



Department of Science and Technology (DST)

PROJECT: PRESERVING OUR BIOSPHERE-UNDERSTANDING SCIENCE THEN AND NOW

PROJECT COMPLETION REPORT

IMPLEMENTED BY:

MILLENNIUM INDIA EDUCATION FOUNDATION
(13 COMMUNITY CENTRE, EAST OF KAILASH, NEW DELHI-65)(www.mief.in)

CATALYSED & SUPPORTED BY:

NCSTC DIVISION, DEPT.OF SCIENCE & TECHNOLOGY,GOVT.OF INDIA

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1. Title of the Project (please print in BLOCK CAPITALS): PRESERVING OUR BIOSPHERE-UNDERSTANDING SCIENCE THEN AND NOW

2. Financial Aspects of the Projects:

Reference to NCSTC sanctions (s)

2.1.1.1.1.1.	No:	CO/A/FP/E132/2016
2.1.1.1.1.2.	Date:	15/02/2018
2.1.1.1.1.3.	Total Amount sanctioned:	Rs 1426000/-
2.1.1.1.1.4.	Dated on which the bond was signed:	03/02/2018
2.1.1.1.1.5.	Amount for which the bond was signed:	Rs 1426000/-
2.1.1.1.1.6.	Amount(s) received (date wise):	Rs 1200000/-dated 21/02/2018
2.1.1.1.1.7.	Whether the original sanction was received:	YES/NO
2.1.1.1.1.8.	If 2.1.7 is YES then	18/02/2018
2.1.8.1	Give details sought under 2.1.1, 2.1.2, 2.1.3, 2.1.4, 2.1.5, and 2.1.6 in respect of the revised sanction(s)	NA
2.1.8.2	State briefly major reasons for the revision(s) sought	NA
2.1.2.	Interest accrued on funds provided, if any	Rs 30280/-
2.1.3.	Unspent balance including interest (to be refunded immediately)	NA
2.1.4.	Date of refund of unspent balance. (please indicate DD/Cheque No. Its date and bank)	
2.1.5.	Finalization of Project Accounts:	
2.2.1.1.1.1.	Date on which the audited statement of Project accounts were submitted to NCSTC:	22.07.19
2.2.1.1.1.2.	Date on which the Expenditure/Utilization Certificate(s) was (were) submitted to NCSTC	22.07.19
2.2.1.1.1.3.	Whether the Expenditure. Utilizations Certificate(s) submitted to NCSTC was (were) Only provisional: (in any case attach a copy of each of the documents to this report)	YES/NO
2.2.4.	If 2.2.3 is YES please indicate	NA
2.2.4.1.1.1.1.1	Whether it was, or should be, accepted by NCSTC : YES/NO	NA
2.2.4.1.1.1.1.2	If 2.2.4.1 is YES then please give the reasons why it was or should be accepted by NCSTC	NA
2.2.4.1.1.1.1.3	If a date has been agreed to for the submission of the Final Expenditure /Utilization Certificate(s) to NCSTC	NA

3. Name(s) of Investigator(s)/Proposer(s) of the Project with their full address(s) and telephone number(s), if any,: **Dr Uday Kakroo PI 13 Community Centre East of Kailash New Delhi 110065 Ph 9810301261**

4. **Brief** outlines of the thematic genesis of the project and the over-all approach followed for its implementation as approved by the NCSTC.:

The project was aimed at sensitizing **school students of Delhi from classes 8-12th**. The idea was to organize scientific activities in schools that would result in the formation of scientific communities comprising of students, teachers and parents as well. These groups were encouraged to take up such measures that would promote **preserve our biosphere** and **enable** all life forms (human/animal/environmental) to maintain healthy ecosystem.

The project was implemented as was approved by NCSTC in Delhi state over a period of 12 months from March 2018 to April 2019. During this period various activities were held as approved by NCSTC Div. of Dept. of Science & Technology. About 80% of the area of Delhi was mapped for the presence of biodiversity (Flora and fauna) by school children during their field survey which was an essential part of the project.

Procedure adopted and activities conducted:

- A. Selection of Schools: 90 Schools in Delhi** were selected on the basis of their willingness to take part in this project on first cum first serve basis. **List of participating schools** is attached as **annexure 2.1**

B. Experts for the project:

A panel of 8 experts having subject related experience was made. **These experts** helped the student teams in identifying flora and fauna, helped in preparing the resource material, reviewed the concepts proposed by these school teams, **ranked them according to the merit** and gave their feedback as well. The list of experts with their respective areas of expertise is attached as **annexure 2.2**

C. Teacher interaction on the project activities:

Four one day teacher orientation workshops were conducted in different schools of Delhi wherein objectives of the project and activities to be conducted at school levels and in the field outside the schools were discussed. List of schools that took part in these orientation workshops is attached as **annexure 2.3**

D. Lectures in the schools :

The experts delivered interactive lectures on the project title “Preserving our Biosphere – Understanding Science Then and Now” in the schools. List of schools where lectures were delivered is given as **annexure 2.4**

E. Formation of science communities in the school :

All the participating schools were asked to form a group of 20 -25 students from classes 8-12 to study the biodiversity in their respective areas. The schools were also asked to nominate 1-2 teachers to assist these students in their study.

F. Field study to map the area for the presence of biodiversity (Flora & Fauna) within 4-5 kms radius of the school.

The teams selected by their respective schools were asked to visit the nearby parks, gardens, agricultural land etc. and **click pictures of whatever diversity they could see**, identify some common species and give numbers to the unidentified species. The data (about flora and fauna) was collected by the team leaders. The pictures of

unidentified species were sent to MIEF experts for identification. The data was stored as per the format designed by MIEF. 20 schools submitted their project proposals .

Copy of the field data collection format is attached as **annexure 2.5**

G. Analysis of data collected by the student teams:

These teams were asked to compare the data collected to that of biodiversity present in Delhi during 1950s-60s. Additional research material about the biodiversity present in Delhi during the period of 1950s-60s was provided to each school by MIEF to enable these students to analysis their data and also propose innovative and implementable concepts to regenerate/preserve the biodiversity in the state.

Review report of experts on the project reports submitted by the student teams is attached **as annexure 2.6**

H. Displays in schools :

24 panels in the form of calenders, each of size 2x3 ft were designed and printed on flex. The calenders contained the information about the presence of biodiversity in Delhi now and during 1950s-1960s. These calenders were displayed in the schools for 2-3 days with an objective that all school children, teachers, management and visitors would also get informed about various aspects of biodiversity present in the Delhi.

H. Award Ceremony:

All the 20 concept project proposals were studied by MIEF panel of experts and were ranked based on their merit. The assessment report of experts along with their feedback is attached as **annexure 2.7**

These schools and their student teams were rewarded with certificates and prizes by Dr Nisha Mendiratta Head NCSTC Div. Dept .of Science & Technology in a function at Mount Abu Public Rohini Delhi on 24th April 2019.

The list of schools that were rewarded is attached as **annexure 2.8**

5. Objectives of the Project:

Original objectives: 1. To sensitize and motivate school going children to engage in such scientific activities both in schools and at home so that group of scientific communities are formed .

2. To encourage the students to become '**scientists in their own school**', by catalyzing long-lasting interest in STEMM (science, technology, engineering and math), and encouraging future careers in science-related fields.

Subsequent objectives, if there was any change: Study the biodiversity in Delhi was focused.

Whether the deviations in 5.1 and 5.2 were substantial; if so, please indicate whether approval(s) was (were) obtained for the same from NCSTC and state briefly what necessitated them.

6. Time schedule of the Project:

Proposed duration/date(s) : 12 months

Approved duration/date(s): 12 Months

Actual duration/date(s): 14 Months

Reasons for substantial difference in 6.2 and 6.3, if any Approved time schedule of the Project

Actual time schedule followed **NA**

Reasons for any substantial change in 6.5 and 6.6

7. **Collaboration/Co-sponsorship: NA**

- 7.1.1. List of collaborating organization(s) with address(es)
- 7.1.2. Nature of collaboration
- 7.1.3. Memorandum of understanding (MOU), if any (Enclose a copy if in a documentary form)
- 7.2.1. List of cosponsoring organization(s) with address(es)
- 7.2.2. Nature of co-sponsorship
- 7.2.3. Terms and Conditions of co-sponsorship (Enclose a copy if in a documentary form)

8. **Organizational and functional set up for the implementation of the Project:**

8.1 Organizational structure

8.2 Role/function and responsibilities of persons at various levels of the organizational setup:
The project overall was supervised and guided by PI as per the NCSTC sanction and guidelines.

8.3 List of names of persons in the organizational set up with their complete addresses, telephone numbers (if any), and the nature (temporary or permanent) and duration of their service in the organization.

- I. Dr Uday Kakroo Director MIEF 13 Community Centre, East of Kailash New Delhi 110065 Ph 9810301261 was Permanently in this project right from the beginning as **PI**.
- II. Mohd. Imtiyaz Ali MIEF 13 Community Centre, East of Kailash New Delhi 110065 Ph 9810301261 was also permanently involved in this project right from beginning as **Project Coordinator**.

