

Impact Study on Professional Skill Development Training for Science Teachers of Secondary Schools by BFF – CCBVO



The Research Study Initiated
by
Bangladesh Freedom Foundation (BFF)
and
Conducted by
Centre for Capacity Building of
Voluntary Organization (CCBVO), Rajshahi.

December 25, 2015

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Level -5, 6/5A, Sir Syed Road, Mohammadpur,
Dhaka 1207, Bangladesh

**Conducted by
Centre for Capacity Building of Voluntary Organization (CCBVO)**

Mohisbathan, Rajshahi Court, Rajpara,
Rajshahi-6205, Bangladesh
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The Study Team

Coordinator

Sarwar-E-Kamal,
Chief Executive, CCBVO

Members

Prof. Md. Mostafizur Rahman,
Department of Agronomy and Agricultural Extension,
Rajshahi University

Prof. Md. Elias Hossain,
Department of Economics,
Rajshahi University

Md. Nirobul Islam
Project Coordinator, PSE, CCBVO

Associates

Md. Khairul Islam
Lecturer, Department of Economics, Rajshahi University

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Acronyms

BFF	Bangladesh Freedom Foundation
CCBVO	Centre for Capacity Building of Voluntary Organisation
FGD	Focus Group Discussion
NGO	Non Government Organisation
PSE	Promoting Science Education
RTTC	Rajshahi Teachers Training College
SPSS	Statistical Package for the Social Sciences

Chapter I

Executive summary

In the backdrop of lower level of scientific literacy and lower standard of science education in the rural areas of Bangladesh, Bangladesh Freedom Foundation (BFF) along with its partners NGOs has launched a motivational and professional skill development training program for the science stream teachers of the secondary schools under the collaboration of Centre for Capacity Building of Voluntary Organisation (CCBVO) and Rajshahi Teachers Training College (RTTC). One of the alleged complaints is that science teaching in the schools is not up to the and not much trained to give teaching in a student-friendly way which could raise the understanding level of the students regarding different science stream subjects. To give remedy to this problem CCBVO being suggested by BFF negotiated with the RTTC to arrange training for the secondary school teachers. The trainings were conducted during 21-23 January and 13-15 June, 2015, and about 110 teachers from Godagari, Paba, Charghat and Mohanpur upazila of Rajshahi district, Kurigram Sadar and Ulipur upazila of Kurigram district and Fakirhat upazila of Bagerhat district participated. The main objective of this training was to make teachers trained on giving quality teaching in an easy way that would encourage enrollment of the students in the science stream and improve the quality of science stream students. The training also aimed that the trained teachers would get involved with the science clubs of the schools patronized by the partner NGOs, and assist students' science based activities. Thus, the main purpose of this evaluation study is to obtain some feed-backs of this training program with regard to the impacts on teachers, on teaching, and on the school and students along with overall environment of the school.

This study of BFF-CCBVO's training program for the secondary school teachers has been carried out following both quantitative and qualitative approaches. For the study a total of 74 respondent teachers from the schools which are under the promoting science education project (PSE) of BFF were surveyed. In addition to the questionnaire survey, 10 FGDs with the students and 1 with the staffs of PSE project were conducted. The study findings are presented below.

For the impact study of the professional skill development training of the secondary school teachers, the evaluation team conducted a questionnaire survey on the teachers who obtained training from RTTC organized by BFF and CCBVO. Of the surveyed 74 teachers 90.5% are male and the rest 9.5% are female. Regarding education of the teachers, 76% have B.Sc. degree and the rest 24% have M.Sc. degree in different science stream subjects. Most of the respondent teachers are found to have trainings as 79.7% teachers have B.Ed training and 2.7% have M.Ed training while 17.6% have no training at all. The average teaching experience of the teachers is 13.21 years indicating that the teachers have relatively long experience of school teaching.

The study team found that all the teachers who received training have shared their experiences and learning with their colleagues. However, in response to how they have shared the knowledge and experiences, it is learnt the 82.6% training recipients shared their knowledge in the meeting of the teachers convened by the head teacher. In the case of 17.4% training recipient teachers, knowledge sharing was done in the form of personal discussion. The training recipient teachers expressed that they have learnt several new things from the training. 83.8% teachers reported that through this training they learnt how experiments of theories can be done in inexpensive ways. 43.2% told that they learnt direct and hands on laboratory practices during the training, and again 43.2% learnt as to how experiments can be done with efficiency and the same percentage of teachers reported that they have learned the experiments in hands on basis. 44.6% training recipient teachers reported that they apply post training knowledge through hands on teaching while 58.1% reported to make clear theories of science before the students. Most of the teachers (72.5%) are taking class using instruments and board. 66.3% teachers reported that they are now

providing practical based teaching to students while 40.5% teachers told that they teach students following interactive teaching method. 98.6% respondents told that eagerness and interest in science among students has increased while 39.2% reported that attention of students has increased and hesitation has been removed. Similarly, 45.9% reported that science phobia among students has also been removed for this reason. 37.8% respondents reported that students are getting familiarity with new instruments and 48.6% informed that students are learning new experiments and preparation of different projects. 39.3% respondents reported that students now can learn quickly and easily as teachers now follow some new methods of teaching.

It is found that 23.0% teacher have applied 50% of their obtained knowledge in the school and classes. Similarly, 20.3% have applied 51%-60%, 5.4% have applied 60%-70, 36.5% have applied 70%-80% and 14.9% have applied 80%-90% of their obtained knowledge from the training. Not a single teacher is found to have applied 100% of his earned knowledge from the training. Trained teachers have failed to utilize full extent of their knowledge in class room as there are some problems in their schools. 63.5% respondents opined that there are infrastructural problems in the schools. That the teachers cannot manage time to demonstrate their training knowledge is reported by 36.5% respondents. Moreover lack of available apparatus or instruments in the school is another problem to implement training experiences which is reported by 40.5% teachers.

In response to the impact of the teacher's training on knowledge of science of students, 24.3% respondents reported that their understanding of science steam subjects has highly increased and 71.6% told that it has increased moderately while 4.1% reported that no change is found in understanding science stream subjects. 16.2% respondents reported that capability and performance in science subjects has increased highly while 82.4% told it has increased only moderately. It is revealed that according to 40.5% respondents, result of science group students has increased highly. 47.3% respondents reported that result of science group students has moderately increased and according to 12.2% respondents no change is found in the result. Use of computer and internet has increased highly according to 17.6% respondents and moderately increased according to 54.1% respondents.

The training of teachers has some impacts on practical learning by students. It is found that attendance of students has highly increased in practical classes according to 35.1% respondents and only increased by 55.4% respondents. Teachers are now providing hand on teaching which increased highly according to 28.4% respondents, moderately increased according to 68.9% respondents and no change according to 2.7% respondents. 92.2% respondents reported confidently that teachers now complete practical before the examination starts. It is found that according to 97.3% respondents the attendance of students in theoretical classes of science has increased and according to 100% respondents the trends of questioning by students in class has increased. Similarly 95.9% respondents told that students' eagerness of learning different topics of science has increased in the school. Moreover, discussion with teachers regarding enrolling in science stream and eagerness of overall students about science education, have increased according to 86.5% and 94.6% respondents, respectively.

It is revealed that participation in science club has increased which is reported by 98.6% respondents. Group work among the members of science club and participation by club in expo or gatherings has also increased, as reported by 95.9% and 100% respondents, respectively. Again, taking of new project by club members, organizational capability of members through club and mutual relationship among members through club activities have also increased according to 94.6%, 95.9% and 97.3% respondents, respectively. It is found that presentation of teaching topic, friendly behavior of teachers with the students, and tendency of advising students on science matters has increased according to 98.7%, 98.7% and 98.6% respondents, respectively.

It is found that 50% schools observe science week. Again, 95.9% schools arrange science quiz competition, 83.8% schools arrange debate competition on different topics of science, 66.2% schools published bulletin or magazine on science, 93.2% school have taken new projects in last six months, and 89.2% school took part in science fair outside the school in last 6 months.

Trained teachers in some cases have failed to use post training knowledge because of having some problems in schools. 60.8% respondents told that there is lab/infrastructure problem in the school while 62.2% respondents reported that there is lacking of apparatus/materials/instruments in the school. 44.6% reported that teachers do not have available time to implement received knowledge from training.

Based on the existing problems in making the training more effective respondent teachers provided some suggestions. Most of them suggested that they need longer duration training program (67.6%) along with frequent training (43.2%). They also demanded subject wise training (20.3%) and some incentives to the training recipients (17.6%) to make the training more effective. They also suggested that training should be arranged at *upazila* level (10.8%). They suggested for improving the infrastructure of school (32.4%) and arranging more science fairs (10.8%) as well. The respondents were also asked to evaluate the training as a whole. They told that teachers have learnt many things related to science (39.2%) from the training that has increased their teaching efficiency (31.1%) and has increased the education quality of the school (28.4%). Therefore, they told that arrangement of this sort of training is a good initiative (68.9%) but their obtained training is not sufficient and hence they need more training (20.3).

The head masters of the schools were asked whether improvement has taken place among the teachers after receiving training. In response, 32.4% head masters told that teachers now go to class with instruments relevant to the topic of class while 52.7% reported that they take practical classes regularly and as a result students now can do new practical which is reported by 16.2% head teachers. Again, 10.8% respondents told that teachers help students in different activities of science club. As a result of taking training from the RTTC behavioral changes have taken place in the teachers. According to 37.8% head teachers' opinion, teachers are now rendering careful and regular teaching. 33.8% head teachers observed that teachers now go to class with necessary apparatus and instruments. Other changes mentioned are encouraging students (23%), encouraging for group work (16.2%), interacting teaching (18.9%), doing experiments with inexpensive materials (18.9%) and giving students hands on training (16.2%).

It is found from the study that training to the secondary school teachers has resulted in many positive outcomes which are reported during the FGDs. The positive outcomes are manifested through the impacts of the training on the teachers, their sharing of training knowledge, performance of students at present compared to earlier, understanding ability of the students, number of experiment done by students, use of scrap materials in doing practical experiments, practice of group wise discussion, preparation of projects for science fair, interest and enjoyment of students etc. As recommendations the evaluation team suggested to continue the training frequently and more in number with giving incentives to the training receivers. It also suggests continuing the functioning of the science club and arranging more and more science fairs, competitions, quizzes, debates etc., and also recommends extending of supports to the schools in building necessary infrastructure and procuring some instruments for science education.

