out over a period of two months. A schematic diagram of the project profile is given below:

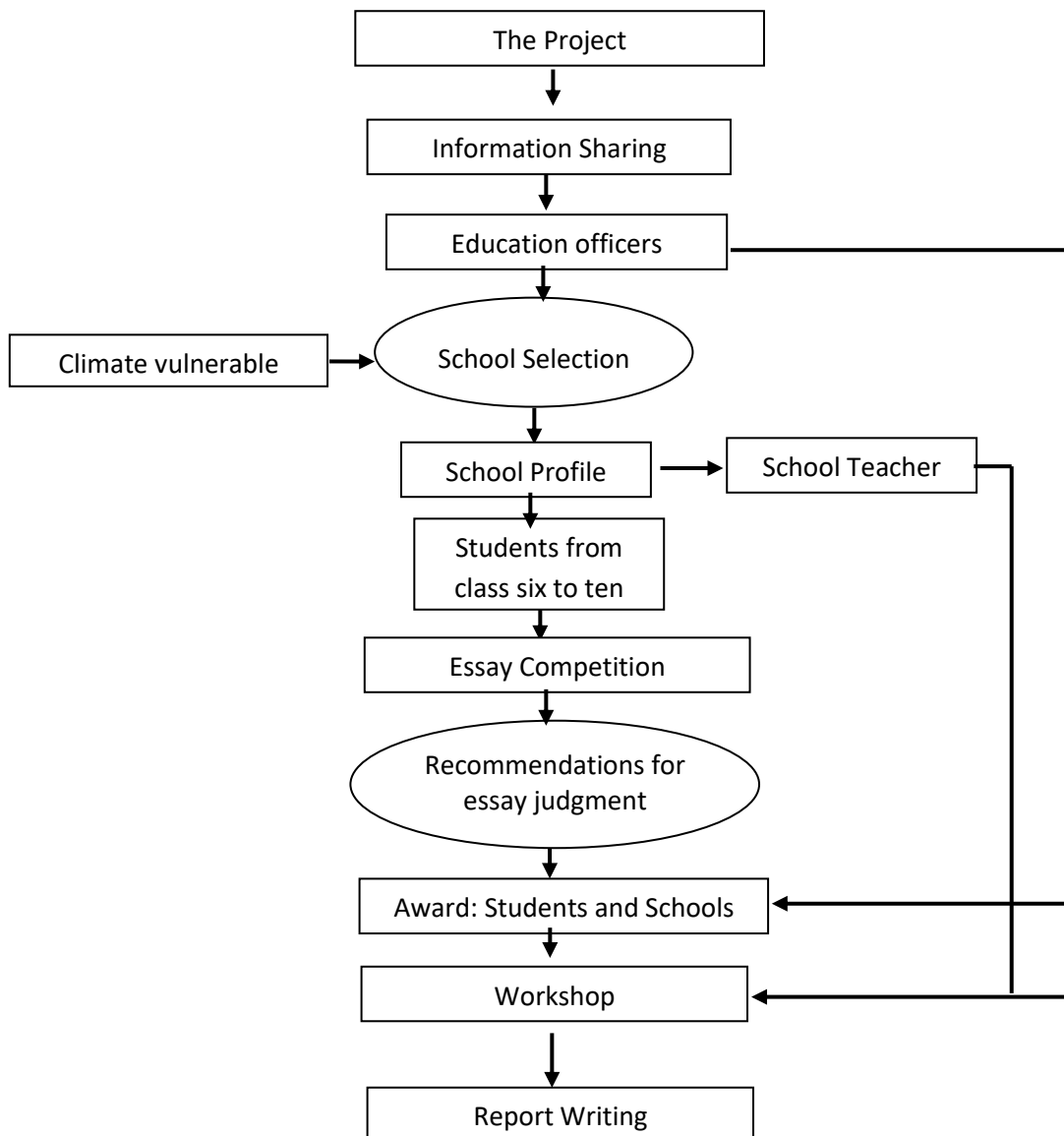


Figure 2.1: Schematic diagram of the research methodology

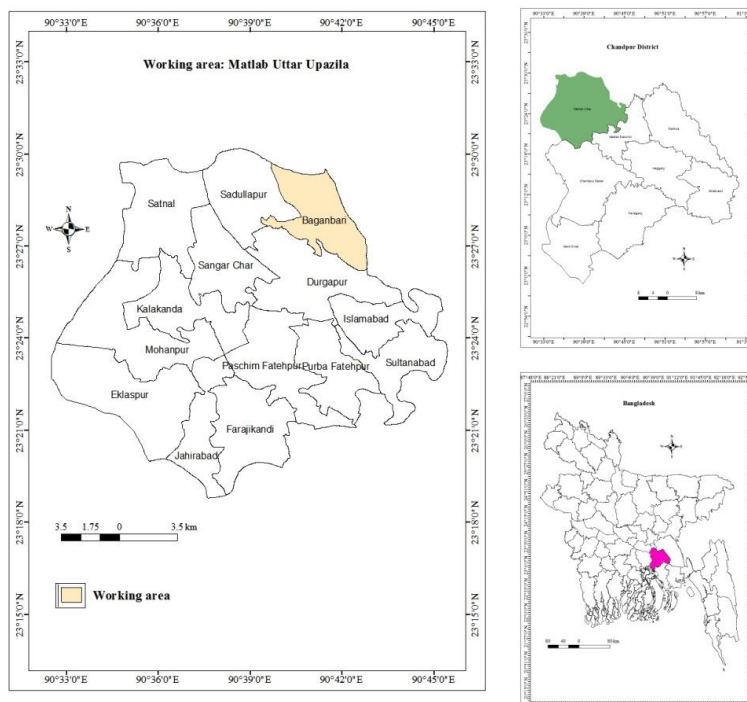
2.2 Main Activities

The main activities of the project include:

- School selection and planning for intervention with the concerned teachers, DEO, USEO, and EPRC local staff;
- Announcement of essay competition among the students of the selected schools;
- Development of educational materials and presentation based on EPRC documents;
- Collected the essays written by the students from the schools;
- collection and evaluation of collected essays and selection of first, second, and third position among the participating students as well as best school among the 4 schools;
- Arrangement of workshop on the climate change adaptation and safe water management
- Presentation of paper in the workshop
- Awarding prize to the first, second, and third position holders of essay competition and to other students as well as best school and other schools;
- Preparation of progress and end-line report.

2.3 Study Area

Due to its geographical location, climate change is a great a matter of concern for Bangladesh. As a result, the area where the scarcity of safe drinking water is visible to the school students is emphasized in the selection of the study area. According to the DPHE-British Geological Survey, the worst Arsenic (90%) affected District was Chandpur (BGS and DPHE, 2001). The project activities were conducted at selected four schools located Matlab Uttar Upazila in Chandpur district. Matlab Upazilla is located on the left bank of the lower Meghna and downstream of the confluence of Meghna and the Padma within the Meghna Dhonagoda flood control and irrigation project. The project areas are presented in the Figure 2.2.



2.4.1 School Selection

Four schools have been selected under Matlab Uttar Upazila in Chandpur District based on consultation with Upazila Secondary education officer and sub-district secondary education officer. The four schools represented areas at risks from arsenic, salinity and flooding which in combination represent the threats to safe drinking water and climate change adaptation. The headmasters of the schools were contacted about their interests before finalizing the schools selection. The selected schools were:

- a) Baganbari Ideal Academy;
- b) Moutopi Junior High School;
- c) Dhanagoda Taltoli High School; and
- d) Nischintapur High School

Total number of the student of the schools is about 1242 including 36.3% boys and 63.7% girls. There are 55 teachers including 34 male and 21 female.