8.4 Enclose copies of the minutes of the meetings of the committee(s), if any, set up for guiding the implementation of the project. No committees were formed. However meetings with experts were held from time to time to formulate a procedure to be adopted for completion of the project.

9. **Give brief details (supported by audio/video records such as photographs, cassettes, slides, publications such as circulars, invitations, publicity pamphlets, press cuttings, etc) of**

- 9.1 The Project: **Details are attached as annexures**
- 9.2 Out-come of the Project, and
- 9.3 Utility and scope of the Project

10. **Infrastructural facilities (assets procured) acquired under the Project (please tabulate relevant item wise details of their description and costs): NA**

- 10.1 Hardware (equipment, instruments, etc)
- 10.2 Software (audio-visual material, publications, etc.)

11. **Scientific/technological/social/commercial utility/benefits developed/accrued/expected:**

11.1 **List of software/hardware published/produced under the project with description of details such as their costs, names of their authors/producers, copyright/patent holders, title(s)/product name(s), date/month/year of their publication/production, reference (volume/serial number, issue/part, page- span/length, national/international accession number, if any, etc.**

- a. **Exhibition 24 nos (2x3 ft size) on biodiversity in Delhi** in the form of **calendars** that were displayed in schools during the project implementation period.
- b. **Prepared power point presentation on the topic for the students .**

11.2 **Manpower:** Was employed as per the sanction accorded by NCSTC.

11.2.1 **Names and addresses of resource persons** Involved in the project: **Attached as annexure 2.2**

11.2.2 **Names of persons, with their present addresses,** who obtained degree(s)/diploma(s) as a result of their work in the Project, if any **NA**

11.2.3 **Names of S&T communicators trained,** with their Present addresses: **NA**

11.3 Target population at which the Project was aimed

11.3.1 **Description:** School students studying in **classes 8-12th** were involved in this project.

11.3.2 **Size:** A total no of 90 schools (both govt and public) took part in this project. **13878 students** besides teachers were directly involved in this program. **Out of these, 500 students from 20 schools of Delhi** were directly involved in real time field research by collecting data and then comparing it to what was existing in Delhi about 40-50 years back.

11.3.3 **Criteria/modes of selection of the target group adopted,** If selection was involved: Middle, Secondary and Sr Sec. Schools(Govt.&Public) in Delhi were approached directly/ through director education dept and selected on first cum first serve basis .**90 schools participated in the project.**

11.3.4 **Brief description of their initial status (before the Project was aimed at them) :** **NA**

11.3.5 **Major changes observed, or expected to be observed, in the Target population** after the completion of the project: Are given as recommendations at 11.3.7

11.3.6 **Method of analysis** of the change observed, or expected to be observed, in the target population: **NA**

11.3.7 Brief outlines of the outcomes of the actual analysis of the 'effects' of the Project on the target population: The outcome as proposed by the participating school, is as under :

a) **Plant smartly:** Grow plants that purify air like Aloe Vera, snake plant, spider plants, Peace lilies, Ficus elastica, Ivy, Gerbera, areca palm, sansevieria etc. Plant trees like Mango, Banyan and Jamun that serve as sinks for Carbon Dioxide and other gas emissions, act as dust traps, recharge ground water and promote cloud formation and local precipitation.

b) **Encourage Native species:** We must restore Delhi's native trees that have been slowly diminishing over the time due to the lack of water, lack of space and rapid urbanization. Native Plants provide shelter and food, support pollinators and attract a variety of birds, butterflies by providing diverse habitats and food sources. Examples: Palash, Ronjh, Kareel, Pilkhan, Amaltas, Ber, Bistendu, Kosam, Shahtoot/Mulberry, Jhinjeri, Peepal, Saptaparni.

c) **Be Innovative: Drape concrete structures in green**

c.1 **Moss wall-** It is great for biodiversity as on one square meter it provides home to nearly 1600 plants.

c.2 **Vertical garden-** A nidea to reduce carbon footprint in the least available area

c.3 **Elevated garden-** Best suited for the concrete jungle where land space for plantation is not available

c.4 **Terrace garden:** Can be maintained in the housing societies.

- d) Let the Native Pollinators Buzz:** Grow variety of native wild flowering plants that bloom throughout the season to attract pollinators. This will increase the number of plants in the area. These flowering plants will attract Butterfly, Wasp, House fly, Beetle, Ladybug, Honey Bee who are natural pollinators.
- e) Develop Green Corridors:** Greenery along busy roads can cut air pollution caused by vehicular emissions. Climbers are the right choice as these natural layers trap dust and emissions at increased rates
- f) Encourage waste management and recycling of environmentally dangerous wastes** in the form of plastics, chemicals, metals and radioactive materials as they have proven to contaminate our air, water and land with carcinogens and toxins which destroy our biodiversity.
- g) Learn and Teach about Biodiversity:** Educate yourself and others about the importance of biodiversity : Initiatives like “green campaign” must be carried out through rallies, sapling donations, street plays and green marathons
- h) Fungi are vital** to crop production through mycorrhizal relationships with plant roots, so, can they be grown along with plants to increase fertility.
- i) Development of rich biodiversity zones:** People can adopt an area in their locality like park for the development. It will provide a good habitat to the plants and animals.
- j) Take small measures to save the environment:**
- a. Avoid Plastic and poly bags.
 - b. Proper sewage disposal and its treatment
 - c. Dispose of waste properly
 - d. Developing a sense of responsibility and belongingness to conserve nature
- k) Rain water harvesting** in every house to increase ground water table.
- l) Reduce the usage of pesticides and fertilizers:** Go for organic compost. It helps plants to grow healthy and strong, improves soil texture, and causes no harm to pollinators. Use natural products and methods for pest control such as BT (*Bacillus thuringiensis*) for caterpillar infestation; use pesticides that have minimal residual effects such as pyrethrins, insecticidal soaps, and dormant oil sprays; use a high-pressure water stream from a hose to control aphids; use barriers and collars around plants to keep pests away.
- m) Use minimum natural resources and save maximum** for the forthcoming generation.
- n) Reuse and recycle:** Composting is key here. It reduces the amount of waste going into landfills and the space needed to hold that waste. **Look into ways** you can use those purchases intended for single-use. Keep up with what is recyclable in your area. New markets for recycled products can be opened up.
- o) Encouraging local fruits and vegetables - Buy local foods:** They are according to the climate of the area and hence easy to digest.

- p) **Encourage the conservation and recycling of water:** Water is a vital liquid for all living beings. Efforts should be made to restore the aquatic fauna by improving the Health of water bodies. Protect our rivers. Revival of river Yamuna and other big and small water bodies should be taken up.
- q) **Habitats for birds:** Develop certain places for the rehabilitation of birds. Make arrangements for their nesting, water and food.
- r) Prevent the cementing of soil in cities and leave some space along the road sides to increase water penetration into the soil.
- s) **Mark important days:** Celebrate events like Van Mahotsav, Earth Day and World Animal Day in schools, colleges and offices to promote awareness among people about conservation of biodiversity.
- t) **Identify locations of critical wildlife** habitat for species at risk and the threats to these areas. Where possible, eliminate threats and maintain natural areas. Leave critical wildlife habitat undisturbed, especially nesting and denning sites. Construct fences to protect riparian areas and other sensitive habitats from trampling and other disturbances.
- u) **Encourage and support local government** initiatives that protect habitat and decrease threats to biodiversity

11.3.8 Economical effectiveness/justification of the completed project(e.g., per capita expenditure versus utility/scope) NA

- 12 **Suggested plan of action on the completed Project**, particularly on its aspects which could result in future utilization of the outcomes:

School recommendations given at 11.3.7

Experts recommendations is as under:

- a. **A dedicated incharge** as pointed out by Dr Dinesh would really help students as students involved in projects need guidance and mentoring. The incharge should make groups of students with different learning abilities and interests in a group. Students with varied interest can add different parameters to the project.
- b. **The idea of the project at school level as conceived by MIEF was to inculcate** among students love and empathy for biodiversity in particular and biosphere in general. Students when they know what nature has and what service and products the biodiversity offers will appreciate it and work towards its conservation. While listing the plants and fauna in their region, students should also be encouraged to know its ecological and economic services.
- c. **By becoming a part of project**, students are also learning the method of science, therefore adequate attention has to be paid to the method of science that focuses on methodology, observation, sample size, how many sites were visited, data analysis etc.

- d. **The project should be done** in light of both abiotic and biotic factors as biosphere comprises of both. Some schools have looked at soil.
- e. **Teachers should also give students** fair idea of what existed before as given in the title so that comparative chart could be made.

This is to certify that the information provided above is complete and true to the best of my/our knowledge.

