



SIR CV RAMAN NOBEL LAUREATE  
NATIONAL SCIENCE DAY 2020

PROMOTING SCIENTIFIC LITERACY  
BUILDING SCIENTIFIC TEMPER

## Highlights 2019-20



सत्यमेव जयते

NATIONAL COUNCIL FOR SCIENCE & TECHNOLOGY COMMUNICATION  
DEPARTMENT OF SCIENCE & TECHNOLOGY  
MINISTRY OF SCIENCE & TECHNOLOGY

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**NATIONAL COUNCIL FOR SCIENCE & TECHNOLOGY COMMUNICATION  
DEPARTMENT OF SCIENCE AND TECHNOLOGY  
TECHNOLOGY BHAWAN, NEW MEHRAULI ROAD  
NEW DELHI 110016**



## PREFACE



The programmes of NCSTC are devoted towards societal upliftment through dissemination of scientific knowledge with accessibility and inclusion of all. NCSTC aims at fostering scientific temper and building capacity for informed decision making in the community.

As rightly said by our honourable Prime Minister, good governance is also about integrating science and technology into the choices we make. Therefore, the NCSTC programmes are now poised to grow further in sync with national priorities. A wide range of initiatives and programmes for mass awareness & capacity building are targeted at children, youth, and women, and also serve the underprivileged. We hope to help them to be greater partner in a path to a prosperous sustainable future.

With the theme, **“Women in Science”** for this National Science Day, we re-dedicate ourselves to enabling a sterling role of Indian women in scientific pursuits and developing scientific and innovative mindset in the country and strengthening the initiatives to further its march towards a better world order.

The NCSTC focuses on outreach activities, training in science and technology communication, development, production & dissemination of S&T resource materials through a different mass media, incentive programmes, field based projects, research in S&T communication, international co-operation, motivating students, and building field capacity on burning issues through science communication in variety of formats.

NCSTC has flagship outreach initiatives for Science Communication and Popularization chiefly – Science Channel, 24X7 Indiascience internet channel, Mobile Science Exhibition (MSE), demonstration programmes on Science, Technology, Engineering, Mathematics and Medicine (STEMM) and Augmenting Writing Skills for Articulating Research (AWSAR) aim to disseminate the research work of research scholars/scientists among the masses by making it popular through easy to understand and interesting articles.

In view of changing scenario of media and communication in the country, it is envisaged to strengthen the outreach programmes and increase their reach across the country and demography through mobile science exhibition, scale up of science channel and providing scientific content in Indian Languages through various digital platforms. We work at all levels of society to help build in the role of science for grand challenges and develop a system that ensures dissemination of appropriate scientific information and delivery of the desired social outcomes of science.

Finally, and most importantly, we congratulate the awardees under various categories for their excellence and valuable contributions in the field of science communication.



Dr. Akhilesh Gupta

Scientist 'G' & Head

National Council for Science & Technology Communication

Department of Science & Technology, Govt. of India

Technology Bhawan, New Mehrauli Road, New Delhi-110016

February 28, 2020, National Science Day



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**EDITORS**

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**National Council for  
Science & Technology Communication**



## National Council for Science & Technology Communication (NCSTC)

Public awareness of science as well as promotion of scientific temper amongst masses are two major objectives of Indian science communication programme spearheaded by the NCSTC, DST. Highlights of various activities and achievements are summarized here under different areas:

## Content Development Programme

### Science Channel

The Science Channel project, covering DD Science for DTH as one-hour slot on DD National and India Science as a 24x7 internet-based OTT channel, was mandated to VigyanPrasar by DST and formally inaugurated by Hon'ble Union Minister for Science and Technology, Dr Harsh Vardhan.

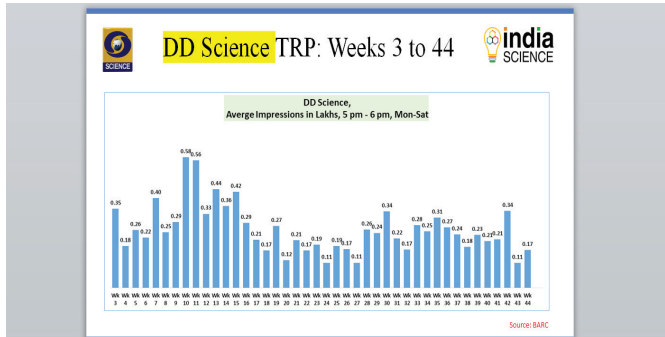


Dr. Harshvardhan, Minister of Science & Technology and Earth Sciences addresses at the launch of DD Science

Ever since January 15, 2019, DD Science has been available on DD National from 5 pm to 6 pm, Monday to Saturday. Similarly, India Science has been available on the web ([www.indiascience.in](http://www.indiascience.in)) and as downloadable apps on Android and iOS smartphones. Both the channels have a mix of English and Hindi films, comprising documentaries, interviews, studio-based discussions, weekly wrap-ups of science news etc. A total of 619 programmes have been produced since launch of the Channel. All films produced by Vigyan Prasar are hosted on India Science, while some are telecast on DD Science based on relevance and audience interest.