Chapter II

Impact Study on Professional Skill Development Training for Science Teachers of Secondary Schools

1.0 Background

Bangladesh is a developing country in south Asia with a large population. The average literacy level in the country is slightly over 60% and the education system in the country consists of different streams of education viz. general education, *madrasha* education and vocational education. Among these education streams general education is large and wide spread, and this education is provided by schools, colleges at the lower stratum and by universities at the upper stratum. In the general education system, there are again three branches- science, humanities and commerce. For a developing country like Bangladesh, educational experts and practitioners always insist on a dominant role of science-based education without neglecting humanities and commerce branches. However, Bangladesh generally suffers from a low level of scientific literacy compounded by a sharp decline in the number of school students enrolling for science. The decline in science enrollment has also accompanied by a slide in the quality of science education. Along with the shortage of teachers, resulting from low numbers of students enrolled for science studies, factor such as weak curriculum, low quality textbooks, poor teaching and assessment methods are also mentionable. Therefore, Bangladesh Freedom Foundation (BFF) along with its partners NGOs launched a motivational and skill development training program for the science background teachers of the secondary schools under the collaboration of CCBVO and RTTC.

One of the alleged complaints always raised from different corners is that science teaching in the schools is of low quality and they are not much trained to give teaching in proper way which could raise the understanding of the students regarding different science stream subjects. The teachers are allegedly cannot do well in the practical classes and are not much serious about rendering hand-on teaching for the students. It is worth noting that government agencies sometimes offer training programs for the teachers, but due to proper planning and monitoring, these programs cannot generate expected results in terms of enhancing the quality of the teachers and creating any impact on the school environment. The motivation of the teachers about their duties in the school is also very low. In this backdrop, CCBVO with the help of BFF negotiated with RTTC for organizing a motivational and skill development training for secondary school teachers in 2015. The training has been held and it was expected that a significant impact would be seen in the schools as regards to science education in the schools as the teachers are supposed to share their training with other teachers and teach their students with more carefulness and efficiency. This would also help increase the number of science students in the school along with more enrollment in the science clubs which are formed under the nourishment of the partner NGOs of BFF.

It is worth noting that BFF in cooperation with its partner NGOs has been implementing a project for enhancing science education in the secondary schools in different regions of the country. The organization beliefs that the motivational training of the science stream teachers would help achieve the objectives of this project as well. The training has been conducted from 21-23 January, and 13-15 June, 2015 and about 110 teachers from Godagari, Paba, Charchat and Mohanpur upazila of Rajshahi district, Kurigram Sadar and Ulipur upazila of Kurigram district and Fakirhat upazila of Bagerhat district have participated. During the training the participating teachers learnt about motivational issues for their children, hands on teaching techniques, various aspects of pedagogy of teaching and experiments with scrap materials such as egg-shell, rope, bottle of soft drink, scrap paper, etc. in an inexpensive way. It was expected that after their return these teachers' training knowledge would be spilled over to their colleagues and also on the

learning of the students. Thus, the total environment of science education in the schools will be improved. BFF and its partners (including CCBVO) believe that improvement of the quality of the teachers and provision of laboratory instruments are the key factors for spreading science education in the region and therefore, the training that is provided to the teachers is instrumental in bringing about fundamental changes in education in the region.

Since the inception of the project 'Promoting Science Education in secondary school (PSE)' by BFF implementing through its partner NGOs, the training of secondary school teachers has not been evaluated, but the various activities of the project have been evaluated before. Similarly, trainings without feedbacks on impacts would result in pursuing uncertain outcomes on the quality of teaching and learning of the students.

1.1 Schools, teachers and students in the region

Secondary schools are the second tier of general education in Bangladesh. Small children passing out from primary education generally enroll in the secondary schools to continue their education. These schools are scattered over the region. Based on the demand for education there are numerous schools established in the rural areas. However, the condition of the schools is mostly underdeveloped with most of them lacking enough space and infrastructure. The schools mostly suffer from shortage of class-rooms, necessary furniture, laboratories, spaces for playground etc. to provide for congenial educational atmosphere. Moreover, the schools are generally lacking sufficient number of teachers and staffs to facilitate services for the children with regard to their learning. Subject wise recruitment of teacher is absent and most of the teachers were found to teach different subjects. Especially, in the science stream one or two teachers teach all the science subjects from class VI to class X. The schools generally lack equipment for experiments which hinders taking of practical classes properly and does not permit to carry out all the scheduled practical experiments for the students. Many of the schools do not have laboratory rooms to conserve the equipments whatever they have and in such cases showing how to do a specific practical experiment becomes difficult for the teachers. As school teaching now-a-days is not considered as a good job from economic point of view, generally less meritorious graduates opt for coming into this profession. So, quality of these teachers is evidently not high. This lacking is compounded when they do not receive proper and sufficient training on teaching. Although some school teachers received training from government agencies, it has been found insufficient as far as science education is concerned.

Students in these schools mostly come from poor economic background with less educational environment in their families. Sometimes the parents cannot provide the educational expenses of their children. Due to poverty many of the students cannot come to school regularly. Because of these reasons, most of the children opt for pursuing humanities or commerce education rather than pursuing science education. With less care from families and due to low quality of teaching the students generally do not fare well in the examinations in terms of their results. It is found that children with solvent economic background and carrying comparatively good results leave the schools and move to better schools.

1.2 Purpose of the study

Recognizing the problems of teaching in secondary schools in the rural areas of Bangladesh BFF with the cooperation of CCBVO and other NGOs has arranged training for science stream teachers towards improving their professional quality and to transfer some practical experiment based knowledge to the students through these teachers. The main objective of this training was to make teachers trained on giving quality teaching in an easy way that would encourage enrollment of the students in science stream and improve the quality of science stream students.

The training also intended that the trained teachers would get involved with the science clubs of the schools patronized by the partner NGOs and assist students' science based activities including preparing of new projects. Thus, the main purpose of this study is to obtain some feed backs of this training program with regard to the impacts on teachers, on teaching, and on the school and students along with overall environment of the school.

1.3 Objectives of the study

The specific objectives of the study are:

- a. to assess the usefulness of the training to the teachers (participants);
- b. to know the present state of practicing of the learning from the trainings by the participants of the respective schools.
- c. to obtain the assessment from the students of those schools on science teaching qualities of the trained teachers.
- d. to assess progress towards other cross cutting issues of science education in the schools.

Moreover, this study will assess the progress towards the overall goal. It will identify how the training of the teachers has been transformed in both qualitative and quantitative terms and how nicely suited to the overall goal of the Science Education Project. The study team has also paid special attention to change of science related knowledge, benefits of students after the teacher's training and students' practices within the school in connection to science education in the region. Finally, the study team identified the lessons learned about the training, best practices by students and teachers and challenges/gaps and formulates actionable recommendations, which can be utilized to make BFF's partners (including CCBVO) work in a more effective way in the future.

1.4 Approach and Methodology

The approach of this study revolves around the objectives of the training as well as those of the science project, which includes identification of key issues, sample design, methods of data collection, data processing and analysis. The study critically assesses the outcome of the teachers' training focusing on knowledge sharing, knowledge transformation, teaching efficiency, student outcomes and practical teaching related issues. Thus, the study provides basis for policy decisions for continuation and expansion of training initiatives for the teachers and related others in the intervention areas.

This study of BFF-CCBVO's training program for the secondary school teachers has been carried out following a semi structured questionnaire and guidelines for FGDs developed as per the objectives and purpose of this evaluation. For the study a total of 74 respondent teachers were taken as the sample from the schools which are under the Promoting Science Education project of BFF. In addition to the questionnaire survey, 10 FGDs with the students and one with staffs of science education project were conducted. All the collected data were processed using computer software packages and analyzed accordingly.

The evaluation study followed both quantitative and qualitative techniques to achieve the objectives. The study involves four stages –

- (i) getting started and planning the process,
- (ii) data collection,
- (iii) analysis and interpretation, and
- (iv) presentation and dissemination of the findings.

The sample structure is as follows:

Details of the sample for quantitative survey					
Name of Upazila	Type of survey	Number of schools	No of respondents/school	Total	
				Quantitative	Qualitative
Paba	Quantitative	8	1	8	-
Godagari	do	14	1	14	-
Charghat	do	18	1	18	-
Mohonpur	do	12	1	12	-
Kurigram	do	12	1	12	-
Ulipur	do	4	1	4	-
Fakirhat	do	10	1	10	-
Total Quantitative		74	-	74	

Details of the sample for quantitative survey				
Name of Upazila	Type of survey	Number of schools	Number of participants per group	Total FGDs
Paba	Qualitative	3	10	3
Godagari	do	7	10	7
Total Qualitative		10	10	10

1.5 Study Design and Sample Selection

The study of BFF-BVO's training program for the secondary school teachers intends to determine the impact of the training towards its ultimate goal. Due to time limitation, this study could not deal with large sample which could be considered as more representative. Considering the time limitation and the size of the sampling frame a total of 74 teachers from different regions were interviewed for this evaluation study. These 74 sample teachers were distributed proportionately to the regions where training intervention has been made. A semi structured questionnaire containing both close and open ended questions was used for collecting the data for quantitative analysis. For qualitative and in depth analysis, 11 FGDs were conducted of which 10 FGDs were with the children and 1 with the staffs of science project of CCBVO.

1.6 Method of Data Collection

The data collection method has been proposed based on the expectation stated in the ToR and the deliverables to be produced by this study. The methodology is designed to prepare a framework for collecting primary data and information from the relevant teachers and students, and analyzing the information up to micro-level. The techniques of using each of the methods in the context of this study are discussed separately in the following paragraphs.

- (a) **Review of Secondary Materials/Documents:** A thorough document search has been conducted on the training activities for secondary teachers. In this regard, booklets, training schedule and materials, immediate feedbacks of the trainees regarding the training, documents of science club, documents from the school etc. were reviewed. Informal discussions were also carried out with responsible persons who provided information regarding various documents based on which other materials were collected.