SIGNATURE(S) WITH DATE AND SEAL:

Project In-charge

NAME ASSIGNED

(Dr Uday Kakroo)

Head of the implementing agency

NAME ASSIGNED:

(Ms Rashmi Kakroo)

FOR OFFICIAL USE ONLY:

2. Annexures

Annexure 1

2.1 List of participant schools

List of Participant Schools		
S.No.	Name of School	Address
1	Adarsh Public School	F-62 Bali Nagar New Delhi.
2	Alkhon International School	IP Extension Patpargunj Delhi
3	Arwachin Bharti Bhawan Sr.Sec. School	C Block,Vivek Vihar Delhi
4	Arwachin International School	Pocket B Dilsad Garden Delh.
5	ASN Sr. Sec. School	Mayur Vihar Phase I New Delhi.
6	Bal Bharti Public School	Pitampura New Delhi.
7	Bal Mandir Sr. Sec. School	VikasMarg, Defence Enclave, Swasthya Vihar, Delhi.
8	Bharat Shakti Sr.Sec. School	Rithala Road Budhvihar Delhi.
9	Bhartiya Vidya Bhavan	KG Marg New Delhi.
10	Bhatnagar International School ,	Bahera Enclave Paschim Vihar New Delhi
11	Birla Vidya Niketan	Pusp Vihar Sec IV New Delhi
12	Bosco Public School	Sunder Vihar Paschmi Vihar Delhi
13	Brain International School	H Block Vikaspuri Delhi
14	East Point School	FC - 26, Vasundra Enclave Dallupura New Delhi
15	Evergreen Sr. Sec. School	Vasundra Enclave Dallupura New Delhi
16	GLT Saraswati Bal Vidya Mandir	Nehru Nagar New Delhi .
17	Gov. Boys Sr. Sec. School	Shivaji Park Shahdra Delhi
18	Govt. Boys Sr. Sec. School	Karala, Delhi.
19	Govt. Co-Ed. Sr. Sec School,	Sec-22, Dwarka, New Delhi.
20	Govt. Co-Ed. Sr. Sec. School,	Khera Dabar, New Delhi.
21	Green Field Public School	Dilshad Garden GTB Enclave Delhi.
22	Green Land Model School	Shastri Park New Delhi
23	Guru Harkrishan Public School	Hargobind Enclave Delhi
24	Gyan Mandir Public School	Naraina Vihar New Delhi
25	Indraprashta World School	PashimVihar Delhi.
26	Jain Bharati Mrigavati Vidyalaya	G T Karnal Road Delhi
27	Kalka Public School	Alaknanda Kalka Ji New Delhi.
28	KLK Saraswati Bal Vidya Mandir	Ward No. 6 Mehrauli New Delhi
29	Lady Florence Convent School	Main Madanouri Road Gurgaon
30	LalitMahajan Sr. Sec. School	Vasant Vihar New Delhi.
31	Little Flower Public School	Shiva Ji Park, Shahdra ,GTB, Delhi.
32	Lovely Public Sr. Sec. School	Priyadarshini Vihar, Bank Enclave, Laxmi Nagar, New Delhi
33	M M Public School	Vasudha Enclave Pitampura New Delhi
34	Maharaja Agarsain Public school	Phase IV Ashok Vihar Delhi
35	Mamta Modern School	H Block Vikaspuri New Delhi

36	Mata Leelawati Saraswati Vidya Mandir	H 16 Hari Nagar New Delhi.
37	Mata Ram Rakhi Vidya Mandir	E Block Mahendru Enclave New Delhi.
38	Mayur Public School	IP Extension Delhi.
39	MHDC Saraswati Bal Mandir	Janakpuri New Delhi.
40	Modern Public School	Rishab Vihar Delhi.
41	Modern Public School	Block B Salimar Bagh New Delhi
42	Modern School	Barakhamba Road New Delhi.
43	Mother Devine Public School	Sec 3 Rohini Delhi
44	Mother Mary School	Sahkarita Marg, Mayur Vihar Phase -1, Delhi.
45	Mothers Global School	C Block Preet Vihar Delhi
46	Mount Abu Public School	Rohini Sec 5 Delhi
47	NEW AGE Public School	12 Gupta Enclave Vikas Nagar Delhi
48	New Delhi Convent Sr. Sec. School	Rajnagar Part II Palam Colony Delhi .
49	North Delhi Public School	B/P Block SalimarBagh Delhi
50	PG Senior Secondary School	Patel Nagar New Delhi
51	Pragati Public School	Sector -13, Phase-II, Dwaraka, Delhi
52	Queen's Valley School	Sec 8 Dwarka New Delhi
53	Rahul Model Public School	Railway Road Sadh Nagar -II Palam Colony New Delhi.
54	Rajkiya Sarvodaya Kanya Vidyala	Dallupura New Delhi.
55	Rastra Shakti Vidyala Sr. Sec. School	Hastal Road Uttam Nagar New Delhi.
56	Remal Public School	Sec 3 Rohini Delhi .
57	Richmond Global School	N.S. Road Pachim Vihar Delhi.
58	RMC Saraswati Vidya Mandir	Guru Nanak Nagar Bhalaswa Dairy Delhi
59	S D Public School	Panjabi Bagh New Delhi
60	S D Public School	BU Block Pitampura Delhi.
61	Sachdeva Public School	FP Block Pitampura Delhi.
62	Sant Mathew Public School	Paschim Vihar New Delhi.
63	Sant. Nirankari Public School	Avtar Enclave PaschimVihar New Delhi
64	Saraswati Bal Mandir Sr.Sec. School	Rajouri Garden New Delhi.
65	Saraswati Shishu Mandir	Aram Bagh Pahargunj New Delhi.
66	Sarvodya Bal Vidyala	R Block Mangolpuri New Delhi
67	Sarvodya Kanya Vidyala	Dwarka Sec 13. New Delhi
68	Sarvodya Kanya Vidyala	Dallupura Delhi .
69	Shaheed Raipal DAV Public School ,	Dayanand Vihar New Delhi
70	SLS DAV Public School	Bhisham Lal Sharma Marg, Mausam Vihar, Delhi
71	Somerville Public School	Vasundra Enclave Delhi.
72	Spring Days Public School	Phase I Ashok Vihar Delhi.
73	Sraswati Bal Vidya Mandir	A2 PachimVihar New Delhi
74	SSD Saraswati Bal Mandir School	West Punjabi Bagh New Delhi
75	St. Andrews Scotts Public School	Mayur Vihar Phase 1 Delhi

76	St.Cecilia's Public School	9/17B, Rajouri Garden Extension Road, New
77	Sumermal Jain Public School	B 2 Janakpuri New Delhi
78	The Indian Height School	Sec 23 Dwarka New Delhi.
79	Universal Public School	G -109 Mahaveer Enclave Palam Colony New Delhi.
80	Universal Public School .	A block Preet Vihar Delhi.
81	Venkateshwar Global School	Pocket 1/1 Sec 13 Rohini New Delhi.
82	Venketeshwar International School	Sec 10 Dwarka New Delhi
83	Vikas Bharati Public School	Sec 24 Rohini New Delhi
84	Vikash Bharti Public School	Sector 10 Rohni New Delhi
85	Vishal Bharti Public School	Pashim Vihar New Delhi.
86	Vishwa Mitra Sarvodya Kanya Vidyalaya	Old Seemapuri Delhi
87	Vivekanand Public School	B Block Anand Vihar New Delhi
88	Vivekanand Public School	D- Block Anand Vihar Delhi
89	VMH Saraswati Shishu Mandir	Mamurpur Narela Delhi .
90	VSPK International School	Sector-13, Rohini, Delhi.

2.2 The list of experts with their respective areas of expertise

1. **Dr. J.P. Bhatt Sr. Scientist,**
Centre for Interdisciplinary studies of Mountain & Hill Environment, University of Delhi

Area of Specialization: Environmental Impact Assessment (EIA), Aquatic Ecology, Fish and Fisheries and Wildlife.

Principal Investigator: In many Research projects related to EIA studies and Cumulative Impact **Assessment**
Teaching: Department of Environmental Studies, Delhi University and Delhi School of Journalism
Publication: More than 20 in national and International Journals

2. **Dr Dinesh Chandra Nautiyal Research Scientist**
Centre For Inter-disciplinary Studies of Mountain and Hill Environment, University of Delhi

Area of Specialization: Has more than 15 years research experience in the field of Plant Taxonomy, Ecological Studies and Conservation biology. Have been providing expertise for a number of years to the Centre in conducting the studies related with EIA/EMP of hydro-power projects

3. **Dr (Mrs) Monika Koul Assistant Professor Botany**
Hans Raj College, University of Delhi

Area of Specialization: Ecology, Environmental and Reproductive Biology

Has more than 20 years of Teaching and research experience in her field of specialization. Has served as Resource Person for World Bank Sponsored Project “Indo-Kabul Training Programme For Teachers of Kabul University” ,Guest Lecturer, to the students enrolled for the old scheme of University of Delhi, Guest Lecturer, to the Undergraduate students in Miranda House, University of Delhi, Guest Lecturer to the Post Graduate Students for M. Sc. Agrochemicals and Pest Management, University of Delhi, and Guest Lecturer in Department of Environmental Biology, University of Delhi .Is also visiting faculty, School of Planning and Architecture, ITO, New Delhi

Research and Publications;

Has published book titled “Fun With Botany” for school students at Vigyan Prasar, DST, Govt. of India., Plant Reproductive Biology and Conservation for IK Publishers, New Delhi, India.,

Has written chapters in written chapters on “Transport in Plants” in Book “Biology Programme, Khosla Publishing House. New Delhi; “Modular interface (Virtual Learning Environ., Inst. of Lifelong Learning, Univ. of Delhi, Delhi). ISSN 2349-154X; Urban Forests: Species selection and biodiversity conservation: 259-270. In Diversity and Conservation of Plants and Traditional Knowledge ;Toxicity and Accumulation of Heavy Metals in Aquatic

Flowering Plants In Plant Diversity and Conservation and Impact of Climate Change on Medicinal Plants: An Assessment In: Assessment of Climate Change in India and Mitigation Policies etc.

