

# **Promoting Science Education in Secondary School Project**

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## **1. Background and Rationale**

Bangladesh generally suffers from a low-level of scientific literacy compounded further by a sharp decline in the number of school students enrolling for science. In 2001, 264,000 students appeared for the secondary school leaving (SSC) examination from the science group whereas this number decreased to 200,000 in 2006. The decline in science enrolment also accompanied with a slide in the quality of science education. Along with the shortage of teachers resulting from the low numbers enrolling for science studies, factors such as a weak curriculum, low quality textbooks, poor teaching and assessment methods, inadequate incentives for teachers, and lack of trained faculty and laboratory facilities have contributed to the decline in quality, as well as for the disinterest and phobia towards science. The inadequate or lack of laboratory facilities in schools is particularly conspicuous in Bangladesh's science education system. It is estimated that eighty percent of rural schools have no laboratory facilities.

## **2. Existing Situation**

The overall enrolment rate at primary and secondary schools in Bangladesh has increased significantly over the last two decades but in the same period the quality of education, according to education experts and practitioners, has decreased drastically. Planners have struggled to formulate educational policy to keep pace with global developments in science and technology, while the number of science students in Bangladeshi schools, and at higher education level, continues to fall. It may be worth noting that the falling trend in science students is matched by a rising trend in Business students. The number of Secondary School Certificate (SSC) candidates under the Science Group category fell from 264,100 in 2001 to 176,880 in 2008. At the same time, those from the Business Group rose from 129,821 in 2001 to 239,441 in 2008. Similar trends are seen at Higher Secondary Certificate (HSC) and university entry/degree levels. Statistics of the National University shows that 5.4 percent of students enrolled in Bachelor of Science courses in 1993, but the rate declined to 4.6 percent and 3.3 percent in 1994 and 1995 respectively. Hence, the number of science students is falling at all stages with the situation being comparatively worse in rural areas.

A recent study, conducted by the Bangladesh Freedom Foundation, shows that 66% of schools do not have laboratories and 80 percent of rural school children in Bangladesh have no access to such facilities. In the few schools that do have laboratories, either too many students vie to use the equipment or the faculty simply bars student access to the laboratories and/or equipment on the pretext that if the equipment is damaged it will be

prohibitive to replace. Practical classes for school leaving examinations are supposed to begin from Class IX, but in reality most schools don't start teaching practical classes until Class X, and mere attendance ensures passing marks. Moreover, students' enthusiasm for and attendance in practical classes is found to be low.

In national labour market, There is much concern that during their time in school and further education, students are turning away from the study of Science, technology, Engineering and Mathematics. This is a bad omen for our education system as the secondary level education is considered as the gateway to the higher education. Presently, Science and Technologies (ICTs) is getting more and more importance around the globe. But in our country the opportunities of studying science and science oriented professional education is waning gradually. If the situation goes on, secondary schools will face the shortage of science teacher in future. Besides, Bangladesh will face scarcity of skilled human resources in essential sectors like agriculture, industries, medical etcetera.

### **3. Overall Goal**

The project aims to popularize science among secondary school students through student led out-of-school activities in science and technology.

### **4. Objectives**

- Enhance and extend attainment in, interactions with and experiences of Science among secondary school students
- Initiate student-led 'Science Clubs' that provide space for discussion and experimentation on science.
- Encourage student to lead and manage the activities of the clubs themselves, with some guidance from their teachers and support from the partner organisations.
- Improve collaboration between local schools to enhance the overall quality of the region
- students are intended to spark inspiration and to foster long term interest in subjects like physics, chemistry, biology etc
- Improvements in practical skills, self-confidence and thinking skills of students
- Initiate and guide extracurricular activities in schools and improve collaboration between schools
  
- Sensitise regional and national level policy makers, media houses and civil society through advocacy.

### **5. Location area and rational of the area selection:**

The project working area:

1. Nilphamari Sador

## **6. Name of School :**

7. 01.Dubachuri B.L Maddrasha, 02.Kakai Barogacha P.C High School 03.Tupamari High School 04.Palashbari Girls High School, 05. Natun B.L High School 06.Charcharabari High School 07.Ramnagor High School 08. Loxmichap High School 09.Kachua Seba Secondary School 10. Ramgonj B.L High School 11. Palashbari Parasmoni High School 12. Taronibari High School 13. Bismuri Chanderhat High School 14. Ithakhola Kalitola High School 15. Chanderhat Girls High School 16. Kanialkhata High School 17. Sararpar High School 18. Fultola High School 19. Panchopukur High School 20. Nagor Daroyani High School

## **8. Major Activities**

The project intends to form science clubs in schools. The clubs will bring together three groups of people, students as direct beneficiaries and school authorities and educators and parents as secondary stakeholders. Each NGO will deal with 20 educational institutions.

### i) Club activities

1. Promote student interest in science.
2. Carry out practical experiments from school textbooks using low-cost science kits.
3. Organize discussions, science fairs (at School and at district/upazila level, inter-class and inter-school competitions etc.
4. Encourage peer to peer learning.