- (b) **Primary Inspection and discussion:** The study team members made sincere visits to the schools of science project intervention area, talked to the teachers, head teachers, students, some governing committee members, and key informants. This is an excellent way to become familiar with the issue under the study. This inspection has enabled the team members to conceive the situation related to the training and the school environment
- (c) **Teacher Survey:** Questionnaire survey allows gaining information from a large number of people in a systematic way according to specific questions, often in ways they allow for good analysis. The questions include structured set of closed questions as well as open-ended questions. In this study, mostly open response questionnaires are applied except for few close ended questions. Major issues are touched the process and impacts of the training, use of the training, students' benefits due to the teachers' training, opinion of the head teacher regarding the training, impact on knowledge enhancement, practical experiments and some cross cutting issues related to science education.
- (d) **Focus Group Discussion (FGD):** In assessing some issues related to training of the teacher and other science related issues, and forwarding suggestions for enhancing operational effectiveness, the study team has planned to conduct FGDs. FGDs are conducted to gather opinions of the students who are the direct beneficiaries of the training program and the science project staffs who are directly involved in nurturing the science clubs. The focus of the discussions is primarily upon the issues, for which data can hardly be collected through the survey technique, particularly when in-depth information is needed. The facilitator used a discussion guide and checklists were prepared. During the sessions of the FGDs, interaction among the participants was encouraged to stimulate in-depth discussion of various issues.

The whole study is completed under the coordination of two teams- the core team and the field team for data collection. In addition to quantitative data collectors, core team members also went to the field to collect data. Before inception to the data collection the data collectors were provided with proper instructions about the techniques to be applied during data collection. The fieldwork for collecting data on questionnaire was conducted in 6 days from 5 to 10 December, 2015.

1.7 Technique of Data Analysis

After collecting the data the study team devoted themselves to management of data which involved data processing, data tabulation and data analysis. To this end the questionnaires were taken under registration and editing; open ended questions were listed and classified; data were entered, verified and edited; and tabulation was done using the software SPSS. At the next stage, analysis plan was developed as per the objectives of this evaluation study.

At the first stage, analysis of the data collected through questionnaire was performed which allows to portray the impact, usefulness, benefits etc. from the viewpoint of the teachers themselves. At the second stage, findings from the FGDs were identified and written descriptively. Following the description, cross-case analysis is done.

2.0 Analysis of teacher's opinions

For the impact study of the skill development training of the secondary school teachers the evaluation team conducted a questionnaire survey on 74 secondary school teachers who received training from RTTC organized by BFF and CCBVO. Of the surveyed 74 teachers 90.5% are male and the rest 9.5% are female. Regarding education of the teachers 76% have B.Sc. degree and the rest 24% have M.Sc. degree in different science stream subjects. Most of the respondent teachers are found to have trainings as 79.7% teachers have B.Ed training and 2.7% have M.Ed training while 17.6% have no training at all. The average teaching experience of the teachers is 13.21 years indicating that teachers have relatively long experience of school teaching. It is

found that most of the teachers under the survey received only BFF's training organized by the CCBVO, in their whole teaching life. Only 11 (14.8%) teachers are found who received training from other NGOs or agencies. Of them 3 received training from CPD, 2 from TQI, 2 from World Vision, 1 from BRAC and three from other agencies.

One of the objectives of the training arranged by BFF and its partners is that the training recipient teachers would share their experiences in the school with their colleagues and students and this will result in dissemination of the training knowledge in the whole school. The evaluation team found that all the teachers who received training from BFF-CCBVO have shared their experiences and learning with their colleagues. However, in response to how they have shared the knowledge and experiences it is learnt that 82.6% training recipients shared their knowledge in the meeting of the teachers convened by the head teacher. In the case of 17.4% training recipient teachers, knowledge sharing was done in the form of personal discussion. The following table presents that information.

Table 1: Ways of sharing training knowledge and experience by recipient teachers		
Sharing ways	Number of teachers	Percentage
Tell experiences in the teachers meeting	61	82.4
Discuss experiences with colleagues personally	13	17.6
Total	74	100.0

The training recipient teachers expressed that they have learnt several new things from the training. 83.8% teachers reported that through this training they learnt how experiments of theories can be done in inexpensive ways. 43.2% told that they learnt direct and hand on laboratory practices during the training and 43.2% again learnt as to how experiments can be done with efficiency and the same percentage of teachers reported that they have learnt the experiments in hands on basis. 33.8 science teachers reported that they learnt difficult things during the training. This is shown in Table 2.

Table 2: Aspects that learnt a new from training		
Learning	Frequency	Percentage
Learn experiment in an inexpensive way	62	83.8
Direct and hands on lab practice	32	43.2
Understand the need of practical class	5	6.8
Understand difficult things of science	25	33.8
Learnt how to inspire students	11	14.9
Learn how to do the experiments efficiently	32	43.2
Nothing new	1	1.4
Total	74	100

It is learnt that the training recipient teachers tried to utilize their training knowledge for the sake of the student in the school. Table 3 shows as good as 44.6% reported that they apply training through hands on teaching while 35.1% teachers informed that they make students engage in group work. After receiving training using instruments in the class to make clear theories has increased which is reported by 58.1% trained teachers. Use of board and modern technology such as projector by trained teachers has also increased which is reported by 41.9% teachers. Again, 37.8% teachers informed that they now teach students in interactive way instead of just delivering lecture that was adopted before training. 29.7% teachers told that they inspire students with practical while 23% teachers told that they discuss about obtained knowledge before doing practical experiments. Moreover, some teachers reported that they use their gained knowledge from training by assigning new home work to students and engaging students to do inexpensive experiments.

Table 3: Ways of using training knowledge by training recipient teachers in the class		
Use of training knowledge	Frequency	Percentage
Discussion the training knowledge before practical experiments	17	23.0
Give them hands on teaching	33	44.6
Assign students for new home work	4	5.4
Make students engage in group work	26	35.1
Teach them to do inexpensive experiments	7	9.5
Show students theories using board or projector	31	41.9
Come and show experiments by using instruments in class	43	58.1
Teach training experience by interactive way	28	37.8
Inspire students with practical	22	29.7
Total	74	100

Teachers are provided training to bring change in teaching methodology so that students can easily understand the topics. Changes in teaching of trained teacher are shown in Table 4. From the table it is found that most of the teachers (72.5%) are taking class using instruments and board. It is also reported by 66.3% teachers that they are now providing practical based teaching to students. Interactive teaching is more effective than lecture based teaching. 40.5% teachers told that they teach students following interactive teaching method. Thus, class performance of teachers has increased which is reported by 31.1% teachers. 21.6% teachers told that after receiving the training by the teacher students receive more inspiration from teachers. In addition to these changes some others changes are also found in teaching of teachers such as 18.9% reported that teachers give emphasis on group work, 6.8% reported that teachers discuss some new topic in class, 13.6% told that teachers now acts to create science based mentality among students studying in lower classes (six to eight). Moreover, 6.8% reported that teachers complete class in due time. All these information are shown in Table 4.

Table 4: Changes in teaching after training compared to pre training period		
Changes	Frequency	Percentage
Now Student focused teaching	7	9.5
Increased practical based teaching	49	66.2
Emphasis being given on group work	14	18.9
Increased use of instruments and board	61	72.5
Discussion of new topic	5	6.8
More inspiration from teacher	16	21.6
Creating science based mentality in the lower class students (six to eight)	10	13.6
Teachers taking interactive classes	30	40.5
Class performance of teachers increased	23	31.1
Complete classes in time	5	6.8
Total	74	100

Teachers are provided training to enhance their skill and efficiency from which students will be benefited. It found that students have been benefited in some certain area after receiving training by their teachers that are listed in Table 5. 39.3% respondents reported that students now can

learn quickly and easily as teachers now follow some new methods of teaching. As teachers inspire students and make clear about different issues of science, 98.6% respondents told that eagerness and interest in science among students has increased while 39.2% reported that attention of students has increased and hesitation has been removed. Similarly, 45.9% reported that science phobia among students has also been removed for this reason. 37.8% respondents reported that students are getting familiarity with new instruments and 48.6% informed that students are learning new experiments and preparation of different projects. As a result students are making good result which is reported by 23.0% respondents.

Table 5: Benefits of students after the teachers training		
Benefits	Frequency	Percentage
Can learn quickly and easily	29	39.2
Eagerness/ interest in science increased	73	98.6
Better result in examinations	17	23.0
Attention of students increased and hesitation removed	29	39.2
Science phobia removed	34	45.9
Getting familiar with new instruments	28	37.8
Learn new experiments/ project preparation	36	48.6
Other	16	21.7
Total	74	100

Teachers have learnt many things from training. However, they could not be able to apply all obtained knowledge in the class. The level of application of obtained knowledge by teachers is shown in Table 6. It is found from the table that 23.0% teacher have applied 50% of their obtained knowledge. Similarly, 20.3% have applied 51%-60%, 5.4% have applied 60%-70, 36.5% have applied 70%-80% and 14.9% have applied 80%-90% of their obtained knowledge from the training. Not a single teacher is found to have applied 100% of his earned knowledge from the training.

Table 6: Application of knowledge obtained by teachers from training		
	Frequency	Percentage
Up to 50%	17	23.0
51-60%	15	20.3
60-70%	4	5.4
70-80%	27	36.5
80-90%	11	14.9%
Total	74	100.0

Trained teachers have failed to utilize full extent of their knowledge in class room as there are some problems in their schools. The problems reported by teachers are shown in Table 7. From the table it is revealed that according to 63.5% respondents there are infrastructural problems in the schools. As there is shortage of science teachers in the school and as result a teacher has to take many classes everyday and they do not have enough time to implement their gathered knowledge which is reported by 36.5% respondents. Moreover lack of available apparatus or instruments in the school is another problem to implement training experiences and it is revealed that 40.5% teachers did not able to apply knowledge for not having available apparatus or instruments in the school.

Table 7: Reasons for not utilizing training knowledge in full extent		
Causes	Frequency	Percentage
Infrastructural problem	47	63.5
Lack of time	27	36.5
Lack of apparatus/ instruments	30	40.5
Total	74	100

Most of the respondent teachers told that they want to join training if it is arranged for them further as there are some benefits in joining such training. The reported benefits are shown in Table 8. 56.8% respondents told that they want to join in further training as it is very much helpful to develop skill while 44.6% want to join for learning more about teaching quality, and 12.2% respondents want to join it to enhance student quality.