Has published numerous research papers in International and National journals on subjects ranging from air pollution ,edicinal plant research.water quality and pollution status of najafgarh Jeel etc.

4. Dr. Dinesh Kumar Gautam Assistant Professor, Zoology,
Hans Raj College, University of Delhi, Delhi

Area of Specialisation: Zoology(Reproductive Physiology).

Has more than 10 years teaching experience in a reputed college in Delhi and has done research in Reproductive Biology/Andrology/Assisted Reproductive Technology/ Male contraception, Genomics and Bioinformatics.

Has delivered lectures in schools and has been resource person in various workshops "INSPIRE Internship Programme-2012", "National Conference on Relevance of Nanotechnology in Biology; and has organized Workshops on Molecular Biotechnology Techniques, on Bioinformatics, on Model Organisms in Biological Sciences, on Techniques in Immunology", "Drosophila- as a model organism" etc.

Has numerous research publications in national science journals to his name.

5. Dr Neha Mishra Teacher
University of Delhi

Area of Specialization: Environmental Studies and Life Sciences

Has more than 2 years of teaching experience to the UG students in University of Delhi. Has been MRP in various workshops on 'Beat the plastic', Climate change, biodiversity, Environmental pollution, e-waste, environmental awareness and others in University of Delhi Colleges.

Has delivered lectures and executed workshops in various schools of Delhi

Has published numerous research papers in National and International Journals of repute on Biodegradation of DDT by *Achromobacter* sp. strain Y12A in broth medium ,(2017) in International Journal of Microbiology Research. Molecular investigation of biological nitrogen fixation: A Review (2017) International Journal of Scientific Research. Methods for measurement of air pollutants. Air Pollution Diversity of nif-H gene in rhizosphere and non-rhizosphere soil of wheat crop in Rajasthan, India. Springer ETC.

- 6. Nimish Kapoor Scientist E & Division Head Science Film Festivals**
Vigyan Prasar ,Govt.of India

Area of specialization: Mass Communication in Science & Technology

Has more than 20 years of experience in planning, conceptualization, coordination and execution of science films based programmes;coordination and execution of National Science Film Festival & competition and designing and developing resource material for outreach programmes;

Has been conducting workshops and capacity building programmes on science communication through films & science broadcasting.

- 7. Ms Madhu Ved Retired Principal**
Saraswati Bal Mandir Senior Secondary School Rajouri Garden New Delhi

Area of Specialisation: Teaching and administration

Has more than 30 years of teaching and administrative experience as National Educator with the largest educational institution that are running 28 schools in New Delhi,and are affiliated with 12 other institutions in the country.

She has worked as an Advisor, a Resource person, content writer, personality grooming, motivator, Director and as a Gen. Secretary of many social and academic organization in India and abroad.

- 8. Sharda Dixit Rtd.Principal**
B.M Saraswati Bal Mandir Sr. Sec. School, Narela Delhi

Area of Specialisation: Teaching and administration

Has more than 36 years of teaching and administrative experience in schools in managing and prioritizing the student centered teaching i.e., with the CCE new pattern of CBSE. Organizing the faculty meetings to guide and make them understand the importance of teaching learning process. Curriculum development and implementation. Handling and solving the day to day problems of students like socioeconomic, Adolescence and disciplinary.

2.3 List of schools who took part in teacher orientation workshops

Teacher Orientation Workshop		
Venue: Mamta Modern Public School Vikaspuri New Delhi		
Date: 06.09.2018		
S.No.	Name of School	Address
1	Mamta Modern School	Vikas Puri New Delhi
2	Bhatnagar International School	Bahera Enclave Paschim Vihar New Delhi
3	Modern School	Barakhamba Road New Delhi
4	Queen's Valley School	Sec 8 Dwarka New Delhi
5	Brain International School	H Block Vikaspuri New Delhi
6	St. Cecilia's Public School	F Block Paschim Vihar New Delhi
7	Gyan Mandir Public School	Naraina Vihar New Delhi
8	Pragati Public School	Sec 3 Dwarka New Delhi
9	Venketeshwar Intl School	Sec 10 Dwarka New Delhi

Teacher Orientation Workshop		
Venue: ASN Sen. Sec. School Mayur Vihar Phase I Delhi		
Date: 17.07.2018		
S.No.	Name of School	Address
1	Greens field public School	Dilshad Garden Delhi 93
2	Universal Public School .	A block Preet Vihar New Delhi.
3	Shaheed Raipal DAV Public School	Dayanand Vihar New Delhi
4	Vivekanand Public Shool	B Block Anand Vihar New Delhi
5	Evergreen Public School	Vasundra Enclave New Delhi
6	Somerville Public School	Vasundra Enclave Delhi.
7	Alkhon international School	Anand Vihar New Delhi.
8	Mayur Public school	IP Extension Delhi.
9	St. Andrews Scotts Public School	IP Extension Parpargunj Delhi.
10	Mother's Global School	C Block Preet Vihar Delhi.
11	ASN Sr. Sec. School	Mayur Vihar Phase I New Delhi .
12	Lovely Public Sr. Sec. School	Preet Vihar Delhi.
13	Mother Mary School	Mayur Vihar Phase 1 Delhi.
14	Bal Mandir Sr. Sec. School	Vikash Marg Delhi.
15	SLS DAV Public School	Mausam Vihar New Delhi.
16	Little Flower Public School	Shivaji park Shahdra Delhi.
17	East Point School	Vasundra Enclave New Delhi.
18	Vivekanand Public School	D- Anand Vihar New Delhi.
19	Arwachin Bharti Bhawan Sr.Sec. School	Vivek Vihar New Delhi.

Teachers Orientation Workshop		
Venue: Mount Abu Public School Rohini		
Date:15.05.2018		
S.No.	Name of School	Address
1	Bal Bharti Public School	Pitampura New Delhi.
2	Adarsh Public School	F-62 Bali Nagar New Delhi.
3	Bosco Public School	Sunder Vihar Paschim Vihar New Delhi
4	The Indian Public School	Sec 24 Rohini New Delhi
5	Indraprashta World School	Pashim Vihar New Delhi
6	M.M public School	Vashndra enclave New Delhi
7	Maharaja Agarsen Public school	Asho vihar New Delhi
8	Modern Public School	Salimar Bagh New Delhi
9	Mother Devine Public School	Sec 3 Rohini New Delhi
10	Mount Abu public School	Rohini Sec 5 New Delhi
11	Remal Public School	Sec 3 Rohini New Delhi
12	Spring Days Public School	Phase I Ashok Vihar Delhi.
13	Venkateshwar Global School	Pocket 1/1 Sec 13 Rohini Delhi
14	Vikash Bharti Public School	Sector 24 Rohini New Delhi
15	Vishal Bharti Public School	Pashim Vihar New Delhi

Teachers Orientation Workshop		
Venue: SD Public School Pitampura		
Date:03.05.2018		
S.No.	Name of School	Address
1	S D Public School	Pitampura BU Block New Delhi
2	S D Public School	Punjabi Bagh New Delhi
3	Jain Bharati Mrigavati Vidyalaya	G T Karnal Road Delhi
4	VSPK International School	Sector-13, Rohini, Delhi
5	Sachdeva Public School	FP Block Pitampura Delhi.
6	Sumermal Jain Public School	B 2 Janakpuri New Delhi