### ii) Community/ Guardian mobilisation

1. Organise guardian meeting
2. Discussion meeting/ workshop with local civil society and journalists

### iii) Media mobilisation

1. Workshops for local/ national media sensitization
2. Progress sharing meeting with the national level media (BFF)
3. Talk show in electronic media (BFF)

### iv) Policy maker/ Civil society mobilization

1. Workshops for forming civil society platform
2. Provide a platform for interested educators to instruct on topics outside the school curriculum.
3. Sensitise regional and national level policy makers, media houses and civil society through advocacy (workshop/ seminar).

## 9. Expected Outcomes of the Project

Objectives	Outcomes
To popularize science among secondary school students in comparatively economically and geographically disadvantaged schools.	<ul style="list-style-type: none"><li>• Reduced phobia towards science.</li><li>• Increased enjoyment and interest for science.</li><li>• Improved understanding of science curriculum.</li><li>• Peer to peer learning.</li></ul>
To develop leadership qualities among students belonging to the science clubs.	<ul style="list-style-type: none"><li>• Students develop skills at organizing and managing programs.</li><li>• Students learn to work in teams.</li></ul>
To create greater interest among teachers and parents towards promoting science education.	<ul style="list-style-type: none"><li>• A supportive environment for studying science.</li></ul>
To organise Seminars and workshop for local and national level advocacy	<ul style="list-style-type: none"><li>• A supportive policy for promoting science education.</li></ul>

### 9.1 Formation of Science Clubs

A science club is a students' club that offers students the chance to do science-related extra curricular activities that extend and enhance the knowledge of science they experience in their classroom syllabus.

The club activities will lead to improvements in school performance. This can manifest as improved motivation and a positive impact on attitudes of the students. Co-curricular activities such as debating, scouts and sports were common in the past but no longer in rural schools. These now primarily exist in relatively more privileged schools in urban areas. The project, therefore, intends to revive co-curricular activities in science through the formation of school based science clubs in rural secondary schools.

#### **The clubs will bring together three groups of people**

- Students: The most important group as they will be responsible for leading and managing the science clubs.
- School authorities and local GoB officials and educators: Convincing this group is essential to gain access to students.
- Parents: Gaining the support of parents can be leveraged to pressure schools and their children to place due importance on science and to promote such activities.

#### **The science clubs will seek to achieve the following:**

2. Promote students' interest in science
3. initiate creative science projects in groups and individuals
4. Carry out practical experiments from school textbooks using low-cost science kits.
5. Think and talk about science, during the activity and when sharing their ideas

6. Organize discussions, science fairs, inter-class and inter-school competitions.
7. Encourage peer to peer learning.
8. Provide a platform for interested educators to instruct on topics outside the school curriculum.
9. Get students, teachers and parents involved in promoting science.
10. Develop leadership among students.

### Students' benefits:

- Practice at the process skills needed in science.
- Increased opportunity to develop and practice thinking, speaking and listening skills.
- Opportunities to experience a wider range of science topics, hence broadening their enthusiasm for science.
- working in teams have been great because they have to organise between them what to do, discuss how to solve problems between themselves and how to approach the investigation, sharing their results and obviously discussing their results with their team members and summarising their results
- Overall, it will give them a lot of confidence in their own thoughts and develop a scientific mindset.

### Teachers' benefit

- To learn about new topics and try out new ideas, in a less pressured environment.

### School's benefit

- To observe science fairs.
- Raising the profile of science within the school.
- A positive change in attitude to science lessons
- Acceptance of school to the society

## 10. Personal Management of the project

S n	Name of the position	Type of the Position	Number	Key Responsibilities
1	Project Director (ED)	Part time	1	- Overall responsibility - Coordination - Communication with BFF
2	Project Coordinator	Regular	1	- Coordinate the project activities. - Coordinate training activities Supervise project stuffs - Liaison with BFF and other stakeholders - Deliver project status to BFF - Prepare project plan and follow - up implementation process - Monitoring budgetary control

3	Assistant Project coordinator	Regular	3	<ul style="list-style-type: none"> <li>- Student mobilisation</li> <li>- guardian mobilisation</li> <li>- Prepare and preserve project documents</li> <li>- Prepare Report</li> <li>- Training</li> </ul>
4	Accounts and Administration Officer	Part time	1	<ul style="list-style-type: none"> <li>- Maintain all financial records and books of accounts</li> <li>- Preparation of financial statements/reports as required by the organization, BFF and audit purpose</li> <li>- Maintain administrative activities of the project</li> </ul>

#### 11. Particulars of the Project :

a. Title	Promoting Science Education (PSE)		
b. Grant Period	from 1 <sup>st</sup> January 2012 to 31 <sup>st</sup> December 2014		
c. Total budget(in BDT)	BDT .2306245		
d. Allocation for this period	BDT .251450		
e. Location	level	Name	Number
	Division	Rangpur	01
	District	Nilphamari	01
	Upazila	Nilphamari Sadar	01
f. Total beneficiaries	Male	Female	Total
1220	775	445	1220

**Supported by:** Bangladesh Freedom Foundation