Table 8: Benefits of joining this training if arranged again		
Benefits	Frequency	Percentage
Skill development	42	56.8
Can contribute to student quality enhancement	9	12.2
To learn more about quality teaching	33	44.6
Total	74	100

BFF and its partner NGO (CCBVO) arranged training for teachers to make some changes in teaching and science education. The impacts of the training regarding knowledge on science are shown in Table 9. In response to the impact of the teacher's training on knowledge of science of students, 24.3% respondents reported that their understanding science steam subjects has highly increased and 71.6% told that it has increased moderately while 4.1% reported that no change is found in understanding science stream subjects. 16.2% respondents reported that capability and performance in science subjects has increased highly while 82.4% told it has increased only moderately and 1.4% told they find no change in this indicator. Training has increased the thinking ability of students on science concepts. 25.7% has said that it has increased highly while 73% said it has been increased moderately and 1.4% found no change. Again, most of the respondents reported that self-confidence in science related issues and ability to solve science related problem have increased among students.

Table 9: Impacts of the training regarding knowledge on science				
Impacts	Highly increased	Moderately increased	Unchanged	Decreased
Understanding science stream subjects	24.3	71.6	4.1	-
Capability and performance in science subjects	16.2	82.4	1.4	-
Thinking ability on science concepts	25.7	73	1.4	-
Self-confidence in science related issues	40.5	56.8	2.7	-
Ability to solve science related problems	14.9	75.7	9.5	-
Total	100	100	100	100

As a result of getting training by teachers, their teaching quality and other activities have increased which in turn has some impacts on results and performance of students. The impacts of training of training on students' result and performance of students are shown in Table 10. It is revealed from the table that according to 40.5% respondents, result of science group students has

increased highly, 47.3% respondents reported that result of science group students has moderately increased and according to 12.2% respondents no change is found in the result. Use of computer and internet has increased highly according to 17.6% respondent and moderately increased according to 54.1% respondents.

Table 10: Impacts of training on result/performance of students				
Impacts	Highly increased	Moderately increased	Unchanged	Decreased
Good results in science group	40.5	47.3	12.2	
Use of computer and internet	17.6	54.1	28.4	
Participation in different competitions about science	33.8	60.8	5.4	
New experiment by self initiative	27	64.9	8.1	
Total	100	100	100	100

The training of teacher has some impacts on practical learning by students which is reported in Table 11. From the table it is found that attendance of students has highly increased in practical classes according to 35.1% respondents and only increased by 55.4% respondents. Teachers are now providing hand on teaching which increased highly according to 28.4% respondents, only increased according to 68.9% respondents and no change according to 2.7% respondents. 92.2% respondents reported confidently that teachers now complete practical before the examination starts. Again, most of the respondents told that students write practical notebook in due time and they have ability of doing practical correctly. Students can also do practical with scrap materials. It is also found from the table that according to 31.1% respondents the use of instruments and apparatus by students during practical has increased highly and it has moderately increased according to 60.8% respondents and 8.1% respondents found no change in the use of instruments and apparatus by students during practical.

Table 11: Impacts on practical learning by students				
Impacts	Highly increased	Moderately increased	Unchanged	Decreased
Attendance of students increased in practical classes	35.1	55.4	8.1	1.4
Students now doing hands on experiments	28.4	68.9	2.7	
Complete practical before examination	25.7	63.5	10.8	
Finish writing of practical notebook in time	31.1	52.7	16.2	
Ability of doing practical correctly	18.9	78.4	2.7	
Doing practical with scrap materials	48.6	48.6	2.7	
Number of experiments by students in different subjects	18.9	67.6	13.5	
More use of instruments and apparatus by students during practical	31.1	60.8	8.1	
Total	100	100	100	100

It is also evident that the eagerness of students has also increased after receiving training by teacher. The impact of training on eagerness of students is shown in Table 12. From the table it is found that according to 97.3% respondents the attendance of students in theoretical classes of

science has increased and according to 100% respondents the trends of questioning by students in class has increased. Similarly 95.9% respondents told that students' eagerness of learning different topics of science has increased in the school. Moreover, discussion with teachers regarding enrolling in science stream and eagerness of overall students about science education, have increased according to 86.5% and 94.6% respondents.

Table 12: Impact of training on eagerness of students				
Impacts	Highly increased	Moderately increased	Unchanged	Decreased
Attendance of students in theoretical classes of science	36.5	60.8	2.7	-
Trends of questioning by students in class	47.3	52.7		-
Students eagerness of learning different science topics	27	68.9	4.1	-
discussion with teachers regarding enroll in science	23	68.9	6.8	1.4
number of enrolled students of science in class nine	33.8	52.7	12.2	-
eagerness of Overall students about science education	33.8	60.8	4.1	-
Total	100	100	100	100

Science club is an essential platform of students in the school as it is helpful for dissemination of knowledge regarding science. It is learnt that the training for teachers arranged by BFF has some positive impacts on the science club. The impacts of training on science club are shown in Table 13. The table reveals that participation in science club has increased which is reported by 98.6% respondents. Group work among the members of science club and participation by club in expo or gatherings has also increased told by 95.9% and 100% respondents. Again, taking of new project by club members, organizational capability of members through club and mutual relationship among members through club activities have also increased according to 94.6%, 95.9% and 97.3% respondents, respectively.

Table 13: Impacts of training on science club				
Impacts	Highly increased	Moderately increased	Unchanged	Decreased
Participation in science club	35.1	63.5	1.4	
Group work among science club members	21.6	74.3	4.1	
Participation by club in expo/gatherings	36.5	63.5		
Taking of new project by club members	27	67.6	4.1	1.4
Organizational capability of members through club	18.9	77	4.1	
mutual relationship among members through club activities	33.8	63.5	2.7	
Total	100	100	100	100

One of the main objectives of training for science teachers was to improve the quality of teachers. The impacts of the training on the quality of teachers are shown in Table 14. From the table it is found that presentation of teaching topic, friendly behavior of teachers with the students, and tendency of advising students on science matters has increased according to 98.7%,

98.7% and 98.6% respondents, respectively. Again, teachers' cooperation in developing the science club, classes as per syllabus, and showing experiments to class 6-8 students have also increased by the opinion of 98.6%, 93.3% and 89.3% respondents, respectively.

Table 14: Impacts of teaching on quality of teachers				
Impacts	Highly Increased	Moderately increased	Unchanged	Decreased
Better presentation of teaching topic than earlier	51.4	47.3	1.4	
Teacher became student friendly compared to earlier	51.4	47.3	1.4	
Tendency of advising students on science matters increased	37.8	60.8	1.4	
Teachers cooperate in developing the science club	29.7	68.9	1.4	
Complete classes as per syllabus	31.1	62.2	6.8	
Occasionally showing experiments for class 6-8 students	25.7	63.5	10.8	
Total	100	100	100	100

After receiving training teachers are practicing different activities in school. The best practices in the school about science education are shown in Table 15. From the table it is found that 50% schools observe science week. Again, 95.9% schools arrange science quiz competition, 83.8% schools arrange debate competition on different topics of science, 66.2% schools published bulletin or magazine on science, 93.2% school have taken new projects in last six months, and 89.2% school took part in science fair outside the school in last 6 months.

Table 15: Best practices in the school about science education				
Practices	Yes		No	
	Frequency	%	Frequency	%
The school observes science week	37	50.0	37	50.0
The school arrange science quiz competition	71	95.9	3	4.1
The school arrange debate competition on science topics	62	83.8	11	14.9
The school published bulletin or magazine on science	49	66.2	25	33.8
The school take new project within six months	69	93.2	5	6.8
Students of the school took part in science fair outside the school in last 6 months	66	89.2	8	10.8
Total	74	100	74	100

Trained teachers in some cases have failed to use post training knowledge because of having some problems in schools. The reported problems by respondent teachers are shown in Table 16. 60.8% respondents told that there is lab/infrastructure problem in the school while 62.2% respondents reported that there is lacking of apparatus/materials/instruments in the school. 44.6% reported that teachers do not have available time to implement received knowledge from training. Again, according to 18.9% teachers, financial problem is another reason for not using post training knowledge. Absence of students, lack of room/space and lack of subject wise

teacher also are weakness of using the post training knowledge according to 14.9%, 13.5% and 18.9% respondents.

Table 16: Weaknesses of schools in using the post training knowledge		
Weaknesses	Frequency	Percentage
Lab/ infrastructure problem	45	60.8
Apparatus/ material/ instrument problem	46	62.2
Lack of time of teachers	33	44.6
The training is of short duration	15	20.3
Financial problem of school	14	18.9
Occasional absence of students	11	14.9
Lack of room/space	10	13.5
Lack of subject wise teacher	14	18.9
Total	74	100

Training is important and useful for all schools as the teachers are not well skilled and experienced. The importance and usefulness of training for the schools is given in Table 17. In the survey 43.2% respondents think that training is important for the improved quality of practical classes, 31.1% think it to improve overall teaching quality of teachers, 41.9% think training increases teachers efficiency. In the same way, 20.3% respondents told that training increases students' quality also. Again they told that as a result of training motivation towards science increases and it increases more and inexpensive experiments in school and finally it helps remove science phobia.

Table 17: Importance and usefulness of training for the schools		
Importance/ Usefulness	Frequency	Percentage
Improved quality of practical classes	32	43.2
Improvement of overall teaching in the school	23	31.1
Increase of teachers efficiency	31	41.9
Increase of students' quality	15	20.3
Motivation towards science increased	29	39.2
More and inexpensive experiments being done in school	23	31.1
Removing of science phobia	12	16.2
Other	28	37.9
Total	74	100

Based on the existing problems in making the training more effective respondent teachers provide some suggestions that are given in Table 18. Most of them suggested that they need longer duration training program (67.6%) along with frequent training (43.2%). They also demanded subject wise training (20.3%) and some incentives to the training recipients (17.6%) to make training more effective. They also suggested that training should be arranged in *upazila* level (10.8%). They suggested improving the infrastructure of school (32.4%) and making arrange more science fair (10.8%) as well.

Table 18: Suggestions to make the training more effective		
Suggestions	Frequency	Percentage
Training with longer duration	50	67.6
Subject wise training	26	35.1
Give incentive to the training recipients	13	17.6
Giving more emphasis on practical classes in the schools	27	36.5
Improve and increase school infrastructure	24	32.4
Provide and procure more apparatus	28	37.8
Subject wise teacher recruitment	15	20.3
Give frequent training	32	43.2
Arrange training in at upazila and district level	8	10.8
Arrange more science fair	8	10.8
Total	74	100

The respondents also asked to evaluate the training as a whole. In response they evaluate the training which is reported in Table 19. They told that teachers have learnt many things related to science (39.2%) from the training that has increased their teaching efficiency (31.1%) and has increased the education quality of school (28.4%). Therefore, they told that arrangement of this sort of training is a good initiative (68.9%) but their obtained training is not sufficient and hence they need more training (20.3).