2.4.2 Essay competition

An essay competition was held among the students of selected four schools. The selected topic of the essay was 'climate change adaptation and sustainable safe water management' with the objective of enhancing the knowledge of the school students about the theme of the study. To guide the students in preparation of the essay sub sections of the essay titled (i) Climate change, (ii) Climate change and Bangladesh, (iii) Sustainable Safe drinking water, (iv) Climate change and risk of safe drinking water, (v) Global measures to be taken about sustainable safe drinking water (v) Local/ national measures to be taken about sustainable safe drinking water and (vi) conclusion drawn . The word limit of the essay was of 800 words. Students from the classes of 6 to 10 of the selected schools were allowed to take part in the essay competition. Each school was asked to primarily select best 25 essays from their school and send for the final evaluation. However, the selected 4 schools, total 63 essays were received and evaluated.

2.4.3 Evaluation Process

After receipt of the essay form the schools, EPRC divided the essays into 2 groups. Group A for student of class 6 to 8 and group B for class 9 and 10 students. Two examiners independently evaluated each essay. Then student merit list were prepared for each group A and group B with average score from two examiners. The first, second and the third position for each group as well as best school from the participated schools were announced.

2.4.4 Workshop

A workshop on 'Climate Change Adaptation and Sustainable Safe Water Management' was organized at Matlab Uttar Upazila on 29th December 2018 with the technical support of GARNET-SA at Baganbari Union Parishad. In this dissemination the government officials, guardians of the students of four schools, and the students and teachers of four schools were been invited, EPRC personnel presented keynote paper in the workshop on climate change adaptation and safe water management at the beginning of the workshop. This was followed by the open discussion relating to the theme of

the workshop. Moreover, students actively participated in the open discussion session led by the expert panel. Finally, the 3 students the first, second and the third from each group were awarded their respective awards. Among the 4 schools, the first one was awarded Tk 2000 and a crest. All the participants of the easy competition were also awarded their designated prize and the three school other than the first prize winning one awarded the designated crests.