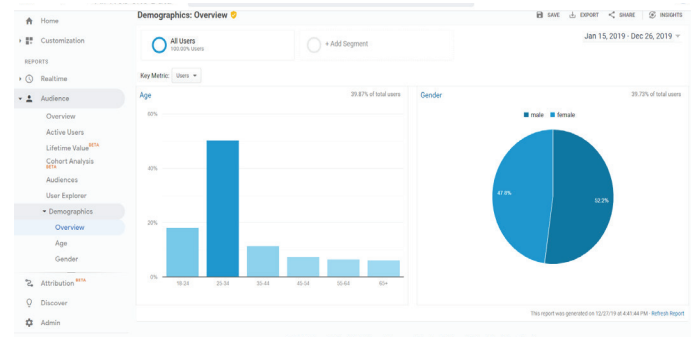
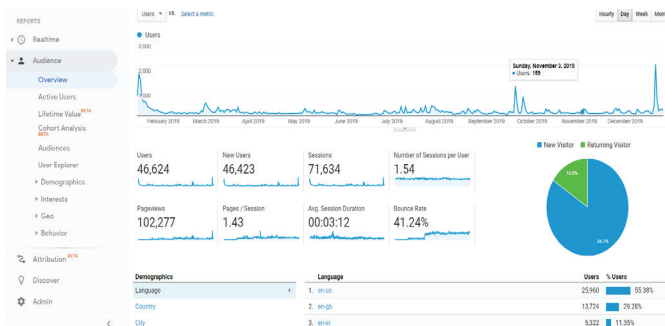
### DD Science

DD Science has been telecasting one Hindi and one English film everyday, from Monday to Saturday since January 15. Barring very rare occasions when the telecast is superseded by other DD programmes of national importance, the DD Science schedule has been built keeping audience interest in mind. A weekly science news wrap-up programme in Hindi and English is telecast every Monday.



## India Science

India Science has a predominantly youth audience, who consume content mostly on smartphones. As much as 72% of the audience accessed India Science on smart phones while desktops/laptops brought 26% of the audience. The rest of the audience used tablets or ipads. The OTT channel has so far been accessed from 144 countries, of which India constitutes 85% of the audience, while the United States comes second with about 6%. The male-female ratio in audience is almost equally poised.



Global reach of OTT Channel India Science

## Development of S&T Content on Wikipedia in Indian Languages

Development of S&T Content on Wikipedia in Indian Languages a new initiative which supports the government's Digital India and Information for All. It is being developed with the vision to popularize science and technology through Wikipedia in Indian languages. The initiative is desired to help create a scientifically empowered society, which can foster a culture of science communication.

Formal discussions of group of experts have been conducted and an official expert committee has been constituted based on their commendations drawing diverse expertise including science and technology, encyclopedia, quality control, education, data science, media, and intellectual property rights, etc. Under the guidance of expert committee, two meetings have been successfully conducted and proposals from IIIT

Hyderabad, IIT Kanpur and CDAC- Noida have been recommended in-principle for DST support. The key objectives of the initiative are as follows:

- a) To scale up the qualitative S&T content on Wikipedia in Indian languages
- b) To build the S&T open knowledge communities for sustainable growth of Wikipedia and other similar platforms sharing knowledge. The communities may include students, teachers, schools, lecturers, professors, Wikipedia enthusiasts, Wikipedia volunteers, organizations, institutions etc.
- c) To promote the S&T content so as to create awareness of the available knowledge resources for the need to contribute to community knowledge creation.
- d) To employ technology by fine tuning the natural language processing tools for Indic Languages, by development of machine translation framework and using bots.
- e) To upload created S&T content in Indian Languages on Wikipedia.

The beneficiaries of this initiative would be all the citizens of India and global communities, especially those interested in Science and Technology information in Indian languages. Proposals from IIIT Hyderabad, IIT Kanpur and CDAC- Noida have been recommended in-

principle for DST support.

## Professional Development Programme

### Augmenting Writing Skills for Articulating Research (AWSAR)

First national competition for 'popular science story' submission was organized under AWSAR, a unique initiative of Department of Science and Technology (DST) that aims to connect existing gap in communicating research to common person by utilizing the latent potential of PhD Scholars and Post-Doctoral Fellows (PDFs). DST had received overwhelming response under this novel endeavor of science communication. AWSAR Award ceremony was organized on the National Science Day, 28 February 2019 to felicitate the awardees of top three stories under PhD Category and one outstanding story under PDF category.

A book compiling AWSAR awarded articles on 124 popular science stories under both PhD and PDF category was released by Secretary, DST, during the interaction meeting with Science Correspondents on 12 September 2019. Six workshops were organized at Chennai, Gandhinagar, Kolkata, Guhawati, Delhi and Lucknow to guide scholars about "How to write a popular science article". More than 600 scholars attended these workshops.



*AWSAR Award for Outstanding Story under PDF category*

Dr. Chandran Rethnaraj, Chennai, Tamil Nadu



*AWSAR Award for Outstanding Story under PDF category*

Dr. Joyita Sarkar, Pune, Maharashtra

Presentation of AWSAR Awards and release of publication



AWSAR workshop participants

*AWSAR Award for Outstanding Story (First Prize) under Ph.D. category*

Ms. Chris Felshia, Chennai, Tamil Nadu



*AWSAR Award for Outstanding Story (Second prize) under Ph.D. category*

Mr. Sayantan Sur, Delhi



*AWSAR Award for Outstanding Story (Second prize) under Ph.D. category*

Mr. Anand Abhishek, Pilani, Rajasthan



*AWSAR Award for Outstanding Story (Third prize) under Ph.D. category*

Mr. Anirban Sarkar, Kolkata, West Bengal



*AWSAR Award for Outstanding Story (Third prize) under Ph.D. category*

Mr. Chitrang Dani, Bengaluru, Karnataka



*AWSAR Award for Outstanding Story (Third prize) under Ph.D. category*

Mrs. M. L. Bhavya, Mysuru, Karnataka



## National Awards for S&T Communication and Popularization

NCSTC instituted National awards in 1987 to stimulate, encourage and recognize outstanding efforts in the area of science popularization and communication. Presently, there are six awards given as follows:

- *National Award for Outstanding Efforts in Science & Technology Communication in general:* It is presented to an individual or an institution for outstanding work in communication of science and technology and/or promoting of scientific temper which had the widest impact in the country during the past five years. The award consists of Rs.5, 00,000/- (Rupees Five Lakhs), a memento and a citation.
- *National Award for Outstanding Efforts in Science & Technology Communication through Print Media including Books and Magazines:* The award is presented to an individual or an institution for outstanding efforts in popularization of science & technology and/ or promoting scientific temper through books, magazines, Internet, etc, during the past five years. The award consists of Rs. 2, 00,000/- (Rupees Two Lakh), a memento and a citation.
- *National Award for Outstanding Efforts in Science & Technology Popularization among Children:* The award is presented to an individual or an institution for outstanding work in

popularization of science & technology and/or promotion of scientific temper among children which has had the widest impact in the country during the past five years. The award consists of Rs. 2, 00,000/- (Rupees Two Lakh), a memento and a citation.

- *National Award for Outstanding Efforts in Translation of Popular Science & Technology Literature in Languages Mentioned in the Eighth Schedule of Constitution of India and in English:* It is presented to an individual journalist or an institution for outstanding work in translating popular science and technology literature in and from regional languages during the past five years. The award consists of Rs. 2,00,000/- (Rupees Two Lakh), a memento and a citation.
- *National Award for Outstanding Efforts in Science & Technology Communication through Innovative and Traditional Methods:* It is presented to an individual correspondent or an institution for outstanding efforts in communication of science & technology and/or promotion of scientific temper through print media during the past five years. The award comprises Rs.2,00,000/- (Rupees Two Lakh), a memento and a citation.
- *National Award for Outstanding Efforts in Science & Technology Communication in the Electronic Media:* This award is presented to an individual correspondent or an institution

for outstanding efforts in communication of science & technology and/or promotion of scientific temper through radio and/or television media during the period under consideration. The award comprises Rs. 2,00,000/- (Rupees Two Lakh), a memento and a citation.

*National Award for Outstanding Efforts in Science & Technology Communication through Print Media including Books and Magazines*

(1) Dr. Suryamani Behera, Odisha

(2) Dr. Amiya Rajbongshi Assam





*National Award for Outstanding Efforts in Science & Technology Popularization among Children*

(1) Sh. Deepak Sharma Uttar Pradesh (2) Kisan Sewa Sansthan, Uttar Pradesh



*National Award for Outstanding Efforts in Science & Technology Communication through Innovative and Traditional methods*

(1) Dr. Mahesh Verma, Delhi  
(2) Dr. S. Nagarathinam, Tamilnadu and  
(3) Dr. Rajendra Kumar, Delhi



*National Award for Outstanding Efforts in Science & Technology Communication in the Electronic Medium*

(1) Dr. Uma Kumar, Delhi



## Hands-on Science Programme

### **National Children's Science Congress 2019**

National Children's Science Congress (NCSC) is a flagship programme of the Department of Science & Technology to initiate the young students of the age group of 10-17 years in the process of scientific thinking and satisfying their quest for scientific knowledge through doing projects. Children have a burning desire to understand how and why of processes occurring in nature. NCSC provides a platform to fulfil this desire. Started in 1993 by National Council of Science and Technology Communication (NCSTC), NCSC encourages a child scientist to identify some societal problems and motivate to arrive at a possible solution through his research based solutions. The children often work as a team

under the mentorship of their teacher. They try to understand the cause of the problem and solve the same using methods of science. The process encourages the scientific thought process of child scientists, analyses an application of scientific theories to the problem solving through innovative approach.

NCSC covers almost all the districts of the country with a participation of over 500,000 students. Emphasis is on hands-on science and presentation of the results and its analysis. Some teams also presented working prototype and models. Through a process of evaluation, best of promising ideas and projects were shortlisted for presentation at State level. The current edition of National Children's Science Congress is being convened with a theme of Science Technology and Innovation for Clean, Green and Healthy Nation.

About 655 projects were shortlisted for a presentation at national level. This included 15 projects of Indian children studying in school in Gulf countries. The whole process of NCSC is guided by an Activity Guide Book (AGB) which was prepared in consultation with experts. The final of NCSC was held during 27-31 December, 2019 at Thiruvananthapuram.



Eminent scientists from agencies like Bhabha Atomic Research Centre, Homi Bhabha Centre for Science Education, Indian Institute of Science Education and Research, ISRO participated in NCS and interacted with the participants and address their queries.







## Rashtriya Kishore Vigyanik Sammelan

The Child Scientists from the best projects of NCSC 2019 also participated in Rashtriya Kishore Vigyanik Sammelan held at University of Agricultural Sciences, Bengaluru as part of 107<sup>th</sup> Indian Science Congress during 4-6 January, 2020. The students got an opportunity to interact with the best of the Indian scientists who visited their exhibition during the Indian Science Congress. This provided the Child Scientists an opportunity to sharpen their scientific temperament and knowledge and learning from the best of the Indian scientists during the event.



## Low Cost teaching-learning Aids

Training workshops were supported in different states such as Andhra Pradesh, Goa, Madhya Pradesh, Punjab, Haryana, Himachal Pradesh, Uttarakhand, Rajasthan, etc. with an aim to empower teachers in understanding the importance of learning through hand-on and/ or through one's own personal experience, and not simply based on what is written in text books.

The participating teachers further encouraged students and promoted the concept of learning science by fun.