Table 19: Overall evaluation of training		
Evaluation	Frequency	Percentage
Teachers learnt many thing	29	39.2
Teachers now can teach efficiently	23	31.1
This training is not sufficient, need more training	15	20.3
The training increased education quality of school	21	28.4
Arranging this sort of training is a good initiative	51	68.9
Total	74	100

The Headmasters of the schools were asked whether improvement has taken place among teachers after receiving training. In response, they identified some changes which are given in Table 20. 32.4% headmasters told that teachers now go to class with instruments relevant to the topic of class while 52.7% reported that they take practical classes regularly and as a result students now can do new practical which is reported by 16.2% head teachers. Again, 10.8% respondents told that teachers help students in different activities of science club.

Table 20: Head master's opinion about change of teachers after training		
Changes	Frequency	Percentage
Teachers go to class with instruments	24	32.4
They take practical classes regularly	39	52.7
Help science club	8	10.8
Students now can do new practical	12	16.2
Science enrollment increased	17	23.0
Participation in science fairs increased	8	10.8
Total	74	100

Respondents were also asked as to how their school is different from other school. In reply 40.5% respondent reported that their schools obtain high pass rate and good result in the school and another 27.0% told that they have more apparatus/instruments in the school that are used by

students. Teachers are now more careful to students according to 29.7% respondents and 31.1% told that students of their school are more attentive. Again, 17.6% reported that there are more students of their school in science club.

Table 21: How is the school different from other schools in science teaching?		
Differencing aspects	Frequency	Percentage
High pass rate and good result	30	40.5
Have more apparatus/instruments which are used by students	20	27.0
Teachers are more careful and eager	22	29.7
Students are more attentive	23	31.1
More students joined in science club	13	17.6
Total	74	100

As a result of taking training behavioral changes have taken place among the teachers. This is shown in Table 22 below. According to 37.8% head teachers' opinion, science teachers are now giving careful and regular teaching. 33.8% head teachers observe that teachers now go to class with necessary apparatus and instruments. Other changes mentioned are encouraging students (23%), encouraging for group work (16.2%), interacting teaching (18.9%), doing experiments with inexpensive materials (18.9%) and giving students hands on training (16.2%).

Table 22: change in the behavior of the trained teacher in Head master's opinion		
Change aspects of teacher	Frequency	Percentage
Encourage students	17	23.0
Careful and regular teaching	28	37.8
Encourage for group work	12	16.2
Interacting teaching	14	18.9
Go to class with apparatus and instruments	25	33.8
Friendly with students	21	28.4
Experiment with inexpensive materials	14	18.9
Give students hands on training	12	16.2
Total	74	100

3.0. Analysis of Focus Group Discussion

In order to get in-depth insights about the achievement of the training of teachers on the students as well as on the overall environment of science education, focus group discussions were carried out in addition to the questionnaire survey. Ten focus group discussions were carried out with students of different schools along with one more with the staffs of the science education project. All the FGDs were taken in the premises of different schools. The students were from students from class six to class ten who are all members of science clubs formed by BFF's partner NGOs namely, CCBVO, BUP and Sachetan.

3.1. Issues addressed in the Focus Group Discussion

Well structured checklists were followed in conducting group interviews with the students. The broader issues focused during the interviews were the background and joining in the science club, impact of science club formation, motivation of the students to be in the science club, environment and facilities of science education in the school, performance of the teachers before and after receiving training, benefit of training of the teachers for students and the school, problems of science teaching in the schools and their thinking about moving forward. Opinions of the students regarding attitude of the students and guardians about their enrolling in science group was also highlighted properly. One of the principal objectives of the training was to

improve the quality and attitude of the teachers towards teaching the students in a careful and hands on way. It is investigated that whether the teaching behavior of the teachers due to training has been changed substantially towards more dedicated and serving way. One of the focusing issues is that schools in the study area suffer from many problems that hinder facilitation of science education in the area. These issues are discussed openly with the students. Furthermore, some related issues about general education of the students were also discussed during the FGD.

Each and every individual activity performed by the focus group members were addressed separately during the interview. The activities were recorded according to the desire and performance of the group participants. Recommendations for further activities and limitations were discussed. Information obtained from one group was also cross-checked into the interview of other groups to validate the collected data. Validation of the data collected by FGD is also made through triangulation with questionnaire data.

3.2. Findings from the FGDs

The study team obtained the following findings from the FGDs:

- a. Impact of BFF training on teachers:** From the FGD analyses it is found that the training program has significantly contributed to the efficiency building of the teachers. The trained teachers are well known to the students. Club members have marked significant difference about the trained teachers between the situation of before and after training. All of the respondents admitted that trained teacher helped to form the science club and also guided them. The lecture delivery, teaching approaches, expression capacity have positively changed after receiving BFF training. Now that teacher tries to complete the theory and practical courses under syllabus. He/she also allows the interaction or question-answering session in the class room. Before joining or participating in any science fair he/she helps students to prepare new projects. Now students can easily share with that teacher about their subjects and other social events. It is observed that trained teacher is trying to make science education popular in the school and thus the phobia on science has reduced. Before taking science group in class IX, students or parents consult with the teacher without any hesitation. Participants also informed that number of students in science group is increasing due to this teacher.
- b. Sharing of training:** During the FGDs, participants were asked about the sharing of received training knowledge from the teacher. It is found that after receiving the training that teacher shared his experiences and learning with the head teacher, other teachers and with the students in the class room. In the sharing session students were encouraged and motivated. The FGD participants reported that the teacher taught them some experiments which do not involve much money. It is reported that other teachers related to the science subjects are also prompted and motivated by the trained teacher. Now they also try to follow his/her manner in class room.
- c. Ability of students at present compared to past:** Questions were asked during FGDs regarding what the students can do presently after their teacher got training. Participants in the FGD reported that after getting encouraged by their teacher they are now doing several things compared to the past periods. Sometimes they arrange science debate, inter-class competitions in the school with the help of concerned teachers. It is found that now they are capable to prepare some projects which are necessary in our society. When it needed they make group discussion on the topic. That now they are co-operative minded is also reported. Due to the cordiality of the teacher in teaching and group discussions, most of the students do not go to private tutor although some students still go to coaching centres. According to them, students are now doing better result in class examinations as well as in the SSC examination. It is worth mentioning here that performance of the SSC result may not be directly attributable to the current training. However, similar trainings including project support have given earlier and functioning of the science clubs certainly have positive impacts on the SSC results of the students in different schools.

- d. Understanding ability of the students:** During the focus group discussion information regarding to the understanding ability of the students were discussed with the participants. All of them informed that by participating in the classes of the trained teacher their understanding ability has significantly increased. When question is raised on different aspects, they arrange group-wise discussion where everybody tries to express what he/she understands about the aspect. It is also reported that due to use of low cost materials as a teaching aid in the class room and in the practical sessions, they can easily understand the topics which would not have been possible just based on theory only. As they got a hands on practical learning it last in their mind for long time. Through the interaction in the class room and also in the science club understanding ability of students improves further. As a result of enhancement of understanding ability of the students, science phobia among the general students has gone away.
- e. Number of experiment done by students:** All the participants of the FDGs expressed positive views on the number of experiments. They reported that only important or a few numbers of experiments were done by the teacher earlier. They reported that after receiving the professional training in RTC which was organized by CCBVO, a fairly good number of experiments in different science subjects are completed before the examination. In practical sessions, initially the teacher can now explain the experiment easily and efficiently to the students and ask the students to do it group-wise. Having trained from the training the teacher uses the low cost and available materials for experiments. Participants also informed that they write their practical note book regularly. Now they can say the name of all experiments which has been done by them.
- f. Use of scrap materials in doing practical experiments:** The participants have pointed out about the use of scrap materials for different experiments in the class room and also projects for science fair. It was observed that after receiving training regarding motivation of science teachers, now the teacher uses scrap materials for showing or preparing different experiments. Even the teachers carry these available scraps materials to the class room for explaining different science topics. Beside the teachers, students also uses these scrap materials to prepare different projects. Participants reported that plastic bottle is used for Newton's 3rd law and Pascal's law; wood is used for Newton's 1st law; saline pipe and its materials are used for siphoning law; and other scrap materials are used for preparing lungs model, air pressure, water pressure, liquid density etc. It was observed that due to use of these scarp materials students are too much interested about the science subjects. It is reported from all participants that earlier the teachers did not complete maximum experiments due to unavailability of scientific materials and equipments in the school. After the training, now their attitude is changed and they try to use these scrap materials for transforming better knowledge.
- g. Practice of group wise discussion:** A group discussion is informal, voluntary and purposeful oral process where gathering of individuals to exchange of views on a particular topic, issue, problem or situation for developing information and understanding, essential for decision or problem solving. During the focus group discussion all participants were asked to give their opinion about the group discussion practices by them. It is found that from the encouragement of the teacher they now practice group working when they need to understand something or need to do a problem solving exercise. It is found that when they feel or face any problem in relation to theory and experiments under courses, preparation of new projects and sometimes personal cases they make group discussion for getting final decision. They reported that this discussion is very helpful to them in their school life and also family life. Personality, team listening, sharing capacity, appropriate language, simplicity of expression, positive speech attitudes and adjustments, clear articulation, communication skill, leadership skill, friendliness among the participants, effectiveness of non-verbal communication etc. are increasing through

the group-wise discussion. They also pointed out that in case of group discussion they have no formal leader, hence one of the participants is expected to take initiative to make others join and interact spontaneously and makes them more empathic. Maximum times they use this method for their academic purposes. From this group discussion practice, shyness of the students reduced and subject knowledge increased.