2.5. Management

The project was implemented by EPRC, a partner organization of BWP. EPRC is a multi-disciplinary research, education, training and networking non-government and not-for-profit organization. Its vision is to redress the sufferings of the poor people through appropriate management/development of water, hygiene, sanitation, agriculture, forestry, energy, food, disaster risks, education, health and social scopes in local, regional and global levels. The strategic objectives include research and development of knowledge, technology, human resources, natural resources, institutions, monitoring and evaluation policy in its fields of interests. It has been working in the fields of environment, water, education, agriculture, hygiene, health, food security, disaster risks management and its related social and policy issues

Chapter-3

Results and Discussion

3.1 Features of the Selected Schools

The project has directly and indirectly educated about 1242 students and 55 teachers. The selected schools were from Matlab Uttar Upazila of Chandpur District. The following Table 3.1 summarizes the characteristics/features of the schools.

Table 3.1: Summary of features of the selected schools

Sl. No.	School name	# of Students	
		Boys	Girls
01	Baganbari Ideal Academy	71	103
02	Moutopi Junior High School	32	47
03	Dhanagoda Taltoli High School	135	310
04	Nischintapur High School	213	341
Total		451	791

All the four schools were secondary non-government high school with MPO registration. In total there were about 1242 students. Of them there are 36.3% boys and 63.7% girls. The selected sub-district and schools are exposed to the risks for arsenic contamination water as well as flooding and may be exposed to other impacts of climate change in near future.

3.2 Essay Competition

An essay competition was organized among the students of four selected schools. The selected topic of the essay was 'climate change adaptation and sustainable safe water management'. The essay was limited to 800 words. Students from the classes of 6 to 10 of the selected schools took part in the essay competition. The total number of 63 students took part in the essay competition (Table 3.6).

Among them 2 first and 2 second students (one from 6-8 class and one from 9-10 class) were awarded first prize (prize money and crest) and 2 were awarded crest for securing 3rd position (from each group). The best and other participated schools were awarded with crest. All 63 students and 4 schools who participated the essay competition were awarded certificates and every participant colorful pencil box as a gift.

Table 3.2: Participants in essay competition

Name of School	Class		Overall
	6-8	9-10	
<i>N</i>	25	38	63
Baganbari Ideal Academy	11	04	15
Dhanagoda Taltoli High School	06	10	16
Moutopi Junior High School	04	13	17
Nischintapur High School	04	11	15

As has been mentioned earlier a total 63 students were participated in essay competition from the selected four schools including Baganbari Ideal Academy 15, Dhanagoda Taltoli High School 16, Moutopi Junior High School 17 and Nischintapur High School 15 (Table 3.2).

Table 3.3 shows group and school wise winner in essay competition. Among the participating schools, for group A(class 6 to 8) Baganbari Ideal Academy won the first prize, Nischintapur High School got second prize and Moutopi Junior High School got the third prizes. For group B(class 9 to 10) Moutopi Junior High School got the first prize, Dhanagoda Taltoli High School got the and Nischintapur High School got the third prize. Moutopi Junior High School was selected as the best school in the essay competition based on number secured first and third prizes and vote of the essay evaluation committee...

Table 3.3: Essay competition result

Name of Schools	Class Group		Grade	Score
	6-8	9-10		
Baganbari Ideal Academy	1 st	-	(3x1)	3
Dhanagoda Taltoli High School	-	2 nd	(2x1)	2
Moutopi Junior High School	3 rd	1 st	(1x1)+(3x1)	4
Nischintapur High School	2 nd	3 rd	(2x1)+1x1	3

Note: first=3, second=2, third=1

3.3 Workshop

A workshop on “Climate Change Adaptation and Sustainable Safe Water Management” at Matlab Uttar Upazila has been organized under the study activities with the technical support of GARNET-SA in 29th January 2019 at Baganbari Union Parishad. The main objectives of the workshop were (1) to discussion on workshop topic:



Climate change adaptation and sustainable safe water management by the resource panel; and (2) to award prizes among the winning students of selected four schools.. During the workshop exchange of views and sharing knowledge and build up of the awareness and capacity of young school children, their guardians, teachers, and NGO personnel about climate change, its adaptations, mitigations, sustainable safe water management and its usage perspectives etc. were emphasized. In total 33 participants including the USEO of Matlab Uttar; NGO representatives (GARNET-SA member), Headmasters, teachers, students and guardians of four selected schools of Chandpur district participated in the workshop. EPRC personnel presented a keynote paper in the workshop on climate change adaptation and safe water management.

