



Summary:

Exciting Science Group:

The Exciting Science Group comprises of scientists from two of Pune's best research institutions, NCL and IISER-Pune. This initiative is aimed at conveying the excitement of science and technology to school students. The motivation behind our programme is to attract the brightest talent from the next generation towards careers in science and technology, since it will be these students who will drive tomorrow's science and innovation based economy.

This report discusses the activities undertaken by the Exciting Science Group from April 2013 to March 2014.

- We continued with our Popular Science Talks, with speakers drawn from NCL, IISERP. These talks give students a chance to meet scientists and understand the relevance of their work to society. Typically, the scientists also perform experimental demonstrations for students to kindle a sense of wonderment.
- We also conducted talks for students at two PMC magnet schools, K.C.thackeray Vidyaniketan, Near Daruwala Pul and, Hutatma Balvir Shirishkumar Vidyalaya, opposite Police lines. Talks at the Jawahar Navodaya in Shikrapur, haven't been held as yet due to scheduling conflicts. However, we have scheduled talks at this school starting this month and will be able to complete all the planned talks by the end of the academic year. These talks are typically on topics from school text books, and include several experiments. Students are given small gift (such as a book, or a science kit that we specially put together) at the end of the talk, that typically relates to the science discussed. The students are also provided a snack at the end of the talk.
- We have also extended our activities this year by initiating a weekly "Science Club" program at two underprivileged schools.

We would like to acknowledge the generous support for this activity from CSIR-NCL, IISER, the Venture Center, Forbes Marshall and Praj Foundation.

We gratefully acknowledge that the activities of the Exciting Science group are supported by:





Popular talks for School students:

The Popular Talks series of once-a-month talks aims to connect school students to *practising* scientists. Thus, school students get to hear a firsthand account of what it means to do research, and to get a feel for the thrill of discovery. The speakers do not attempt to teach science to the students – rather, the idea is to create a sense of “wow” and to kindle the students’ curiosity. The talks are not meant to be pedantic lectures, but combine live demonstrations, experiments and problem solving exercises to involve the students and engage their attention.

The Popular Talks are held once a month at 10 am on Sunday mornings at the NCL Innovation Park, Pashan Road. The talks are free and open to students and science teachers. Registration is on a first-come-first-served basis, and is done by sending email to register@excitingscience.org or through our web site: <http://www.excitingscience.org>.

Date	Topic	Speaker
28 April 13	“Where Mathematics meets Biology”	Dr Leelavati Narlikar
26 May 13	“Why Light is wonderful”	Dr G V Pavankumar
23 June 13	“Strange events in our Solar System”	Prof Jayant Narlikar
14 July 13	“Life in Our Universe: How did it come about?”	Dr Sudha Rajamani
25 Aug 13	“How Computers Work?”	Dr Debashree Ghosh
29 Sept 13	“Jugglology”	Dr Steven Spallone
20 Oct 13	“How to experience life beyond our senses: down to atomic level?”	Dr Pankaj Poddar
24 Nov 13	“Science of Big Molecules: Past, Present and Future”	Dr M Jayakannan
23 Dec 13	“Information Transfer via Vesicles in cells”	Dr Thomas Pucadyil
26 Jan 14	“Introduction to Practice of Inquiry through Jigsaw Puzzles”	Dr Tara Mohanan
16 Feb 14	“Explosions in the Universe”	Dr Poonam Chandra
23 Mar 14 (scheduled)	“How to stand on Giant Shoulders”	K P Madhu

Photographs of Selected Popular talks:

Prof Jayant Narlikar (June 2013)