- h. Preparation of projects for science fair:** One of the objectives of establishing science club and giving training to science teacher is to make students able to prepare new projects of their own and practice science related extracurricular activities. During the FGDs, participants were asked to give their opinion about how they prepare new projects, how they obtain teacher's help, how they obtain the materials for preparation projects, etc. It came out from the discussion that before the date of science fair or competition, science teachers initially inform them some new concepts about preparing projects. Sometimes the idea came from their own thinking which is very much related to people's daily life. During the project preparation they use available low cost kits and scrap materials. They also pointed out that after preparation they show those new projects to the concern teachers. Finally, teachers select which one will be presented in the science fair. During the FGDs participants reported their experience about some projects like robotic instrument, lungs model, digital indication, short circuits, safety road model etc.
- i. Achievements of training and relevance of the science club:** During the FGDs with the students one important thing has been unveiled regarding the achievements of the training of the secondary schools' science stream teachers. To the opinion of the students, they have got a lot of benefits from the training of their teacher. Actually the benefits have been augmented by the positives outcomes of the science clubs established in the schools. According to them, had there been no science club in the schools the positive outcomes could have been much less than what have been obtained currently. While the training to the teacher helps them obtaining good teaching and new practical instructions by the teacher, the existence of science club provides them the opportunity to practice those learning in an encouraged way which provokes imagination and innovation based curiosity among them. Thus the training of science teachers and functioning of the science club is mutually re-enforcing towards spreading science education in the schools.
- j. Necessity and benefit of science club:** During the focus group discussion information regarding the necessity and benefit of science club were discussed with the participants. To the opinion of the participants of the science club, the club proved very useful for them. Through this club they can do science related extracurricular activities that extend and enhance their knowledge of science. Club activities also lead to improved school performance. It is found that the science club brings together students, school authority and local GoB officials and educators; and parents in their stride to expand science education. They reported that after joining to the science club their interest in science, creative mind in science, organizing capacity, discussion ability, leadership, group discussion on science topics, understanding power on science subjects, self-confidence level, meeting arranging capacity etc. have increased. A positive change in attitude to science lessons, participation in the science fair and acceptance of school to the society are also reported by the participants, which are attributable to this club. All participants opined that this club also builds up the unity and self dependent attitude among the members. This club is now considered as a platform for the science students.
- k. Interest and enjoyment of students:** During the FGDs, participants were asked to give their opinion about their interest and enjoyment as science students. It is found from the discussion that interest of the students in science is on the increase and activities under the science club have played significant role here. Moreover, as the teaching approach of the teacher after

getting the training has changed and the teacher teaches in an interactive way, students get interest and enjoy the class and lessons. The students also get enjoyment when they see that they made projects with low cost materials with the help of the teacher who got the idea from the training. They also reported that they enjoy by participating in the science fair and it encourages them a lot. When the teacher made them doing a new experiment, which he/she learnt during the training, it is really exciting for the students as was reported by them.

l. Problem of science education and solution: Questions were asked regarding the problems of science education and solution during the focus group discussion. All of them reported that there are many problems regarding science education in the school. Now-a-days service market generally caters for commerce group students. Parents of students feel that much money is needed for science students due to arrangement with private tutors, form fill-up cost, need more books etc. Non-availability of good quality science teachers in different science stream subjects in school is also reported. In the schools of rural area there are no sufficient laboratory facilities and sometimes entering into the laboratory is prohibited for the students. Due to shortage of laboratory equipments, everyone is not allowed to use those equipments. Participants also informed that donation of BFF for science club is very minimum. Time management by the science teachers in class room is a problem. Many times they are not capable to cover one topic in one class hour. All the participants of the FGDs put forward some suggestions to overcome these problems. Arranging training for other science teachers, follow up training for trained teachers, continuation of BFF-CCBVO program, increasing the amount of donation, monitoring the science club activities by the CCBVO, arranging science fair regularly, etc. are some of the recommendations that are reported. To their opinion, CCBVO should take sincere steps for arranging further training program and should continue efforts to strengthening the science club.

m. BFF and CCBVO role: During the FGDs the participants were found very contented that BFF and CCBVO arranged the training program in RTTC for the science teachers for the development of science education in high schools. During the FGD sessions all participants were asked about the role of BFF and CCBVO. From their opinion it is found that the activities of BFF and CCBVO have positive role to change positively the situation of science education. They formed science club with the help of them and now can participate in science fair which is arrange by BFF and CCBVO. Due to their help, science teachers are receiving training. And as a result, performance of science students in the school is improving compared to other schools which are not under the CCBVO program. However, they observed that the supports obtained by the school and science club from BFF and CCBVO are not sufficient. The participants expects more supports from BFF and CCBVO such as support for purchasing instruments for schools, financial budget for the science clubs to do more experiments, more training for the teachers, direct training sessions for the science club members by resource persons, arranging science fair, competition, quiz, debate etc. frequently for enhancement of the quality of the science students. Finally, FGD participants also demand more staffs of CCBVO to work for and interact with them. Simillar types of responses were found in other areas where BUP and Sacheton are working.

4.0. Recommendations

Based on the finding of the survey data analysis and the observations from the FGDs the following recommendations can be made which lead to better policy formulation and appropriate working framework for the BFF and partners towards expanding science education in the intervention area:

Firstly, it is detected that the especial training for the science teachers is keeping a good impact generally on the schools and students. Therefore, the efforts of BFF to train the science teachers at secondary school level need to be continued, which would contribute to motivate and building

capacity of the teachers. The training may take place at least once in a year if possible and it may consider the left out teachers and newly enrolled schools simultaneously to cover the schools and teachers. The duration of training for the teachers is obviously proposed for five days including reporting and departure days. Participants of the trainings could be given some incentives as well. Moreover, a follow-up training is needed for those who already obtained one training to make sure how properly they are sharing their training knowledge with their colleagues and giving service to the students and also address the whole objectives of this training. A training follow-up technique and guideline must be necessary to the implementing NGOs. BFF and its partner NGOs can develop this proposed guideline.

Secondly, in addition to provide more training, BFF and its partner NGOs should sincerely take steps so that the post training lessons are implemented in the school during taking classes and practical sessions. In this regard monitoring activities and further cooperation based relationship with the schools can be introduced. The study team also recommending designing a concrete training guideline that might be developed in collaboration with BFF, partners NGOs and RTTC.

Thirdly, it is found that functioning of the science club is the key factor for success of the training of teachers. Without the help of the science clubs the result of the training could have been much less. Therefore the study team insists on continuation of these science clubs in the schools. Rather, the team suggests strengthening these science clubs with more supports as well magazine on science fiction its coverage to other schools.

Fourthly, it is found that the science clubs are nurtured by the promoting science education project of BFF partner NGOs. But the project is found to have rendered scant support in terms of advising the children as there are few staffs in the project. For this reason sometimes children cannot get support of the staff when they need. Thus, the study team recommends increasing number of field staffs so that the science club members can often interact with the staffs.

Fifthly, arranging science fair provides opportunities for the children to show their innovativeness in science affairs. However, all members of science clubs cannot participate in the fair as the system does not permit. If more students could participate in the fairs, the benefits would be maximized. Therefore the team recommends for arranging frequent number of science fairs locally and also with the BFF supported schools all over the country. At the time of preparing the projects the financial supports also need to be increased.

Sixthly, BFF and its partner NGOs should give increased support for arranging competition of debate, quiz, essay writing etc on science related issues. This would provide more space of science related brainstorming among the students. A mini magazine on science fiction (scientific knowledge) is recommended to publish as inter school efforts and can be circulated among the teachers and students as on regular basis and article must be written by the science club members/students for innovative science education.

Seventhly, Partner NGOs of BFF should establish a greater networking with other NGOs and government agencies that are also provide services for expanding education in the country. In this regard relationship with educationists and practitioners can also be made.

Eighthly, it is reported that the trainings for the teachers concentrated mostly on physical and chemical science related aspects and experiments on biological sciences receives less attention in the training sessions. Therefore, the future design of the training needs to bring balance in this regard.

Finally, the evaluation team recommends extending supports to some schools in developing their laboratories and, if possible, helping them procuring some instruments of doing practical experiments, because some schools lack space and apparatus for conducting practical classes for the students.

Annexure

Annexure-1

Survey Questionnaire

Questionnaire for Impact Study on Professional Capacity Enhancing Training Programme of BFF-CCBVO for the Science Teachers Working at Secondary Schools

A. Only for teachers trained by BFF-CCBVO

1. Personal information

Name				Male	Female
Name of the school					
Union		Upazila		District	
Educational qualification		Professional degree			
Total experience		year	Experience in this school		year

2. Information regarding training

a.	How many times you received training through BFF-CCBVO?	once / twice
b.	Have you share the subject of your training with the head teacher and other teachers of your school? How have you discussed?	
c.	How did the head teacher appraise the training you obtained?	
d.	How did other teachers of science appraise this training?	
e.	What new things have you learnt from this training?	1. 2. 3. 4.
f.	How do you apply obtained knowledge from training in the class?	1. 2. 3.
g.	What differences do you think are there in teaching between pre-training and post training periods?	1. 2. 3. 4.
h.	What benefits students are getting from new teaching because of training?	1. 2. 3. 4.
i.	How much (%) of the training knowledge can you utilize as per your thinking.	
j.	Why the rest (%) of the training knowledge is cannot be utilized?	
k.	Please tell, in detail, if you obtained similar training from other organization.	
l.	Would you be willing to participate if the same training is organized again? Why?	
m.	Would you recommend any of your colleagues to participate if the same training is organized again? Why?	

3. Has there been any post training impact created on the students?

Answers: 1- highly increased, 2- moderately increased, 3- remain unchanged, 4- decreased					
a.	Knowledge on science subjects	1	2	3	4
	1. Understanding on science subjects				
	2. Capability on science subjects				
	3. Thinking ability of science aspects				
	4. Self confidence on science subjects				
	5. Ability to solving science related problems				
b.	Results from different perspectives				
	1. Better result in examination for science stream				
	2. Use of computer and internet				
	3. Participation in various science related competitions				
	4. Doing new practical experiment from self initiative				
c.	Practical related				
	1. Attendance of students in practical classes				
	2. Make students doing hands on practical experiments				
	3. Complete practical classes before the school examination starts				
	4. Complete writing practical khata/note book in due time				
	5. Ability to do the practical experiment accurately				
	6. Doing practical experiments with scrap materials				
	7. Number of practical experiments in different topics				
	8. Use of scientific materials and experimental equipments compared to earlier				
d.	Enthusiasm/ eagerness of the students				
	1. Attendance of students in theoretical classes of science				
	2. Tendency of questioning by students in the class				
	3. Knowledge on various aspects/things related to science				
	4. Discussion with teachers before enrolling into science stream				
	5. Number of students in science stream in class nine				
	6. Eagerness of students towards science stream in general				
	7. Eagerness of guardians and society as a whole on science education				
e.	Science Club				
	1. Participation in science club				
	2. Group wise discussion among students				
	3. Participation in science fair/ exposition				
	4. Undertaking new project by science club members				
	5. Science related extra-curricular activities				
	6. Networking with other institutions regarding science related aspects				
	7. Organizational (leadership) capacity building of the students the club				
	8. Interrelationship among students through the club				

	Answers: 1- highly increased, 2- moderately increased, 3- remain unchanged, 4- decreased				
f.	Quality of teachers				
	1. Presentation of lessons in better way compared to earlier				
	2. Teacher-student relationship compared to earlier				
	3. Tendency of teachers to give students advice on science topics				
	4. Help building and developing science club				
	5. Complete classes as per syllabus				
	6. Showing practical experiments to class VI-VIII students besides students of class nine and ten,				

4. Impact of the training on the following science related aspects of the school:

	Aspects	yes	No
1.	Does your school observe 'Science Week'?		
2.	Does your school organize competition of quiz on science related aspects?		
3.	Does student-debate competition on science topics takes place in your school?		
4.	Is any bulletin/magazine/ journal containing science topics published from your school?		
5.	Does your school has any science museum?		
6.	Did your students prepare any new project in last six months?		
7.	Did your students participate in any science/ education fair outside your school in last six months?		