2.4 List of schools where lectures were delivered

List of schools where lectures were delivered and exhibition held					
S.No.	Date	Name of School	Address	Expert	No. of Students
1	25.07.2018	Venkateshwar Global School	Pocket 1/1 Sec 13 Rohini Delhi	Dr. JP Bhat	150
2	23.08.2018	Somerville Public School	Vasundra Enclave Delhi	Dr. Nimish Kapoor	100
3	24.02.2018	Universal Public School .	A block Preet Vihar New Delhi	Dr. JP Bhat	240
4	24.02.2018	Mayur Public school	IP Extension Delhi	Dr. JP Bhat	250
5	24.02.2018	ASN Sr. Sec. School	Mayur Vihar Phase I New Delhi	Dr. JP Bhat	150
6	11.10.2018	ASN Sr. Sec. School	Mayur Vihar Phase I New Delhi	Dr. Monika Kaul	150
7	28.08.2018	East Point School	FC - 26, Vasundra Enclave Dallupura New Delhi	Dr. Neha Mishra	185
8	28.08.2018	Evergreen Sr. Sec. school	Vasundra Enclave Dallupura New Delhi	Dr. Monika Kaul	120
9	28.08.2018	Greenfields Public School	Dilshad Garden GTB Enclave Delhi	Dr. Neha Mishra	225
10	30.08.2018	Birla Vidhya Niketan	Pusp Vihar Sec IV New Delhi	Dr J P Bhatt	330
11	31.08.2018	Maharaja Agarsain Public School	Phase IV Ashok Vihar Delhi	Dr. Monila Kaul	226
12	06.09.2018	Guru Harkrishan Public School	Hargobind Enclave Delhi	Dr. Monika Kaul	120
13	11.09.2018	Lovely Public Sen. Sec. School	Priyadarshini Vihar, Bank Enclave, Laxmi Nagar, New Delhi,	Dr. JP Bhat	400
14	24.09.2018	Brain International School	H Block Vikaspuri Delhi	Dr. JP Bhat	150
15	03.10.2018	Mount Abu Public School	Rohini Sec 5 New Delhi	Dr. JP Bhat	500
16	08.10.2018	Bhatnagar international School ,	Bahera Enclave Paschim Vihar New Delhi	Dr. DC Nautiya	200
17	27.10.2018	Modern Public School	Block B Salimar Bagh New Delhi	Dr. Monika Kaul	500
18	29.10.2018	Adarsh public School	F-62 bali Nagar New Delhi.	Dr. Monika Kaul	360
19	04.11.2018	Bhartiya Vidya Bhavan	KG Marg New Delhi	Dr. Monika Kaul	160
20	12.11.2018	M M Public School	Vasudha Enclave Pitampura New Delhi	Dr. JP Bhat	280
21	19.11.2018	S D Public School	BU Block Pitampura Delhi	Dr. J P Bhat	80
22	27.11.2018	Sumermal Jain Public School	B 2 Janakpuri New Delhi	Dr. DC Nautiyal	260
23	29.11.2018	Little Flower Public School	Shahadra Delhi	Dr. DC Nautiyal	450
24	01.12.2018	Mothers Global School	C Block Preet Vihar Delhi	Dr. D C Nautiyal	550
25	01.12.2018	Shaheed Raipal DAV Public School ,	Dayanand Vihar New Delhi	Dr. Dc Nautiyal	120
26	07.12.2018	Venketeshwar International School	Sec 10 Dwarka New Delhi	Dr. D. C Nautiyal	400
27	15.12.2018	SLS DAV Public School	Bhisham Lal Sharma Marg, Mausam Vihar, Delhi	Dr. D C Nautiyal	160
28	19.12.2018	Universal Public School	G -109 Mahaveer Enclave Palam Colony Delhi	Dr. D. C Nautiyal	380
29	20.12.2018	PG Senior Secondary School	Patel Nagar New Delhi	Dr. J P Bhat	120
30	21.12.2018	Sarvodya Kanya Vidyala	Dwarka Sec 13. New Delhi	Dr. D. C Nautiyal	52
31	07.01.2019	North Delhi Public School	B/P Block Salimar Bagh Delhi	Dr. J P Bhat	150
32	15.01.2019	Sant Mathew Public School	Pachim Vihar Delhi	Dr. J P Bhat	65

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33	15.01.2019	Pragati Public School	Sector -13, Phase-II, Dwaraka, Delhi	Dr. J P Bhat	250
34	15.01.2019	Richmond Global School	N.S. Road Pachim Vihar Delhi	Dr. J P Bhat	100
35	17.01.2019	Govt. Co-Ed. Sr. Sec. School,	Khera Dabar, New Delhi	Dr. D. C Nautiyal	150
36	18.01.2019	Sant. Nirankari Public School	Avtar Enclave Pachim Vihar Delhi	Dr. J P Bhat	500
37	18.01.2019	Green Land Model School	Shastri Park New Delhi	Dr. J P Bhat	100
38	20.01.19	Sarvodya Kanya Vidyalaya	Dallupura New Delhi	Dr. D. C Nautiyal	80
39	23.01.2019	Arwachin International School	Pocket B Dilshad Garden Delhi	Dr. DC Nautiya	250
40	23.01.2019	Vishwa Mitra Sarvodya Kanya Vidyalaya	Old Seema Puri Delhi	Dr. Dinesh Gautam	90
41	24.01.2019	Gov. Boys Sr. Sec. School	Shivaji Park Shadra Delhi	Dr. J P Bhat	150
42	25.01.2019	Govt. Co-Ed. Sr. Sec School,	Sec-22, Dwarka, New Delhi	Dr. D. C Nautiyal	52
43	28.01.2019	GLT Saraswati Bal Vidya Mandir	Nehru Nagar New Delhi	Dr. J P Bhat	600
44	31.01.2019	Lalit Mahajan Sr. Sec. School	Vasant Vihar New Delhi.	Dr. Monika Kaul	180
45	01.02.2019	Sraswati Bal Vidhya Mandir	A2 Pachim Vihar New Delhi	Dr. J P Bhat	140
46	02.02.2019	Sarvodya Bal Vidyalaya	R Block Mangol Puri Delhi	Dr. J P Bhat	185
47	06.02.2019	SSD Saraswati Bal Mandir School	West Punjabi Bagh New Delhi	Dr. Dinesh Gautam	230
48	08.02.2019	VMH Saraswati Shishu Mandir	Mamur Pur Narela Delhi	Dr. J P Bhat	75
49	08.02.2019	Govt. Boys Sr. Sec. School	Karala, Delhi	Dr. Dinesh Gautam	80
50	12.02.2019	Krishna Lal Kohli Saraswati Bal Vidya Mandir	Ward No. 6 Mehrauli New Delhi	Dr. J P Bhat	130
51	13.02.2019	The Indian Height School	Sec 23 Dwarka Delhi-75	Dr. D. C Nautiyal	300
52	19.02.2019	Mata leela wati Sarswati Vidya Mandir	H 16 Hari Nagar New Delhi.	Dr. Monika Kaul	115
53	19.02.2019	Mata Ram Rakhi Mandir	E Block Mahendru Enclave New Delhi.	Dr. Madhu Ved	250
54	19.02.2019	Rajkia Sarvodya Kanya Vidyalaya	Dallupura New Delhi -110096	Dr. DC Nautiyal	85
55	19.02.2019	RMC Saraswati Vidhya Mandir	Guru Nanak Nagar Bhalaswa Dairy Delhi	Dr. Madhu Ved	240
56	22.02.2019	Modern Public School	Rishab Vihar Delhi	Dr. Madhu Ved	60
57	23.02.2019	Lady Florence Convent School	Main Madanouri Riad Gurgaon	Dr. D C Nautiyal	55
58	23.02.2019	NEW AGE Public School	12 Gupta Enclave Vikahs Nagar Delhi	Sarda Dixit	200
59	25.02.2019	New Delhi Convent Sr. Sec. School	Rajnagar part II Palam Colony Delhi	Sarda Dixit	200
60	26.02.2019	Rahul Model Public School	Railway Road Sadh Nagar -II Palam Colony New Delhi	Sarda Dixit	200
61	26.02.2019	Saraswati Bal Mandir Sr.Sec. School	Rajouri Garden Delhi	Dr. Madhu Ved	100
62	27.02.2019	Bharat Sakti Sr.Sec. School	Rithala Road Budhvihar Delhi	Dr. Madhu Ved	80
63	28.02.2019	Kalaka Public School	Alakhnanda kalka Ji New Delhi	Dr. Madhu Ved	60
64	01.03.2019	Saraswati Shishu Mandir	Aram Bagh Pahargunj Delhi	Sarda Dixit	200
65	01.03.2019	MHDC Sarawati Bal Mandir	Janak Puri New Delhi	Sarda Dixit	175
66	13.03.2019	Rastra Shakti Vidyalaya Sr. Sec. School	Hastal Road Uttam Nagar New Delhi	Sarda Dixit	133
				Total	13378

2.5 Copy of the field survey data collection format

DATA COLLECTION FORM

TITLE OF THE PROJECT: Preserving Our Biosphere- Understanding DScience Then & Now

**(A Project of Millennium India Education Foundation &
NCSTC Division Dept.of Science & Technology Govt.of India)**

NAME OF SCHOOL _____

- Address: _____
- Email: _____
- Phone: _____

Name of the Teacher Coordinator (write name here) _____

- Phone: _____
- Email: _____

Number of students in the group: _____ **Classes studying in:** _____

Team leader (write name here):

FIELD ACTIVITY

Date/s: _____

Areas covered:

- Densely Scarcely populated (Select the right option)
 Urban Rural Resettled colony (Select the right option)

Distance from school:

YOUR OBSERVATIONS

Season (when the study was conducted e.g. hot weather, rainy season etc):....