Regional training workshops on 'Teaching Mathematics through Origami' were organised for school teachers and other mathematicians working in professions related to Mathematics in Punjab, Haryana, Himachal Pradesh, Uttarakhand and Rajasthan. Workshops were supported for making mathematics learning interesting and enjoyable through innovative and interactive methods. 163 Mathematics teachers were trained with guidance from the well-known Origami expert, Sh. VSS Sastry. It helped popularize methods of teaching Geometrical and Mathematical theorems among teachers through the interesting and fun filled activity of Origami.

The workshops imparted skills to teachers for promoting hands-on learning of Mathematics among students by training them to use their motor skills to fold and crease paper into fun shapes and structures and build skills involving spatial reasoning, following precise directions in sequence, fractions, geometry, etc.



Workshop on Mathematics through Origami

### Explaining Science behind so-called Miracles

Training workshop and performances were supported in different states such as Assam, Jharkhand, Uttar Pradesh Uttarakhand, Haryana, and Madhya Pradesh, to create local activists (science communicators) who can go to the field and expose prevalent blind beliefs and help inculcate scientific temper among the masses.

Training workshops and awareness programmes were carried out in three districts of Haryana i.e. Karnal, Panipat and Jind. 247 participants attended the workshops and after the workshop, performed activities in 125 schools and 43 gram panchayats, and also directly reached to 93167 people under awareness programme.



Training workshop on Explaining Science behind so-called Miracles

### Science Exhibitions on Wheels

Mobile Science Exhibitions/ Mobile Science Lab (MSL) is a unique initiative. It aims to reach the unreached with the message of effective Science Communication and for developing scientific temper among the masses, especially students at their school premises. The main objective of the exhibition is to generate awareness and to disseminate scientific information in interesting and innovative formats. The idea of mobile science exhibition bus was conceived to reach the unreached. The activities include science model exhibition, regular sky gazing camps through telescope and scientific explanation to so-called miracles, etc. The target group for these activities includes general public, school &

college students, youths, women, teachers, gram panchayat members, voluntary organizations and policymakers, etc.

This exploratory-on-wheels is reaching out to schools, especially those having no or very little access. This includes schools from interior, rural and peri-urban areas; and focusing on those from aspirational districts. Through this Mobile Exhibition/ Lab, students will get an opportunity for hands-on engagement in science activities which will help them in understanding difficult curriculum-based concepts with fun and ease. NCSTC, Dept. of Science & Technology has been supporting such mobile science labs in different parts of the country. One such Mobile Lab is being run by Vikram A Sarabhai Community Science Centre (VASCSC), Ahmedabad, to reach out to schools in Gujarat. In 2018-19, it directly reached out to 119 schools. The project included schools from aspirational district of Dahod and schools in other districts from interior and rural areas. 33673 students and 1279 teachers participated in activities of the Mobile Science Lab. All the activities, demonstrations, etc., were developed in line with school curriculum highlighting themes such as Science behind so-called 'Miracles', Swachchh Bharat; exhibitions and interactive exhibits; quiz; movies, etc. The on-board team of Science Communicators also took up local community engagement activities wherever possible for developing awareness

A team of Science Communicators fluent in local language accompanied the Joy of Science mobile lab to facilitate students in performing the activities. Each school received full day of intense intervention. The methodology to impart the content included hands-on sessions like model-making, simple experiments, demonstration of scientific phenomena. The MSL carried necessary equipment, gadgets, kits, consumables and other articles required to perform science and Mathematics sessions. The vehicle served to transport the team, consumables and equipment required to set up the Lab at the destination.

The lab primarily focused on schools from remote areas having very little or no access to quality science exposure. The MSL also reached tribal schools of one of the aspirational districts of Gujarat, Dahod. In Punjab the Mobile Science Exhibition (MSE) bus is equipped with 24 indoor and outdoor interactive exhibits and information panels, which will give students/ visitors an opportunity to learn through the process of interaction and discovery. The broad components of exhibition are Health Education, Energy Education, Waste Management, Water Management and Environment Education. Besides, MSE is also equipped with Mobile Planetarium. This outreach programme is intended to carry the activities of Science city to the door steps of the rural population and spread the message of Science to work towards sustainable development. During the



year 2019-20, 490 schools comprising 79992 Students, besides 32432 general public visited MSE bus from April 2019 to December 2019. The main focus of MSE during the year was on Swachh Bharat Mission, The activities included also a Swachhta Pledge by Students and teachers to keep the Environment clean and create a clean India, Waste Management through Vermi-composting in the schools, demonstration of exhibits " Look at Your Hands", awareness to clean their classrooms and school. In Delhi STEMM BUS run by ANMOL in Delhi region is a promising Science Awareness programme with a mission to popularize science among students and General public of Delhi. This STEMM bus installed with many interactive and information Science exhibits and informational models, which give an opportunity to learn science through the process of interaction and discovery, with an emphasis to develop an informed and knowledgeable society. The team of bus is also conducting activities like Fun with Science, quiz competitions, poster making, Science lectures and Science Magic workshops side by side at different locations. The bus has been on tour since April 2019 covering many govt., semi govt., pvt. Schools and many public places, aiming at reaching out to the people from all walks of life through fun and accessible scientific content, removing the barriers to engagement, and targeting selected areas of West, North west, South west, South, North, East Districts of Delhi. The bus has covered

approximately 102 schools and many Public places. Almost 25000 students have visited the bus along with approximately 1700 teachers. Similar kind of Mobile Science Exhibitions / Lab Buses also run in Assam, U.P, Haryana, M.P, Kerala, and Andhra Pradesh for Science Popularization.







### *School Activity*

The standard elements at each school halt:

**Demonstrations:** Explanation of scientific concepts through interactive and fun experiment demonstrations, explaining the science behind them, correlating with topics in the syllabus and showing their practical applications.

**Hands-on Activities:** Every student is given material to prepare a working model based on scientific principle that they carried home. Activities and level of explanation were designed for appropriate age groups.