5. Comments and suggestions regarding training.

a.	Mention three weaknesses of utilizing the training during the post training period	
b.	Give tree arguments about the importance/usefulness of this training.	
c.	Recommend five suggestions to make this training more effective.	
d.	Give your overall appraisal / evaluation about this training.	

B. Interview with the Head teachers

a.	Is there any change happened in science teaching, practical class or science related activities after having discussion with the teacher who received training? Give example if such changes happened.	
b.	What is the specialty of your school in rendering science education compared to surrounding schools?	
c.	Give example if you observe changes in teaching method, activeness, communication and behavior of the teacher who received training.	

[Thank you for giving us your valuable time]

FGD Checklists for Discussion with the Members of Science Club

1. How did you become members of science club? What is the necessity of this club? What benefit you are getting from this club?
2. Did any change happen in the school after the initiation of this club?
3. What event in your club was the most interesting in last one year?
4. How do you hold meetings of your club? How do you record the decisions?
5. Do you get interest/excitement when your teacher teaches you in class? Which teacher you mostly enjoy with?
6. What things you could not do earlier which you can do now?
7. With which subjects you get amused most? With which subjects you are mostly afraid of? Which class you mostly go absent?
8. Who has influenced you to enroll in science stream?
9. How many practical experiments do you know? Are all experiments done which are in the book?
10. What experiments can you do which are not in your book?
11. What experiments can you do with scrap materials?
12. What do you do by using computer and the internet?
13. Do you practice group wise discussion during your study?
14. How do you build projects? How do the teachers get involved and help you? Which teachers and how are they get involved?
15. Do you know that your teacher has taken training through BFF? Can you tell what type of training is taken?
16. Do you think that the teacher is teaching well after taking the training? How do you understand this?
17. Has he taught you the training knowledge he/she learnt?
18. Which aspect or what thing of the teacher you observed new that has given you much pleasure?
19. How better the science teachers of you school render teaching? How much you understand their classes?
20. Do you take service from private tutor? Why?
21. Has your ability of understanding science classes increased compared to earlier?
22. What are the problems of science education in your school?
23. How these problems can be solved?
24. What assistance you expect from BFF-CCBVO?

Name of Respondents and Schools

Name	Name of School	Union	Upazila	Zila
Md. Azad Rahman	Jaforpur Girls' High School	Shalua	Chargaht	Rajshahi
Md. Mazdar Rahman	Halidagachi Dimukhi High School	Shalua	Chargaht	Rajshahi
Md. Asraful Haque	Chomohoni Begum Jaeda Jalil High School	Yousufpur	Chargaht	Rajshahi
Md. Motiur Rahman	Habibpur Alim Madrasa	Nompara	Charghat	Rajshahi
Prabir Kumar Ghosh	Anupampur High School	Charghat	Charghat	Rajshahi
Md. Bablur Rashid	Charghat Pilot High School	Charghat	Charghat	Rajshahi
Md. Mofizur Rahman	Nandangachi Girls' High School	Nimpara	Charghat	Rajshahi
Md. Soibur Rahman	Uttar Meramotpur High School	Charghat	Charghat	Rajshahi
Md. Obaidul Haque	Khpddo Gabidrapur High School	Sordha	Charghat	Rajshahi
Md. Yusuf Ali	Rajabari Hat High School	Deopara	Dogachi	Rajshahi
Md. Naimul Islam	Pilzong high school	Pilzong	Fakirhat	Bagherhat
Md. Nirul Huda	Bonoful high school	Fakirhat	Fakirhat	Bagherhat
Salimur Rahman	Deapara high school	Shuvodia	Fakirhat	Bagherhat
Md. Iqbal Hossain	Takatia deapara madrasa	Shuvodia	Fakirhat	Bagherhat
Md. Abdullah	Awliabag high school	Pilzong	Fakirhat	Bagherhat
Md. Ruhul Amin	Bhana high school	Kakhpur	Fakirhat	Bagherhat
Md. Salim Reza	Al-hera Alim Madrasa	Pilzong	Fakirhat	Bagherhat
Abdur Rahim	Bangabandgu High School	Pilzong	Fakirhat	Bagherhat
Md. Shahabuddin	Zaria Vatro Hogh School	Kokhpur	Fakirhat	Bagherhat
Md. Zinnat Ali	Fakirhat Fazil Madrasa	Bahid Dighar	Fakirhat	Bagherhat
Md. Ijabul Khaled	Premtali Sukbasia High School	6 no. Matikata	Godagari	Rajshahi
Md. Zahidul Haque	Rajbari Hat Girls' High School	Deopara	Godagari	Rajshahi
Md. Shahidul Islam	Kakonhat Fazil Madrasa	Kakonhat Paorosova	Godagari	Rajshahi
Md. Samsul Islam	Pirijpur High School	Maticata	Godagari	Rajshahi
Most. Aiasha Khatun	Mohishal Bari High Schol	Godagari Paoroshova	Godagari	Rajshahi
Md. Darul Islam	Kakonhat High School	Pakri	Godagari	Rajshahi
A.T.M. Tarek Iqbal	Chabbis Nagar High School and College	Risikul	Godagari	Rajshahi
Ahatashamule	Kadom Shahor High School	Deopara	Godagari	Rajshahi
Md. Rabiul Alam	Kadom Shahor High School	Deopara	Godagari	Rajshahi
Md. Emamul Haque	Palpur High School	Deopara	Godagari	Rajshahi
Md. Mokhlasur Rahman	Uttara Girls' High School	Maticata	Godagari	Rajshahi
Most. Sakira Yeasmin	Prodiva High School	Maticata	Godagari	Rajshahi
Md. Mamun-Al- Rashid	Premtali Sukbasia High School	Maticata	Godagari	Rajshahi
Susmita Samaddar	Premtali Girls' High School	Maticata	Godagari	Rajshahi
Md. Atikur Rahman	Premtali Girls' High School	Maticata	Godagari	Rajshahi
Samjoy Kumar Karmokar	Harin Biska High School	Gogram	Godagari	Rajshahi

Name	Name of School	Union	Upazila	Zila
Most. Samreza Khatun	Ginigram High School	Gogram	Godagari	Rajshahi
Md. Monierul Islam	Kakaon Hat Girls' High School	Pakra	Godagari	Rajshahi
Most. Akhtari Khatun	Kakonhat Fazil Madrasa	Kakonhat Paorosova	Godagari	Rajshahi
Md. Abdul kuddus	Chabbis Nagar Dhakhil Madrasa	Rishikul	Godagari	Rajshahi
Most. Mahabuba Kharun	Rajabari Hat High School	Deopara	Godagari	Rajshahi
Pancanan Das	Pirijpur High School	Maticata	Godagari	Rajshahi
Md. Shahinul Islalm	Mahishalbari Girls' High School	Godagari Paoroshova	Godagari	Rajshahi
Md. Asadunnabi	Pirijpur Alim Madrasa	Maticata	Godagari	Rajshahi
Md. Lutfar Rahman	Shekherpara High School	Maticata	Godagari	Rajshahi
Sharmin Jahan	Kurigram Kalettorate School and Collage	Kurigram	Kurigram	Kurigram
Md. Abu Azad	Moddho komorpur girls school and collage	vogdanga	Kurigram	Kurigram
Md. Abu Rustom Siddiq	Nilas School and Collage	Kurigram	Kurigram	Kurigram
Md. Sultan Ali	Sattar Adorso High School	Moghol Basa	Kurigram	Kurigram
Md. Mostafizur Rahman	Adorsho Hugh School	Belgasa	Kurigram	Kurigram
Mahamudul Haque	Belgasa high school	Belgasa	Kurigram	Kurigram
Julfikar Ali	Jogadaha Maleka Khatun Girls' High School	Jogadaha	Kurigram Sadar	Kurigram
Md. Hafizur Rahman	Fulsho high school	Ksehor hat	Mohonpur	Rajshahi
Minul Islam	Kharil High school	Bakshi Mahol	Mohonpur	Rajshahi
Nurul Islam	Dogachi high school	Dogachi	Mohonpur	Rajshahi
Jamilur Rahman	Bishata high school	Ramghati	Mohonpur	Rajshahi
Abdullahil Kafi	Motihar high school	Zahanabad	Mohonpur	Rajshahi
Mokhlasur Rahman	Bamon Naogong high school	Ksehor hat	Mohonpur	Rajshahi
Riaz Uddin	Mohobbotpr high school	Dgurhal	Mohonpur	Rajshahi
Samsuzzaman	Basantopur high school	Doghachi	Mohonpur	Rajshahi
Mazedul Islam	Belna High school	Ghasigram	Mohonpur	Rajshahi
Asrafuzzaman	Bishara high school	Zahanabad	Mohonpur	Rajshahi
Abdul Gaffar	Basanta Kader Hogh school	Mogacha	Mohonpur	Rajshahi
Sapon kumar	Borail high school	Rakhchati	Mohonpur	Rajshahi
Gopal Chandra	M.R.K. High School	Horian	Paba	Rajshahi
Nimai Krishno	Nawhata High School	Nawhata Paoroshova	Paba	Rajshahi
Baki Billah	Sobsar High School	Borogachi	Paba	Rajshahi
Abdul Hannan	Mubaripur High School	Damkura	Paba	Rajshahi
Zahidur Rahman	Mubaripur High School	Damkura	Paba	Rajshahi
Amit Ghosh	Kharkhari Girls' High School	Kharkhari	Paba	Rajshahi
Md. Abdul Hakim	Kharkhari High School	Kharkhari	Paba	Rajshahi
Gaoranga Chabdra	Damkura Hat High School	Dankura	Paba	Rajshahi
Rabibdranath Ray	Gorai Roghurai high school	Durgapur	Ulipir	Kurigram
Fakir Mahidul	Baharullah Rabia Dakhil Madrasa	Buraburi	Ulipur	Kurigram

