

Science village (mega student camp): The gloomy state of rural schools is highlighted every year when Pratham (a NGO working on quality education) releases its Annual Status of School Education Report (ASER), which reflects lack of quality education in rural areas. Hence under this unique initiative, five students from classes IX to XI, and a teacher were nominated by members of parliament from the adopted village under Sansad Adarsh Gram Yojna. The students were exposed to interesting and thought-provoking hands-on science experiments on physics and chemistry, wherein they learnt practical aspects of the subjects. The programme relies on learning by doing and group activity. Around 1200 students from 25 states participated in the camp.

International science film festival: This seeks to promote science and attract talented young science film-makers. There were more than 80 entries from professional and student film categories, and a three-day workshop was held on using science films as a means to science communication and service to the nation. One such event is on 'Sciotoons', which is an acronym for science and cartoon for

science education and science communication.

DST-INSPIRE: As competitive examinations alone cannot identify the talent of youth, there is a dire need to do science that could excite and build critical human resource pool for strengthening the scientific base of the nation. Innovation in Science Pursuit for Inspired Research (INSPIRE) is an innovative programme sponsored by the Department of Science and Technology (DST) for attracting talent and seeding the joy of innovation in the age group of 10–15 years, i.e. 6th–12th standard students with Rs 5000 scholarship per child. After qualifying the district and state-level competition, 589 students across the country participated in the event. Sensitivity to societal concerns was reflected in the projects, such as devices for comfortably carrying head-load, safer railway crossings, etc.

NGO conclave: About 70% of people in India reside in rural areas. The Government lacks resources to reach every nook and corner of the country. Grass-roots level presence of NGOs along with citizen-centric governance provide benefits to the remotest corner, thus making NGOs a natural partner of the govern-

ment for development. This conclave was aimed to provide a platform for NGOs to develop a linkage among themselves, as well as with the research institutes, academia and policy makers for networking and exchange of ideas.

Thus, events like IISF can usher in a pivotal role for developing scientific temper among the masses. The ambitious efforts like Digital India, Make in India, Start up India and less cash economy can truly materialize only when science reaches the last mile which will strengthen the socio-economic fabrics of our country. The India International Science Festival is a dedicated effort in this direction.

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## MEETING REPORT

### World Science Day\*

On the occasion of UNESCO World Science Day for Peace and Development 2016, a day-long programme was jointly organized by CSIR-National Institute of Science Communication and Information Resources (NISCAIR) and United Schools Organization of India (USO). Many noted scientists interacted with school science teachers who participated in the programme.

Manoj Kumar Patariya (CSIR-NISCAIR) pointed out that the teacher–student bond is a rather strong, time-tested and important one which not only educates but fosters interest in science in school children. However, the scientist–

teacher and scientist–student bonds are either weak or non-existent, he added. He stated that at a time when students are getting weaned away from science, strengthening the scientist–teacher and scientist–student bonds can encourage students to pursue science. He also added that teachers can play a vital role in the scientist–student engagement and that such programmes were a suitable platform for the scientists and teachers to brainstorm on encouraging interactions among scientists, teachers and students.

A. K. Pandey (MP Private Universities Regulatory Commission) mentioned that it is essential to educate students about the many Indian contributions to science. He was of the view that teachers need to communicate about the pioneering contributions of great Indian scientists like Aryabhatta and others of ancient times. He said that highlighting the life and

work of famous Indian scientists is generally neglected, and awareness of their contributions can inspire and develop confidence among youth. He also stated that the process of attracting students to science should be initiated from the early stages of schooling.

Narender K. Sehgal (Kalinga Prize winner) who chaired the panel discussion said that science teachers should carry out simple experiments in the schools which can enthuse the students. He said that teachers can be the early role models for students. Sehgal was of the view that conducive environment should be provided to the students which encourages them to ask questions and carry out experiments. He strongly supported the need for internalizing the method of science among youth.

Binod Kumar Tripathi (NCERT, New Delhi) delved on the National Curriculum

\*A report on the day-long programme, 'Single Bond to Triple Bond: Encouraging Scientist–Teacher–Student Interaction' organized on the occasion of UNESCO World Science Day for Peace and Development 2016.

Framework (NCF) 2005. He said that NCF regulates subject teaching in the classrooms and textbooks play an important role in imparting education. He said that teachers have been traditionally playing the role of communicators, resulting in passive classrooms. He stated that the teachers have to shift their role as facilitators who can provide a suitable environment to usher in active classrooms where students can explore, experience and interact not only with teachers, but with other students and even with scientists to develop mastery.

Interacting with the panelists, the school science teachers highlighted the challenges faced by them in teaching science. A basic problem that these teachers faced was the inability of the school children to read and write properly, particularly in English, which the teachers reported was a major challenge in the teaching of science. They also stated that science laboratories in some schools did not have the basic instruments for carrying out experiments, and if they have the instruments, the students did not have easy access to them resulting in lack of practical knowledge. Teachers were of the view that making the practical works compulsory at early stages helps in retaining the curiosity of students as they move to higher classes.

The teachers conceded that there were some exceptional students who showed immense interest in science and were more inquisitive, but owing to the pressure of having to complete the syllabi and other compulsions, the teachers were not able to match the enthusiasm of such

exceptional students and sought to know how scientists can help.

The panelists discussed and responded to the issues raised by the teachers. It was concurred that some of the issues were with regard to language abilities of the students and creating a conducive environment for teaching and learning of science in schools required putting in place suitable mechanisms in the education system. It was also agreed that owing to financial constraints, schools found it difficult to purchase even basic instruments that were required for carrying out simple experiments. Even in the face of such limitations, the teachers should look for opportunities to pursue their demonstrable interest in science. The schools should also strive to seek support and engage with scientific institutions in the country.

Sehgal said that every child is curious and unfortunately, we unknowingly limit or lower their spirit of enquiry by our non-encouraging actions or words. He said that the science teachers have a vital role in developing scientific temper in school students and that is best done by answering all questions asked by children and encouraging them to ask more questions.

Patairiya said that institutions such as CSIR have mechanisms in place that allow school students to engage with the scientists in the various R&D laboratories.

Based on the discussions it emerged that scientists can play a vital role in furthering science in schools. It was agreed that visits by students and teachers to

laboratories and visits by scientists to schools should be pursued systematically.

In the post-lunch session, the teachers were taken on a guided visit to the CSIR-NISCAIR's Raw Materials, Herbarium and Museum Division, Data Centre and Digital Printing Facility.

The following recommendations were made at the close of the programme:

- Periodic programmes of this nature that allow barrier-free interaction and communication between scientists and teachers should be organized from time to time, as the benefits of such programmes have the potential to reach the last child in the classroom.

- Teachers should go beyond the role of a communicator and become a facilitator so that there is a shift from the present passive classroom to an active classroom that focuses on allowing students to construct knowledge and attain mastery based on experiences.

- Mechanisms should be evolved for rural school children to engage with scientists.

- Science practicals should be introduced at an earlier level and it should be connected to occurrences, events and experiences of students in daily life.

Earlier in the day, Nina Jain (USO) welcomed all the guests and participants.

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