**Interactive Exhibits:** Demonstration of interactive exhibits was carried out which were then set up in the school premises for students to try out on their own.

**Exhibition Panels:** Panels with information on different aspects of science and Mathematics were displayed for children to explore on their own from which quiz questions were also asked.

**Quiz and Science Games:** Science games, quiz and question-answer session based on the day's sessions were conducted. Prizes were distributed including booklet on science behind so-called miracles, wall planner, periodic table chart, badges, etc.

**Science behind so-called Miracles:** Experiments aiming at explanation of 'miracles' or superstitious



Mobile science exhibitions visit rural areas

practices in rural areas were demonstrated in schools. A special 3-hour session was also conducted in a market for the community in Devgad Baria, Dahod.

**Model Rocketry:** The activity included explanation and demonstration of model rockets and their launch and explanation of the science behind it.

**Resource Material:** The school was presented with useful resource material in Gujarati, which could be used in the schools later on.

The students and teachers at respective halts received the Mobile Science Lab enthusiastically. They found the experience very useful and a great addition to their learning. The students learnt several complex concepts through interactive and participatory sessions.

### **STEMM- Mobile Science Exhibition Buses**

STEMM-Mobile Science Exhibition Buses is a new initiative, a joint endeavour of NCSTC, DST and National Council of Science Museums (NCSM), Ministry of Culture. It is a collaborative effort of its division NCSTC, programme INSPIRE/ MANAK and Vigyan Prasar. This comprises of twenty five mobile science exhibition (MSE) buses fitted with exhibits on scientific topics, jointly finalized by NCSM and DST, including measurement mania, chemistry in life, hygiene and sanitation, machines transforming lives, machines reduce effort, food and nutrition and space sciences for

human welfare and energy, which are travelling to schools in rural areas vis-a-vis Aspirational districts round the year for communicating science and technology to school students.

Proposals from Network of Organizations for Science and Technology Communication (NOSTC), Vikram A Sarabhai Community Science Centre (VASCSC), Gujarat and Centre for Creative Learning, IIT Gandhinagar have been taken up at 4<sup>th</sup> meeting of Technical Advisory Committee on STEMM-India Initiative and were recommended in-principle for DST support. The initiative aims to trigger the spark among the rural children for nurturing interest in Science in 117 Aspirational districts in 28 states.

## **Scientific Literacy Programme**

### **National Science Day (NSD)**

The National Science Day 2019 programme was supported all over the country on the theme, "Science for the People and People for Science", through State S&T Councils to name a few are Andhra Pradesh, Arunachal Pradesh, Assam, Chhattisgarh, Goa, Himachal Pradesh, Karnataka, Kerala, Maharashtra, Manipur, Mizoram, Nagaland, Punjab, Sikkim, Tamil Nadu, Telangana, Tripura, Uttarakhand, and West Bengal.

Celebration of National Science Day begin or culminate on 28 February and activities such as essay competitions, painting competition, science

lectures, debates, quizzes, exhibitions, lectures, workshops, awareness programmes, etc. were organized in states through schools, colleges, universities, R&D laboratories, S&T based NGOs, academic institutions etc. These activities are organized nationwide through State S&T Councils.



PIC: NSD Celebration at Govt. Champhai College



### National Mathematics Day (NMD)

The National Mathematics Day 2019 programme was supported all over the country through State S&T Councils, to name a few - Andhra Pradesh, Arunachal Pradesh, Assam, Chhattisgarh, Goa, Haryana, Himachal Pradesh, J&K, Karnataka, Kerala, Maharashtra, Meghalaya, Mizoram, Nagaland, Punjab, Tamil Nadu, Telangana, and Uttarakhand

Celebrations of National Mathematics Day begin or culminate on 22 December to commemorate the birthday of Srinivasa Ramanujan, the great mathematician, with a focus on popularizing Mathematics. The activities like debates, quizzes, exhibitions, lectures, training programmes, hands-on activities, math-lab activities and other

innovative and novel techniques were organized in states involving colleges and schools students through State S&T Councils.

### Science communication through folk forms

Training workshops and awareness programmes were supported in different states such as Jharkhand, Madhya Pradesh, Orissa, Karnataka, Punjab, Tamil Nadu, and Uttarakhand with an aim to develop resource persons as science communicators through folk media.

Training workshops were organized in 5 districts of Karnataka State – Gadag, Koppal, Dharwad, Bagalkote, and Haveri. During the workshops, 390 young science communicators among teachers, students and professional folk artists were trained and motivated to perform plays to communicate popular science topics. 35 science communication plays were created as a result of the workshops during the trainings. A manual in Kannada on “Puppetry and Science communication in Education” was published on the experience gained at the workshop organised in five districts.



Puppet shows by professional team



Puppet shows by professional team

### Bharat Vigyan Darshan- STEMM India

'Science, Technology, Engineering, Mathematics and Medicine (STEMM) India' activities comprise of Science fairs, melas, expositions, mobile science exhibitions, lecture-demonstrations, interactive media, visits to S&T establishments like labs and industry, hands-on-STEMM activities, and so on. These events, whether stationary or mobile, including mobile science exhibitions, serve to utilize the expertise of resource persons trained/being trained by NCSTC in various aspects of activities listed above. Different kinds of demonstrations on a variety of STEMM themes and also on environment, health, medicine, etc. are held across the nation, Support is extended for scientific awareness and exposure activities on these realms including hands-on activities, science in toys & games, quizzes, solve a puzzle, mathematical games & activities, ask a good question, short design/redesign, spot-the-odd-one, draw a future, painting, presentations, etc., besides skits and street plays, on select themes.