Flora & Fauna

- Animals (write names here)
 - Domestic: ...Cows many(Local with few Pics)...Cross breed cows(few pics)...,Sheep,(pics) Pigs(pics),...Goats,(pics) note can be written whether these were seen in large nos or just few.....
 - Pet: ...Many local dogs (Some pics) ,Few Cats (Pics),or any other pet animal that people in delhi keep (Pics has to be taken for identification)
 - Wild **seen in zoo or biodiversity park or forest** Boar, Jackal,Tiger,etc.....
- Birds (write names here)
 - Local:
 - Migratory:

- Amphibians/Reptiles:
- Insects (write name here):
- Vectors (Mosquitoes / Flies.....)
- Trees (write name here):
- Plants (write name here):
- Flowers (write name here):
- Agriculture (crops) (write name here):

Type of soil / Permeable pavements:

Litter / waste disposal:

Water body (lakes, ponds, streams, river)

- Aquatic animals
- Aquatic Plants.....
- Aquatic Birds.....

Water conservation like rainwater harvesting: as may be seen and to be answered as yes or no

Drains: Choked Running /Open

Any other observations:

Exotic species of captive birds /animals were was seen also seen being sold at –shops in the area .-----

- Once all the data is collected ,the team would make a list of observations under each head.
- That would give an idea what all they have collected .
- Next, the group would compare it with the reference material that we have sent and also research from other resources like books/internet/references we have given in our ref. material etc.ive ot delhi
- To make an assessment of what is native and what is not. They would then study the usefulness of each item/variety with regard to keeping our surroundings healthy if these are restored/improved /removed .
- And think of an innovative but practically possible solution to make the areas studied more healthier .This concept proposal has to be in power point and to be sent to us in soft copy along with the pics and data collected forms so that our experts would study to examine if all vital information collected by the students has been considered or any missed by mistake and which could make a difference while making their concept paper.

Signature of the Group Leader

Signature of the Teacher Coordinator

Note: Please take pictures of what all you see and identify by name (local or species or botanical or zoological)

2.6 Review report of experts on the project reports submitted by the student teams.

Experts: J.P. Bhatt & D.C. Nautiyal

1. Wetland Management

Lakes, rivers and ponds in the cities have not only the ecological significance but recreational and social values also. They support rich biodiversity including fish, algae, macrophytes and invertebrates. They are generally source of drinking water, irrigation and enhance the tourism activities. However, if they are not managed properly, they may create a large number of problems. They become nuisance, and create conducive environment for the varieties of harmful bacteria and weeds.

The groups of students from most the schools under this project have drawn attention towards the high pollution level of lakes or ponds, growth of invasive plants and river like Sanjay Lake, District Park, Paschim Vihar and Yamuna river. Students observed the dumps of garbage along the banks of these water bodies and growth of water hyacinth along the bank of river. The schools highlighted these concerns and are given below. The students suggested various mitigation measures like development of the water quality guidelines, plantation along the bank and introduction of a few fish species.

Notably, it needs a comprehensive awareness programme and suitable measures to reduce the pollutants at the source. All the domestic drains, if present should be diverted. There must be adequate fencing around the water bodies to prevent the dumping of solid waste.

Public participation is very necessary in managing the water bodies. The local communities should be encouraged to protect these water bodies. As a good practice, municipal body should constitute a management committee comprising local people for each water body. There should be proper guidelines and penalty and reward systems. The municipal body should provide the financial support to the local committee for the purpose of management of water bodies.

Schools involved in the study: Arwachin International School, Dilshad Garden; ASN Senior Secondary School, Mayur Vihar; Lovely Public Senior Secondary School; Mayur Public School IP Extension; Bhatnagar International School, Paschim Vihar; Mount Abu Public School, Rohini; Sumerville Public School, Vasundhra Enclave.

2. Green building concept ,terrace gardening and vertical farming

The groups of students from many schools given below suggested the green building concept and vertical farming as one of the environmental management practices. There are various types of vertical farming is generally practiced in the areas of low availability of land and water. Vertical farming is considered to be one of the substitutes of agriculture and horticulture. In Delhi its implementation at large scale needs a detailed feasible study but it can be practiced at individual level. Many people are involved in the terrace plantation at the small scales. Students also suggested plantations under the metro line, green corridors along the busy roads and other available lands. These measures are implemented by the governmental agencies. These agencies are already involved in the plantation activities in the areas where land is available.

Schools involved in the study: ASN Senior Secondary School; S.D. Public School, Pitampura; Venkateshwar Global School, Rohini; Little Flowers Public Senior Secondary School, Shahdra; Venkateshwar International School, Dwarka; Bhatnagar International School, Paschim Vihar.

3. Integrated water management and recycling of waste:

A few groups of students from different schools suggested the waste water recycling and use of grey water efficiently in vegetables and agricultural practices. As far as waste water treatment concerns, it is largely implemented by the governmental agencies and a large number of sewage treatment plants (STPs) are established in Delhi. It is, however, worthy to mention that in spite of the fact, the Yamuna river water is still polluted, therefore, it needs strengthening and improvement. In the individual capacity, people can play significant role in the waste management. It needs a comprehensive awareness programme and public participation. Resident welfare societies can be involved in such activities. Some of the measures, which can be executed at individual and society level are – minimum use of natural resources, minimum use of plastic wastes, minimum use of water, prevention of loss of water, installation of different types of bins for different types of waste. Also, there is need of improvement on the method of collection of waste at household level and transportation of waste. These measures can be implemented by the resident welfare societies.

Schools involved in the study: ASN Senior Secondary School, Mayur Vihar; Mount Abu Public School, Rohini.

4. Eco city concept:

A group of students gave the idea of eco-city concept; it is based on the use of non conventional source of energy like installation of solar panels, wind energy and biogas plants. The increasing use of rooftop solar panels in the rural and urban areas is foreseen to be significant measure to conserve the natural resources and environment. The installation of biogas plants in the rural areas may bring the significant improvement in the fossil fuel conservation. It can be implemented at individual level.

Schools involved in the study: Birla Vidya Nietan, Pushp Vihar, New Delhi

5. Public awareness :

Public awareness is first step towards the conservation of environment and natural resources. All measures suggested here require public awareness prior to the implementation. The groups of students suggested various means of public awareness, which include rallies, eco-club, poster display, audio visual, e-media, green marathon, street plays for reuse, reduce, recycle of waste, etc. Schools and students can play major roles in such activities. Many schools participated in this programme are already involved in such activities.

Schools involved in the study: Bhatnagar International School, Paschim Vihar; Brain International School, Vikas puri, Delhi; Mayur Public school IP Exten.; S.D. Public School, Pitampura.

6. Biodiversity conservation

Total forest area in Delhi is about 8%, of which natural forests contribute very small part. Natural forests and wilderness in Delhi region is confined to the ridge area. The faunal species especially mammals are restricted in

their distribution to the protected area, ridges and outskirts of Delhi. The groups of students suggested various measures including promotion of native floral species, removal of exotic plant species, donate saplings, installation of artificial nests, ban on the garbage dumping in the forest areas. These measures can be executed at individual level. However, it requires public awareness programmes. Students emphasised the loss of populations of house sparrow and suggested the use of holes and artificial nest with house walls. This practice may bring the significant changes and improvements, if implemented by people. In addition, there is need of habitat improvement, especially in the outskirts areas of Delhi. Habitat improvement can be achieved by planting suitable tree species in the parks, degraded lands and other open areas. Also, some of the areas may be declared as 'no go area'. The controlled entry of people in ridge areas should be promoted. There should be proper guidelines for such entries. The feeding of wild animals in the ridge areas and insects in parks should be discouraged.

Schools involved in the study: Bhatnagar International School, Paschim Vihar; Green Field Public School , Dilshad garden; Sumerville Public School, Vasundhra Enclave; Venkateshwar School Dwarka; SLS DAV Public School Mausum Vihar; Maharaja Agarsen Public School, Ashok Vihar; Bhartiya Vidya Bhawans Mehta Vidyalaya.

2.7 Assessment report of the experts who ranked the schools based on their merit.

Assessment by Expert Dr Jay P Bhatt

S. No	Name of school	Class	Project Design	Study area	Field Work	Study material	Scientific input	Innovation/ Management	Total marks	Remarks
			5	5	5	5	5	5	30	
1	Arwachin International School, Dilshad Garden Delhi	9th and 11th	4	1	4	5	2	nil	16	Report is not in proper form. Lack of innovative and conservation idea
2	ASN Sr.Sec. School Mayur Vihar Ph 1, Delhi	7th, 8th & 9th	4	4	4	3	3	3	21	Report is legible; Field work was conducted for water quality but study area of flora and fauna is not clear
3	Bharatiya Vidya Bhawan K G Marg New Delhi	9th, 10th & 12th	3	2	3	3	2	nil	13	Average
4	Bhatnagar International School, Paschim Vihar New Delhi	8 th to 11 th	5	4	5	5	4	4	27	Detailed field work was carried out, study area is well described
5	Birla Vidya Niketan Pushp Vihar New Delhi	9th, 10,12th	4	0	1	3	2	1	11	No field work performed; secondary material has been used in the project
6	Brain International School Vikas Puti New Delhi	8th & 9th	5	3	4	4	4	3	23	A few photographs taken from secondary source
7	Evergreen Public School, Mayur Vihar ,Vasundhara Enclave Delhi	9th, 11th & 12th	2	3	3	2	nil	nil	10	Only photographs are provided, no mention of wildlife
8	Greenfields Public School, Dilshad Garden ,GTB Nagar Delhi	9th, 10th & 11th	3	4	3	4	3	2	19	No Photographs