Mr Sohel Ahmed, Assistant Coordinator (Monitoring and Evaluation), EPRC presented the key note on Climate change adaptation and sustainable safe water management. In his speech, Mr. Ahmed mentioned that the global warming is one of the main causes of climate change. He pointed out that Bangladesh is one of most vulnerable climate change affected country of the world and as a result the average temperature of Bangladesh is increasing faster than the predicted rate 2 degree C by the year 2100 which is alarming.. Mr. Ahmed mainly focused on drinking water quality such as salinity, cyclone, flood, sea level rise, arsenic, drought and its association with climate change as well as consequence on sustainable safe water management and possible strategy for overcoming the problems. He has shown several drinking water technologies to be used during flood or non-flood period. In his presentation he also discuss about Water Safety Plan for ensuring drinking water quality.

Mr. Masudur Rahman, Assistant teacher of Nischintapur High School recommended preparation and distribution of leaflet or other IEC material developed under this project, will also help to build awareness among school students. Three students expressed their experience and said they read about climate change in their text books but not much about safe water management. They also used internet to find information and discussed with elder brothers and other relatives about climate change and safe water management.

Chief Guest, **Mr, Md. Abdul Kium Khan**, Upazila Secondary Education Officer enjoyed the workshop particularly, student involvement.. He



acknowledged the education department and schools for getting involved in the various stages of the research project. He also recommend that this kind of awareness activity should be extended to other schools and also include quizzes or debate tournament at Upazila level throughout the year. The participants also highly appreciated the work carried out by EPRC in collaboration with BWP. They strongly recommended to continue this kind of awareness program over the

year for sustainable improvement of knowledge on climate change impacts on water management in those schools and to extend this program to other schools as well.

3.4 Prize giving ceremony

Open discussion during the workshop was followed by the prize giving ceremony. Moutopi Junior High School was selected as the best school in the essay competition and got best school award and 2000 taka as prize money and Baganbari Ideal Academy and Nischintapur High School and Dhanagoda Taltoli High School awarded crests for participation in essay competition. Two students, one from group A and 1 from group B were awarded the crest and 1000 taka as prize money each for securing first position and similarly two students were also awarded the second prize, one crest and 500 taka each as prize money from two groups. One crest each was awarded to the students who secured the third place in two groups.

Chapter- 4

Conclusion and Recommendations

Overall, about 1242 students were directly and indirectly benefited by the intervention of the project. The level of basic knowledge about sustainable safe water management & Climate Change Adaptation and their related issues were found to be poor before the intervention. The study reconfirmed that rates of knowledge, attitude and practices (KAP) about Climate Change Adaptation and Sustainable Safe Water Management as well as its related issues among the students and teachers can be improved significantly after simple educational intervention as observed earlier.

4.1 Conclusions

The following main conclusions can be drawn:

- i. The students had developed better understanding about climate change and its impacts on water management. Though they had some knowledge about climate change and its impacts from their text books, both the level of knowledge improved significantly after the educational intervention.
- ii. The teachers, members of school management committee and Upazila Secondary Education Officer, local NGO representative appreciated the result of the educational project and acknowledged that they have also benefitted professionally from the exercise.

4.2 Recommendations

The main recommendations are as follows:

- 1) To build awareness about sustainable supply safe water and for sustainable safe water management we should stop water pollution and prevent illegal occupation of water bodies (river, canal, pond etc.)
- 2) The teachers should establish and monitor safe water & technology management facilities at the schools and encourage the students to maintain WSPs properly.

- 3) The schools with government and non-government partners should arrange competition regarding climate change, safe water management, homestead waste management, hand washing/sanitation on environment, hand wash, sanitation and other designated days.
- 4) Adequate quality of educational materials should be prepared and distributed in all the schools
- 5) BWP-GWP and other development partners should be encouraged to undertake this kind of educational interventions in all parts of the country.

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Speech of Chief Guest **Mr, Md. Abdul Kium Khan**, Upazila Secondary Education Officer, Matlab Uttar, Chandpur



Speech of Mr. Masudur Rahman, Assistant Teacher, Nischintapur High School, Matlab Uttar, Chandpur



Opening speech by Mr. Anisur Rahman, Assistant coordination, EPRC, Dhaka



Key note presentation by Mr. Sohel Ahmed, Assistant Coordinator (M&E), EPRC, Dhaka



Workshop Participants



Workshop Participants

Workshop picture



Best School Award



Group A: Class Nine to Ten, First Prize Award



Group B: Classes Six to Eight, First Prize Award

Prize giving ceremony