Science exhibition is one of the most important activities to create and enhance scientific knowledge of children, teachers, parents, people's representatives and common man. It also brings about change in their attitude. It is participatory in nature where audiences learn by participating. DST initiated static and mobile Science Exhibitions, Motivational Talk visits to S&T establishments like labs and industry, S&T Fairs,

Basic Science experiment workshops, technology and innovation workshops, etc. besides lectures, Hands-on activities, demonstration of workmanship on different engineering processes, technological development and innovative methods. More than 64 static and mobile exhibitions were organized in Andaman & Nicobar Islands, Andhra Pradesh, Arunachal Pradesh Assam, Chattisgarh,, Bihar, Delhi, Punjab, Madhya Pradesh, Jammu & Kashmir, Jharkhand, Haryana, Uttarakhand, Uttar Pradesh, West Bengal, Orissa, Rajasthan, Tripura, Kerala, Nagaland, Manipur and Maharashtra.





### India International Science Festival 2019

With an endeavor to promote scientific attitude amongst masses including young students, NCSTC set up an activity corner in the DST pavilion during the India International Science Festival (IISF) 2019 from 5-8 November, 2019 at Kolkata. The prime objective of the IISF is to instil scientific awareness amongst the masses and showcasing India's contribution in the field of science & technology over the years. It was inaugurated by Dr. Harsh Vardhan, Hon'ble Minister for S&T and ES on 5-8 November, 2019. Apart from routine activities, there were corners like Hydroponics, Vermin composting, fun with science, Low cost, aids Science behind Miracles, etc. A puppet show was staged in the pavilion



on the theme “Swachh Bharat, Swastha Bharat” (Clean India, Healthy India) to inculcate the habit of maintaining cleanliness at home and the surroundings.



Prof. Ashutosh Sharma, Secretary, DST interacts the IISF delegates



IISF, Kolkata



IISF, Kolkata



IISF, Kolkata



Students at *IISF, Kolkata*

### Perfect Health Mela

26<sup>th</sup> MTNL Perfect Health Mela was organized by Heart Care Foundation of India (HCFI), which is one of the most visited community health event held annually in Delhi since 1993. It covers all aspects of health, addressing all segments of society using the medium of low-cost replicable education modules like exhibitions, competitions, infotainment and free health check-ups under one roof. NCSTC participated in this event for science popularization & outreach activities for students & general public and organized exhibition with science activity corners 18<sup>th</sup>-20<sup>th</sup> October 2019 at Weightlifting auditorium, Jawaharlal Nehru Stadium, New Delhi. 40000 people from all age groups and walks of life visited the 26<sup>th</sup> Perfect Health Mela on the theme Fit Delhi – Fit India with Mottos “Mein Fit to Hai India Fit” and “Mein Khush to Hai India Khush”. 3000 children participated from slum areas. More than 3600 children from over 100 Schools and Colleges participated in 52 health competitions with the help of 1000 volunteers and 129 organisations including 18 government departments. 220 specially challenged children from 11 schools were sensitised on health through talent hunt competitions and 250 children with expertise in classical dance from 30 colleges showed their skills and participated in talent search competitions. NCSTC put up a Mobile science activity bus, Taramandal and science activity corners from 16<sup>th</sup> Oct to 20<sup>th</sup> October 2019. The participation was appreciated by one and all who

visited these stalls. Students in particular were enthralled to experience by themselves various activity corners that were being demonstrated in the science bus like about earth quakes - how it happens, similarly in Taramandal, students and other visitors learnt about our universe , milky ways , stars and planetary positio



Taramandal and a science activity corner

## Mission Eco Next

### *Eco Eureka and Eco Studio Workshops in Kerala and Tamil Nadu*

Youth engagement workshops are supported about instilling scientific temperament among the young minds by adopting experiential learning methodology. Students learn by experiencing the nature and related activities, this in turn enhances their understanding on nature and as well creates a positive impact towards nature conservation.

A group of 20 youth/ students of 18-25 years from various parts of Palakkad District of Kerala State were engaged in the five days' Eco Next Studio workshop focused on capacity, imagination Skill/ Competence Building. The participants got an opportunity to learn about local ecology and environment, environmental quality monitoring methods, impact of floods of August 2018, climate change adaptation methods and need for the change in crop patters. They also identified based on GIS the landslides which happened in 2018 and Kerala Floods of 2019. They visited Govt: Orange & Vegetable Farms and also the Pullukkad Tribal Colony, Nelliampathy of the Western Ghats and interacted with natural resource managers, scientists, academicians, foresters and other field level staff.

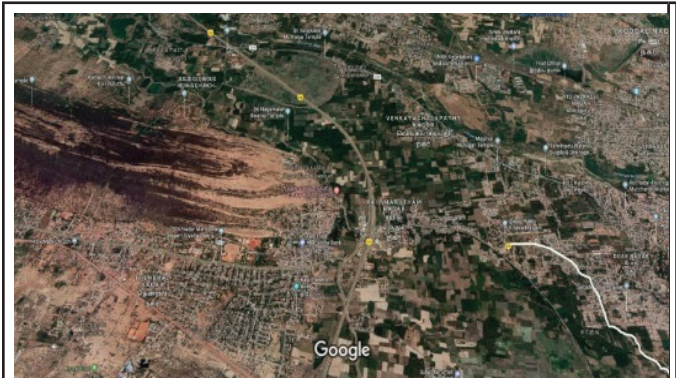
Another group of 25 youth/ students of 18-25 years from various parts of Coimbatore District

of Tamil Nadu attended the five days Eco Eureka workshop. They were involved in a series of nature-based outdoor activities designed to enhance their awareness and in-depth understanding about nature and natural systems. The participants were trained on environmental quality monitoring procedures i.e. analyzing the pollution level on air, water, noise and soil. They were also trained on laboratory procedures, usage of instrumentation, handling the water & soil field test chemicals and analysis of samples, followed by education and public awareness on the pollution levels. The participants got an opportunity to learn about local ecology and environment and also identified the local flora and fauna. They had an opportunity to visit Tiger Reserve of Parambikulam-naturally protected areas and interacted with natural resource managers, scientists, academicians, foresters and other field level staff.