9	Guru Harkrishan Public School , Hargobind Enclave Delhi	9th & 10th	5	4	4	5	5	4	27	All aspects are relatively well addressed
10	Little Flowers Public Sr Sec School , Shivaji Park, Shahdara Delhi	11th & 12th	3	3	3	3	2	nil	14	Wildlife is not surveyed
11	Lovely Public Sr Sec. School Priyadarsh ini Vihar Delhi	9th, 10th, 11th & 12th	5	3	4	5	4	nil	21	Strong study material
12	Maharaja Agarsen Public School, Ashok Vihar	8th & 9th	2	nil	3	3	2	nil	10	Poorly presented
13	Mayur Public School, I P Eetension, Delhi	8th, 9th & 11th	3	nil	nil	1	3	1	8	Description of study area is not mentined, No sign of field work
14	MM Public School Pitampura New Delhi	8th	5	3	4	4	5	4	25	Project design is well, mitigation measures are well written
15	Mount Abu Public School, Sec. 5, Rohini, New Delhi	9 & 10th	4	1	3	5	4	4	21	Study material and suggestive measures are well written, well in scientific inputs
16	SD Public School, Pitampura New Delhi	7th, 8th & 9th	4	4	4	3	4	4	23	All aspectsexcept study material are relatively well addressed
17	SLS DAV Public School , Mausam Vihar Delhi	8th-12th	2	1	2	3	1	1	10	Study area is not clear, no sound mitigation measures
18	Somerville Public school, Vasundhara Enclave Delhi	9th & 11th	3	1	4	3	2	1	14	Average
19	Venkareshwar International School , Sector 10 ,Dwarka New Delhi	11th	4	4	4	4	4	2	22	Except, mitigation measures ,all aspects are satisfactory
20	Venkateshwar Global School , Sect 13, Rohini , Delhi	8th, 9th & 10th	5	4	4	4	4	4	25	All aspects are satisfactory

Assessment by Expert Dr Dinesh Nautiyal

S. No	Name of school	Class	Project Design	Study area	Field Work	Study material	Scientific input	Innovation/ Management	Total Marks	Remarks
			5	5	5	5	5	5	30	
1	Arwachin International School, Dilshad Garden Delhi	9th & 11th	4	3	3	4	3	3	20	No innovative idea; only listing of plants and animals is given
2	ASN Sr.Sec. School Mayur Vihar Ph 1, Delhi	7th, 8th & 9th	4	4	4	4	3	3	22	Recycling of waste water; innovative agronomy and Green building concept
3	Bharatiya Vidya Bhawan K G Marg New Delhi	9th, 10th & 12th	3	3	3	3	2	nil	14	Nice photos
4	Bhatnagar International School, Paschim Vihar New Delhi	8th to 11th	5	4	4	4	4	4	25	Good account of native plant species in the feedback report of this school or presentation given, with declining populations of native species due to urbanization and deforestation. Address current threats to native floral and faunal species of Delhi. Overall, clarity in preparation of presentation of slides, with scientific and local names. Suggest innovative ideas like Green corridors along the busy roads which can reduce air pollution esp. vehicular emissions

5	Birla Vidya Niketan Pushp Vihar New Delhi	9th, 10th, 12th	3	3	3	4	2	3	18	Concept of ideal eco city
6	Brain International School Vikas Puri New Delhi	8th & 9th	4	3	4	4	4	2	21	Efforts for Pubic awareness through photos
7	Evergreen Public School, Mayur Vihar, Vasundhara Enclave Delhi	9th, 11th & 12th	3	4	4	4	3	1	19	Nice photos ; good information on dwindling species of animals
8	Greenfields Public School, Dilshad Garden, GTB Nagar Delhi	9th, 10th & 11th	2	3	2	3	2	nil	12	Very short and poor description
9	Guru Harkrishan Public School, Hargobind Enclave Delhi	9th & 10th	4	4	5	5	4	3	25	Good coverage of Varieties of plants
10	Little Flowers Public Sr Sec School, Shivaji Park, Shahdara Delhi	11th & 12th	4	3	3	3	3	nil	16	Nice photos but wrong identification is given especially for plants
11	Lovely Public Sr Sec. School Priyadarshini Vihar Delhi	9th, 10th, 11th & 12th	4	3	4	4	4	1	20	Nice presentation with detailed information of local names, uses; Assessment threats esp. wild animal species; suggestions given in the presentation are good
12	Maharaja Agarsen Public School, Ashok Vihar	8th & 9th	2	nil	3	3	2	nil	10	Only two birds species are covered or collected in fauna l elements; fairly wide var. of plants
13	Mayur Public School, I P Eetension, Delhi	8th, 9th & 11th		nil	nil	1	2	nil	3	Neither class of students is given nor study area is defined. Only few ppt slides are prepared in the survey report

14	MM Public School Pitampura New Delhi	8th	5	3	3	4	3	3	21	School was found involved in all inovative activities i.e. planting, cleaning school and conservation of local floral and faunal elements
15	Mount Abu Public School, Sec. 5, Rohini, New Delhi	9 & 10th	4	3	1	1	4	4	17	Project out lines for Waste water reuse and conversion of bio waste into manure is good in different areas. But no area is mentioned where it is practically implemented for water management and water management.
16	SD Public School, Pitampura New Delhi	7th, 8th & 9th	4	4	4	3	4	3	22	Eco Club of SD PUblic School, looks important to motivate students how to imbibe habits and life style for minimum waste generation and to create green and clean consciousness among students
17	SLS DAV Public School , Mausam Vihar Delhi	8th-12th	4	4	3	3	3	3	20	Suggestion of wooden house for house sparrow out side of morden house; efforts to document snakes, sparrow and butterflies in Delhi and assessment of threats for declining population of vulture, sparrows

										and black bucks is appreciable in the presentation
18	Somerville Public school, Vasundhara Enclave Delhi	9th & 11th	4	4	3	4	3	1	19	Good observation on running drains esp. which are choked in the area and burning of leaves and garbage in the societies; constructed rain water harvesting system
19	Venkateshwar International School , Sector 10 ,Dwarka New Delhi	11th	4	3	3	4	4	3	21	Biodiv. Parks in waste lands; compost pits and Dust bins for Waste managements in school
20	Venkateshwar Global School , Sect 13, Rohini , Delhi	8th, 9th & 10th	4	4	5	4	3	3	23	New idea of Vertical gardens esp.on metro pillars, house walls and other structures

Assessment by Expert Dr Monika Kaul

S. No	Name of school	Class	Project Design	Study area	Field Work	Study material	Scientific input	Innovation/ Management	Total Marks	Remarks
			5	5	5	5	5	5	30	
1	Arwachin International School, Dilshad Garden Delhi	9th and 11th	3	nil	5	1	3	3	15	The students have not followed the scientific method of analysis. Their field sites are not defined. Presentation weak
2	ASN Sr.Sec. School Mayur Vihar Ph 1, Delhi	7th, 8th & 9th	5	4	4	4	4	4	25	The presentation is good. Field site referred and some experiments have been done. Could have given more details

3	Bharatiya Vidya Bhawan K G Marg New Delhi	9th, 10th & 12th	5	4	4	4	4	4	25	Class not mentioned, Students have put in good efforts, pictures are of good quality
4	Bhatnagar International School, Paschim Vihar New Delhi	8th to 11th	5	5	5	4	4	4	27	Project work is good, well presented with lots of photos and information.
5	Birla Vidya Niketan Pushp Vihar New Delhi	9th, 10th, 12th	4	4	3	4	4	3	22	Class not mentioned, Pictures are not of good quality, Lot of data has been put in the presentation
6	Brain International School Vikas Puti New Delhi	8th & 9th	4	4	4	4	3	3	22	Only pictures of animals and plants from the study area given, no details about them
7	Evergreen Public School, Mayur Vihar, Vasundhara Enclave Delhi	9th, 11th & 12th	3	4	4	3	3	2	19	Writing skills poor, needs improvement and can come out well
8	Greenfields Public School, Dilshad Garden, GTB Nagar Delhi	9th, 10th & 11th	3	3	3	3	2	2	16	No pictures of biodiversity. Poor presentation
9	Guru Harkrishan Public School, Hargobind Enclave Delhi	9th & 10th	4	4	4	4	3	3	22	Students have done good work but data can be presented in a better way
10	Little Flowers Public Sr Sec School, Shivaji Park, Shahdara Delhi	11th & 12th	5	5	5	4	4	4	27	One of the very good presentations
11	Lovely Public Sr Sec. School Priyadarshini Vihar Delhi	9th, 10th, 11th & 12th	4	4	4	4	4	3	23	Pictures of animals and plants are not taken from the study area
12	Maharaja Agarsen Public School,	8th &	3	2	2	3	2	3	15	Only pictures of animals and