List of participants for focus group discussion (FGD)

Place of FGD: Dorompur Palpur Alim Madrasa, Date 07.12.2015

Type of participants: Members of School level Science Club

Sl. No.	Name	Position	Address	Cell No.
1.	Md. Kowsar ALI	Member	Dharampur	01797-876721
2.	Md. Durul Islam	Member	Dharampur	01705-015498
3.	Md. Aitullah	Member	Palpur	01816-474566
4.	Md. Afzal Hossain	Member	Palpur	01798-113792
5.	Md. Mustafizur Rahman	Organizing Secretary	Palpur	01748-487508
6.	Ms. Suraia Jahan	Vice President	Palpur	01732-642211
7.	Ms. Sajeda Sultana	Member	Palpur	01764-875854
8.	Ms. Dalia Khatun	Member	Palpur	01757-222721
9.	Ms. Lubanna Jahan	Cashier	Palpur	01772-823290
10.	Ms. Sabikunnahar	Member	Palpur	01788-983770

Place of FGD: Damkura Hat High School, Date 07.12.2015

Type of participants: Members of School level Science Club

Sl. No.	Name	Position	Address	Cell No.
1.	Tamim Rahaman Joti	President	Damkura hat High School	01740-815556
2.	Farzana Akther Sweety	Member	Do	01824-482963
3.	Tamina Akther Ankhy	Member	Do	01729-675874
4.	Md. Rofiqul Islam	Vice President	Do	01821-295484
5.	Md. Motin Chowdhury	Asst. Secretary	Do	01745-004498
6.	Md. Naim Islam	Member	Do	01784-781623
7.	Md. Joshim Uddin	Member	Do	01818-213589
8.	Md. Nadim Mostafa	Member	Do	01980-590922
9.	Md. Shoriful Islam	Member	Do	01820-567030

Place of FGD: Chobbishnagar High School, Date 07.12.2015

Type of participants: Members of School level Science Club

Sl. No.	Name	Position	Address	Cell No.
1.	Md. Mehidi Hasan Roni	President	Chobbish Nagar High School	01768-293383
2.	Md. Elias Kallol	Member	Do	01626-806224
3.	Md. Ariful Islam	Member	Do	01734-072565
4.	Md. Mahfuz Islam	Vice President	Do	01784-781613
5.	Md. Tamim Alom	Asst. Secretary	Do	01822-876063
6.	Md. Rasel Ali	Member	Do	0168-6158024
7.	Md. Rofiqul Islam	Member	Do	01765-651797
8.	Md. Naiem Islam	Member	Do	01780-244071
9.	Md. Pial Hossain	Member	Do	01777-481907
10.	Md. Tuhin Islam	Member	Do	01733-297407

Place of FGD: Palpur High School, Date 07.12.2015
Type of participants: Members of School level Science Club

Sl. No.	Name	Position	Address	Cell No.
1.	Md. Sobur Hossain Sumon	President	Palpur High School	01788-162548
2.	Md.Najmul Hossain	Member	Palpur High School	01840-291684
3.	Md. Mahin Hossain	Member	Palpur High School	01713-991123
4.	Ms. Morjina Khatun	Member	Palpur High School	01761-572945
5.	Ms. Jahanara Khatun	Member	Palpur High School	01727-907242
6.	Ms. AsmaKhatun	Class captain	Palpur High School	01705-276180
7.	Ms. Aeyasa Siddika	Member	Palpur High School	01763-070773
8.	Ms. Jakia Sultana	Member	Palpur High School	01719-823596
9.	Mr. Humayon Ahmmmod	Member	Palpur High School	01735-701201
10.	Mr. Tonmoy Ghosh	Member	Palpur High School	01721-875540

Place of FGD: Chobbishnagar Woakap Dakhil Madrasa, Date 07.12.2015
Type of participants: Members of School level Science Club

Sl. No.	Name	Position	Address	Cell No.
1.	Md. Monsur Roshid	President	Chabbishnagar Hazi para	01724-730319
2.	Md.Mostakim Rohman	Member	Chabbishnagar Hazi para	01751-709996
3.	Md.Jamil Uddin	Member Publicity	Bagshoil Moddhopara	01731-280731
4.	Md.Israfil Hossain	Organizing Member	Chabbishnagar Dying para	01761-454247
5.	Md.Kafi	Member	Balakandor	01790-830321
6.	Md.Mortuza Ali	Class captain	Bagshoil	01761-136337
7.	Md. Nahid Islam	Member	Balakandorl	01740-002972
8.	Ms.Ankhi Khatun	Member	Bamnai	01983-760046
9.	Ms.Munmun Nahar	Member	Chabbishnaga Baipur	01720-001955
10.	Ms.Jamela khatun	Member	Chabbishnaga Hazipara	01764-635519

Place of FGD: Horin Biska High School, Date 08.12.2015
Type of participants: Members of School level Science Club

Sl. No.	Name	Position	Address	Cell No.
1.	Md. Zihad Ali	Member	Sekpur	-
2.	Md.Zahid Hasan	Member	Horin biska	01955-340620
3.	Md.Mahabubul Alam	Member	Kumorpur	01756-255661
4.	Md.Oaliul Islam	Member	Faradpur	01948-726829
5.	Md.Rofiqul Hasan	President	Alipur	01755-935256
6.	Sifatun Nesa	Asst. Secretary	Horin biska	01954-890639
7.	Halima Sadia	Member	Horin biska	01920-036918
8.	Orfi farzana Mariam	Member	Horin biska	01714-762429
9.	Ms. Zarina Tasnim	Cashier	Horin biska	-

Place of FGD: Shekher Para High School, Date 08.12.2015

Type of participants: Members of School level Science Club

Sl. No.	Name	Position	Address	Cell No.
1.	Ms.Rukaiya Khatun	Member	Sekerpara High School	01823-623633
2.	Ms.Taslima Khatun	Member	Sekerpara High School	01943-940478
3.	Ms. Eva Islam	Member	Sekerpara High School	01938-740529
4.	Md. Ainul Islam	Member	Sekerpara High School	01829-968523
5.	Md. Nasim Uddin	President	Sekerpara High School	01855-204087
6.	Ms. Rabeya Basory	Asst. Secretary	Sekerpara High School	01820-816891
7.	Ms. Asma Khatun	Member publicity	Sekerpara High School	01846-175175
8.	Ms. Shova Khatun	Member	Sekerpara High School	01967-642023
9.	Ms. Nasima Khatun	Member	Sekerpara High School	01846-175175
10.	Md. Shoriful Islam	Member	Sekerpara High School	01770-373239

Place of FGD: Pirizpur High School, Date 08.12.2015

Type of participants: Members of School level Science Club

Sl. No.	Name	Position	Address	Cell No.
1.	H. M Hanif	President	Premtoly	01754-684445
2.	Md. Rakib Ikbali	Member Publicity	Bidirpur	01829-836103
3.	Md. Kalid Hasan	Executive Member	Bidirpur	01872-097151
4.	Abdullah AL Muin	Executive member	Pirizpur	01717-906761
5.	Sree Shuvo Kumar	Executive member	Bhatopara	01731-327691
6.	Md. Oafiur Rahman	General Secretary	Horisonkorpor	01732-056065
7.	Ms. Rizia Parvin	Executive member	Bidirpur	01710-244081
8.	Ms. NurunNesa	Executive member	Pirizpur	01829-595709
9.	Sree Purnima Kumari Mondol	Executive member	Pirizpur	01713-742826
10.	Ms.Usha Khatun	Executive member	Horisonkorpor	01816-221850
11.	Ms.Ayasa Siddika	Executive member	Sahbidpur	01775-588187

Place of FGD: Bidirpur Uttara Girls High School, Date 08.12.2015

Type of participants: Members of School level Science Club

Sl. No.	Name	Position	Address	Cell No.
1.	Ms. Nasima Khatun	President	Bidirpur	01982421039
2.	Ms Umme Hosneara	Cashier	Bidirpur	01724133198
3.	Ms. Sampa Khatun	Member	Bidirpur	01859247319
4.	Ms. Sanjida Anowar	Member	Bidirpur	01741044204
5.	Ms. Sabikun Nahar	Member	Bidirpur	01957750226
6.	Ms. Rajia Sultana	Member	Bidirpur	01859247319
7.	Ms. Tamanna Akther	Member	Bidirpur	01750525478
8.	Ms. Rabia Khatun	Member	Bidirpur	01722448664
9.	Ms. Nureza Afroz	Member	Bidirpur	01737554130
10.	Ms. Maksuda Khatun	Member	Bidirpur	01705276871
11.	Ms. Khadiza Tulkubra	Member	Bidirpur	01942119586

Place of FGD: Premtoly Girls High School, Date 08.12.2015

Type of participants: Members of School level Science Club

Sl. No.	Name	Position	Address	Cell No.
1.	Ms. Jebunessa Khatun	General Secretary	Kanthalbaria	01737-665393
2.	Ms. Atia Khatun	Member	Khetur	01798-956220
3.	Ms. Tanzila Khatun	Member	Khetur	01744-563899
4.	Ms. Khadiza Khatun	Vice-President	Dumuria	01986-268937
5.	Ms. Mahmuda Ansari	Asst. Publicity Secretary	Khetur	01718-948845
6.	Ms. Nowrin Alam	Executive member	Kanthalbaria	01715-732691
7.	Ms. Sharia Islam	member	Dumuria	01710-945518
8.	Ms. Sarmin Sultana	Joint Secretary	Kanthalbaria	01710-602944
9.	Ms. Ayesa Akther	member	Dumuria	01724-113454
10	Ms. Mursida Khanom	President	Faradpur	01729-388561