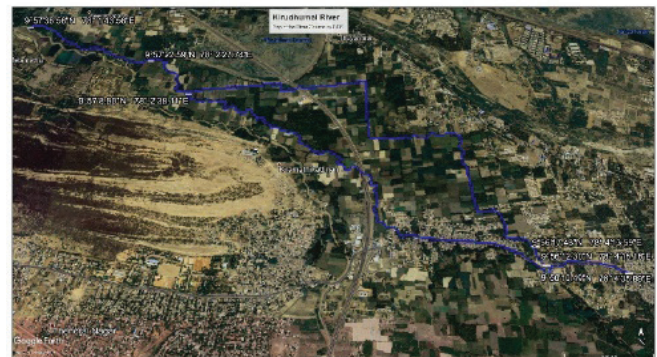
### *Eco Rise Challenge and S&T Communication for Young Change Makers*

Eco Next Studio trainings under the initiative through Madurai Kamraj University, Madurai have led to sensitized citizens of protecting our own ecological and natural resources. They have been envisaging for better ecological atmosphere at local and community levels. The trainees have drawn 12 KMs length of an ailing River Kirudhumal with GPS equipment with media interface. This is aimed at a revival attempt and remove the physical

obstacles of the river flow. This novel eco-media intervention is very handy in resolving the present-day issues of ecological sensitive areas.



Area of the River Kirudhumal, with no river path line in the Google Map.



12 KMs GPS line of River Kirudhumal's path in the origination place in Nagamalai hill in Madurai City.

*Eco Routes: Eco and wash dialogues for eco intelligent rural rejuvenation field capacity enhancement for states of Uttar Pradesh, Uttarakhand*

The foremost impact was the gradual attitudinal shift. The disadvantages like water stress or weather extremes was converted into advantage through scientific knowledge dissemination on Integrated watershed management, afforestation provision of alternate livelihood ensured that communities are not affected by vagaries of climate change. Training people, creating champions of change along with government functionaries and community together made the initiative policy wise viable and sustainable.



Convergence meeting of stakeholders with officials Chitrakoot



Multi Stakeholder consultation Bahraich

*Trainings of farmers as Eco-risk managers in Himachal Pradesh*

The farmers of different agro-climatic zones of Himachal Pradesh have become eco literate on various aspects of climate change and variability. The eco literacy was enhanced by training about 400 farmers and officers of development departments of the state at YS Parmar University of Horticulture, Nauni, Solan and generating 50 Eco-risk managers from all agro-climatic regions of Himachal Pradesh. The Eco-risk managers are continuously in touch with the university scientists for time to time agro-advisories in context to climate variability. Now the farmers have been equipped with appropriate location specific adaptation and mitigation strategies by offering the practical solution of the problems and supplying relevant literature. Crop diversification,

one of the adaptation technology, has now become part of their farming for enhancing sustainable horticulture crop production. The hill people have shifted to cultivation of pomegranate, kiwi and off-season vegetables in place of apple, the most vulnerable crop to climate change. The farmers have also shifted to protected cultivation of flowers and vegetables to save their livelihoods. They are adopting drip irrigation as one of the water efficient irrigation method and also using solar drier for drying their crop produce in natural conditions thereby saving the energy use and also adopting rain water harvesting technologies of the university. The farmers of the region are frequently taking help through mobile service regarding the cultivation practices, selection of the crops, insect pest infestation remedial measures and conservation of soil and moisture techniques in the present scenario of climatic variability.

### *TERI – NCSTC Eco Next Investigation for Youth*

The Energy and Resources Institute (TERI), New Delhi implemented the programme aimed at creating a cadre of youth who are more aware about the environment and are equipped with innovative and co- creative strategies to counter problems faced in areas of nature conservation, eco- restoration, and nature based solutions. Eco Eureka trainings were conducted for the age group of 18 – 25 years, in Delhi, Bangalore and Goa by about 60 experts for around 250 students Green Media Appreciation Workshop, Alwar

drawn from different disciplines on environment and sustainability, Science Communication and WASH related issues, communication skills, leadership potential and ability to form sustainable networks.



Students on an exposure visit at TERI Gual Pahari with NCSTC and TERI Experts



Students interacting with experts during the sessions with a walk through the Environmental Science Lab at TERI SRC, Bangalore



Students interacting during sessions and presentations to enhance their leadership potential and establish networks



Students interacting with experts on the use of GPS in Natural Resource Mapping at Lodhi Road, Delhi

### *Eco Media Dialogues*

Eco Media Dialogues, under multistate youth eco talent development campaign, have been held in Uttarakhand, Himachal Pradesh, Madhya Pradesh and Rajasthan on science communication and eco media for eco cultural rehabilitation and participants were identified for working on Green Media in their respective regions.

### *Training of Trainers (E3 Lab) on Eco Media, Eco Design and Eco Innovation centered Science Communication*

Training of Trainers (E3 Lab) on Eco Media, Eco Design and Eco Innovation centered Science Communication has been organized for trainers from Uttarakhand, Himachal Pradesh, Madhya Pradesh and Rajasthan who are now training the youth as Young Community Advisers on eco conservation and eco innovations.