	Ashok Vihar	9th								plants from the study area given, no details about them
13	Mayur Public School, I P Eetension, Delhi	8th, 9th & 11th	5	5	5	4	4	5	28	Students have given pictures of plants and animals seen in the area but the study area has not beenn demarcated but good amount of field work has been done. It can be further improved.
14	MM Public School Pitampura New Delhi	8th	3	2	4	3	3	3	20	No mention of study area. Just the description about some trees and herbs of the area give. Some birds and lizard mentioned only
15	Mount Abu Public School, Sec. 5, Rohini, New Delhi	9 & 10th	2	2	2	3	2	3	14	Since the project was biodiversity and biosphere studies the students should have included biotic and abiotic factors both. Only soil parameters are there
16	SD Public School, Pitampura New Delhi	7th, 8th & 9th	3	3	3	3	3	3	18	The students could have made a better presentation and included more data of biodiversity in their study
17	SLS DAV Public School , Mausam Vihar Delhi	8th-12th	3	2	3	3	2	2	15	The report is very short and studies not conducted properly
18	Somerville Public school, Vasundhara Enclave Delhi	9th & 11th	3	3	4	1	1	1	13	The report lacks scientific output in all fronts. Seems to be done casually

19	Venkareshwar International School , Sector 10 ,Dwarka New Delhi	11th	3	3	2	3	2	2	15	The project report is so random. Not followed the format
20	Venkateshwar Global School , Sect 13, Rohini , Delhi	8th, 9th & 10th	4	4	4	3	3	3	21	The topic was biosphere in totality, only mention of plants

Assessment by Expert Dr Dinesh Gautam

S. No	Name of school	Class	Project Design	Study area	Field Work	Study material	Scientific input	Innovation/ Management	Total marks	Remarks
			5	5	5	5	5	5	30	
1	Arwachin International School, Dilshad Garden Delhi	9th and 11th	3	nil	5	2	4	3	17	Study area covered not mentioned, only names of animals and plants are mentioned, no picture of plants and animals taken and no details about them
2	ASN Sr.Sec. School Mayur Vihar Ph 1,Delhi	7th, 8th & 9th	5	5	5	4	4	4	27	Only pictures of animals and plants from the study area given, no details about them
3	Bharatiya Vidya Bhawan K G Marg New Delhi	9th, 10th & 12th	5	5	5	4	4	4	27	Students have put in good efforts,pictures are of good quality
4	Bhatnagar International School, Paschim Vihar New Delhi	8th to 11th	5	5	5	5	4	4	28	Project work is good, well presented with lots of photos and information.
5	Birla Vidya Niketan Pushp Vihar New Delhi	9th, 10th , 12th	4	4	3	4	4	3	22	Pictures are not of good quality, Lot of data has been put in the presentation

6	Brain International School Vikas Puti New Delhi	8th & 9th	5	5	5	5	4	4	28	Only pictures of animals and plants from the study area given, no details about them
7	Evergreen Public School, Mayur Vihar, Vasundhara Enclave Delhi	9th, 11th & 12th	3	4	4	3	3	2	19	Data not presented properly, study material is not written well
8	Greenfields Public School, Dilshad Garden, GTB Nagar Delhi	9th, 10th & 11th	3	3	3	3	2	2	16	Picture not submitted, report not written well
9	Guru Harkrishan Public School, Hargobind Enclave Delhi	9th & 10th	4	4	4	4	3	3	22	Data not properly arranged,
10	Little Flowers Public Sr Sec School, Shivaji Park, Shahdara Delhi	11th & 12th	5	5	5	4	4	4	27	Good presentation
11	Lovely Public Sr Sec. School Priyadarshini Vihar Delhi	9th, 10th, 11th & 12th	4	4	4	4	4	3	23	Pictures of animals and plants are not taken from the study area
12	Maharaja Agarsen Public School, Ashok Vihar	8th & 9th	3	2	2	3	2	3	15	Class not mentioned, study area not declared, no picture of plants or animals in the field
13	Mayur Public School, I P Eetension, Delhi	8th, 9th & 11th	5	5	5	4	4	5	28	Only pictures of animals and plants from the study area given, no details about them
14	MM Public School Pitampura New Delhi	8th	3	2	3	3	2	2	15	Study area not declared, only 5 animal pictures included in report

15	Mount Abu Public School, Sec. 5, Rohini, New Delhi	9 & 10th	2	2	2	3	2	3	14	Study area not declared, project didn't involve biodiversity of the study area, work on water and soil purification only, no picture of plants or animals in the field
16	SD Public School, Pitampura New Delhi	7th, 8th & 9th	3	3	3	3	3	3	18	No animal picture reported from the study area, ppt slides not in order
17	SLS DAV Public School , Mausam Vihar Delhi	8th-12th	3	2	3	3	2	2	15	No pic of animal or plant from study area, only 4-5 animals and plants each discussed
18	Somerville Public school, Vasundhara Enclave Delhi	9th & 11th	3	3	4	1	1	1	13	No write up about the animal and plant observed in the study area
19	Venkareshwar International School , Sector 10 ,Dwarka New Delhi	11th	3	3	2	3	2	2	15	No picture of plants and animals from the study area,
20	Venkateshwar Global School , Sect 13, Rohini , Delhi	8th, 9th & 10th	4	4	4	3	3	3	21	No picture of the animals in the study area

2.8 Ranking of schools that were rewarded during award function on 24th April 2019.

S No	School Name	Marks Alloted (out of 120)
1	Bhatnagar International School, Paschim Vihar New Delhi	107
2	Mayur Public School, I P Extn., Delhi	102
3	Guru Harkrishan Public School , Hargobind Enclave Delhi	96
4	ASN Sr.Sec. School Mayur Vihar Ph 1,Delhi	95
5	Brain International Vikas Puri New Delhi	94
6	Venkateshwar Global School , Sect 13, Rohini , Delhi	90
7	Lovely Public Sr Sec. School,Priyadarshini Vihar Delhi	87
8	Little Flowers Public Sr Sec School ,Shivaji Park, Shahdara Delhi	84
9	SD Public School Pitampura,New Delhi	81
10	Bharatiya Vidya Bhawan K G Marg New Delhi	79
11	Birla Vidya Niketan Pushp Vihar New Delhi	73
12	Venkateshwar International School ,Dwarka	73
13	Arwachin International School, Dilshad Garden Delhi	68
14	Evergreen Public School, Mayur Vihar,Vasundhara Enclave Delhi	67
15	Mount Abu Public School, Sec. 5, Rohini, N. Delhi	66
16	Greenfields Public School, Dilshad Garden ,GTB Nagar Delhi	63
17	SLS DAV Public School , Mausam Vihar,Delhi	60
18	Sumerville Public School, Vasundhra Enclave,Delhi	59
19	M M Public School Pitampura,New Delhi	55
20	Maharaja Agarsen Public School, Ashok Vihar New Delhi	41

3. About implementing organization “Millennium India Education Foundation”

Millennium India Education Foundation (MIEF) is a not-for-profit organization headquartered in Delhi, India. MIEF works towards the promotion, encouragement and conduction of research in the fields of education, health, science & technology and community development (art, environment & culture). MIEF is registered under Indian Trust Act 1881 Regd no: 8070/4 year 2003.

Objectives:

- a) Promotion, encouragement and conduction of research in all aspects of education
- b) Promoting science & technology, art ,culture, health, animal health & environment education
- c) Community development programs like developing community based, profession based databases in the form of directories,
- d) Undertaking research and market studies aimed at overall community development
- e) Facilitating proper health care to people through MIEF Health Cards,
- f) Undertaking research in the fields of humanities and natural, physical, social or applied sciences and technology etc.

Our Goals:

- i. To connect young generation to the languages like Sharada so that the ancient scripts of great relevance can be deciphered.
- ii. To help people take up measures aimed at prevention of diseases of public health significance, communicable from animals to human and vice versa through “**One health**” concept. The platform offers help to exchange knowledge gained by researchers, practitioners of animal, human, agriculture and environmental sciences and thus proves helpful to devise a common mechanism aimed at maintaining a healthy ecosystem in the society.
- iii. To help people understand and popularize science aimed at creating a healthy biodiversity in the neighborhood and help reduce climate change-related effects on all life forms.

Projects at hand:

- a. **Science Popularization in school and colleges: By organizing** activities aimed at popularizing science in schools and colleges, develop scientific aptitude and promote scientific thinking amongst School children, youth and teachers. The activities include observance of National and World Days in schools and colleges (like World Earth Day, Environment day, Ozone day, Water Day, National Science Day etc.) , organizing competitions , on field surveys and studies, lectures, workshops , mobile planetarium shows etc.
- b. **Revival of Sharada script**, an ancient and almost extinct Indian script believed to have been developed around 7th century AD in ancient Kashmir.
- c. **Create scientific awareness on diseases** of public health importance that are communicable from animals to humans (**zoonoses**)
- d. **Create awareness about environment and climate change** through activities aimed at **popularizing science** among the young to address these issues.

4.0 Activity wise snap shots.

5.Copy of the participation certificates distributed to schools and students