Sessions by Resource Persons in E3 Lab

### *Green Media Appreciation Workshops*

Green Media Appreciation Workshops were organised by Green Tomorrow society in Alwar, Bharatpur & Sawai Madhopur for assessing potential of traditional and folk arts for sensitizing youth with green scientific insights.





*Eco Next 'Miles Challenge': Young Change makers of the Earth as saviours for native marginalised population of Kachchh towards adaptation to climate change vagaries*

Eco Eureka & Eco Studio Trainings involving nature trails and field workshops were organized by KSKV Kachchh University, Bhuj for the selected youth from various fields and hone their leadership skills as 'Young Change Makers' through eminent mentors for reaching with their message to the community on the issues that are climate change induced in environmentally vulnerable zone and its marginalised population in rapidly degrading Kachchh region, also called 'The Banni plains'





Trainees at KSKV Kachchh University, Bhuj

### *Eco Digital Literacy Campaign*

As part of the Eco Digital Jan Vigyan Jagriti outreach programme in Aspirational and Eco Rise Districts of Tamil Nadu, Karnataka and Andhra Pradesh, many innovative activities on Eco Digital awareness for youth were organized by P.N. Panicker Foundation, Thiruvananthapuram. The programme was inaugurated on 1<sup>st</sup> February 2019 at Aspirational District- Rameswaram for the protection of the green earth especially ensuring drinking water and motivating the creation of bio diversity parks. This is giving impetus to opportunities for youth in green economy sector as trained youth also served as youth skill facilitators in diverse capacities of eco media educators with schools, young community associates & advisors with Panchayats, Grama Sabhas, SHGs, NGOs etc. The activities also evoked interest among the general public to go for setting up of 'Miyawaki Forest', the latest innovation in

creating artificial forests in the abandoned spread of large extent of dry and uncared land of Tamil Nadu



Shri. Rakesh Ranjan IPS, Chief Consultant, Aspirational District Programme, NITI Aayog, Govt. of India, Shri. VeeraRaghava Rao IAS, District Collector, Rameswaram, Shri. N. Balagopal, Vice Chairman, P.N. Panicker Foundation, and Dr. Krishna Rao Appasani CEO, Science City, Andhra Pradesh



Street play and awareness event by Eco Volunteers and members of State Police Team

## Special Brainstorming Session on Science Communication

A special Brainstorming Session on Science Communication: The Way Forward was organised in conjunction with 13th Science Communicators' Meet (SCM) at 107th Indian Science Congress, Bengaluru on 06 January 2020. The session was chaired by Dr A.K. Shrivastava, CSIR-AMPRI Director and co-chaired by Dr R. Sreedhar, Former Director, CEMCA. The discussants included Dr M. Saibaba (NIAS), Dr Nagesh Hegde (Kannada Science Writer), Dr Rana Pratap Singh (BBAU), and Dr. Umashankar (GKVK), Ms. Savitha (IPS) amongst others. A lively interaction with the delegates and participants of SCM was held; they also gave their inputs and suggestions for the future of science communication and some important vistas emerged. Dr. Manoj Kumar Patariya, Adviser/Scientist 'G', NCSTC, DST moderated the session.



## Cooperation in Science Communication

### UNESCO Kalinga Award & Kalinga Chair for Science Popularization (*Biennial*)

The UNESCO Kalinga Prize for Popularization of Science is a prestigious award given by UNESCO for exceptional skills in presenting the scientific ideas to lay people. It was created in 1951, following a donation from Shri Biju Patnaik, then Chief Minister of Odisha and Founder President of the Kalinga Foundation Trust. Now the Prize is co-funded by DST, Government of India, Kalinga Foundation Trust and DST, Government of Orissa. Some of the past prize winners have been Nobel Prize winners. It is administered by the Science Analysis and Policies Division of UNESCO. The purpose of the Prize is to reward efforts of a person who has had a distinguished career as a writer, editor, lecturer, radio/television programme director or film producer, which has enabled him/her to help interpret science, research and technology to public. Many past prize winners have been scientists, while others were trained in journalism or have been educators/writers. The laureate is selected by Director-General of UNESCO upon the recommendation of a five-member jury designated by her/him. The recipient receives US\$40,000 and a UNESCO Albert Einstein Silver Medal. The recipient is also awarded the Kalinga Chair, introduced by the Government of India in 2001 to mark the 50th

anniversary of the Kalinga Prize. As holder of the Kalinga Chair, the winner visits India for a period of 2-4 weeks as the guest of Government of India. The Chair also comprises a token honorarium of US\$5,000.

Prof Erik Jacquemyn from Belgium is the winner of UNESCO Kalinga Award for Science Popularization for 2017. He was invited by Secretary, Department of Science and Technology to visit India as guest of Government of India for duration of 2-4 weeks to give lecture in various cities in India. Prof Jacquemyn was awarded the Kalinga Chair.





Prof. Erik Jacquemyn from Belgium, UNESCO Kaling Prize Winner visits DST

## Recognition for NCSTC

Indira Gandhi Prize for Popularisation of Science for 2020 has been announced by the Indian National Science Academy (INSA) during its Anniversary General Meeting held on 16-18 December 2019 at Goa. Dr. Manoj Kumar Patariya, Scientist 'G', NCSTC has been awarded the Indira Gandhi Prize for Popularisation of Science for 2020 under the

category of science popularisation efforts in English language by career media personnel. The award carries a cash prize of Rs. 25,000, a memento and citation. The INSA awards are to be conferred on the awardees in a function to be held in 2020.

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Sir Chandrasekhara Venkata Raman  
Nobel Laureate 1930



National Council for Science and Technology Communication  
Department of Science and Technology  
Ministry of Science and Technology  
New Delhi 110016