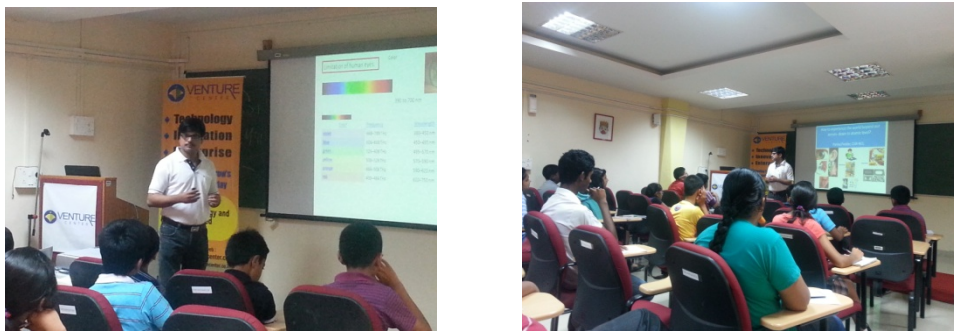




Dr Steven Spallone (Sept 2013)



Dr Pankaj Poddar (Oct 2013)



Dr M Jayakannan (Nov 2013)



Dr Thomas Pucadyil (Dec 2013)



Dr Tara Mohanan (Jan 2014)



Dr Poonam Chandra (Feb 2014)



Monthly talks at schools for underprivileged students:

The schedule of lectures conducted by speakers from NCL and IISER at the two PMC schools are as follows:

Month	Topic	Speaker	Gift given	No of Participants (Cumulative of respective schools)
2 Aug 2013(KCT) 3 Aug 2013(HB)	“Chemistry is Fun”	Dr Sayam Sengupta and Dr Anirban Hazra	“Story of Chemistry” book	85
20 Sep 2013(KCT) 15 Oct 2013(HB) 14 Dec 2013(JNV)	“The Wonderful world of Animal Development”	Dr Girish Ratnaparkhi	“Doing Science is Fun” Book	160
29 Nov 2013(KCT) 30 Nov 2013(HB) 14 Dec 2013(JNV)	“To Stick or not to Stick? – That is the Question	Dr Nagaraj Balasubramaniam	“Surely you’re joking Mr Feynman” Book	160
24 Jan 2014 (KCT) 25 Jan 2014 (HB) 1 Feb 2014 (JNV)	“Fun with Dice”	Dr Leelavati Narlikar		160
Scheduled: 22 Mar 2014 (HB) 29 Mar 2014(KCT)	“Fun with Chemistry”	Dr Shabana Khan		

April 2014 (JNV)				
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Talk on “Chemistry is Fun” by Dr Anirban Hazra and Dr Sayam Sengupta:



Talk on “The Wonderful World of Animal Development” By Dr Girish Ratnaparkhi:



Talk on “To Stick or Not to Stick? - That is the Question” by Dr Nagaraj Balasubramaniam:



Talk on “Fun with Dice” by Dr Leelavati:



Science Club Program:

From last year, ESG has been initiating a weekly “Science Club” program at two underprivileged schools: Hutatma Balvir, Police Lines and K.C.Thackeray Vidyaniketan, Daruwala Pul in order to further enhance scientific enquiry based thinking. The students are mentored by research students from CSIR-NCL and IISER during the weekly sessions. The basic objective of this club is to develop the students’ abilities to think analytically and creatively and encourage the participation of students in research based projects, like Intel/Google science fair. A science club session typically lasts for 1 hour to one and a half hour. In this time, the members are either engaged in science activities, or they plan/discuss/work on a science project or have a special scientific visitor. This program gives tremendous opportunity for the students to engage in more hands-on activity, which enhances their approach towards science in their classes.



Research students running the weekly science Club sessions at the two schools



Science Club students enjoy a hands-on Chemistry experiment

Projects selected for the National Science Fair 2013:



At the end of school year in March last year, students from these science clubs developed innovative novel project ideas that they presented to CSIR-NCL/IISER scientists. Selected projects received further mentoring to develop them for the National Science Fair. Last year, four science club teams from these Vidya Niketans sent in projects for the National Science Fair. These project themes described their independent research on themes as varied as designs for reducing noise from helicopter blades to, whether “handedness” can be observed in fruit flies. Two of these projects were selected for Intel Science Fair that was organised in Bangalore in November 2013. One of these teams also went ahead to win a silver medal at the INSEF National Fair organized by the Science Society of India in Chennai in Jan 2014.



“Research Project Idea Competition” – March 2013



The four science club teams from the PMC schools with their mentors – Two of them selected for the National Science Fair 2013

In March this year too, we organized a research idea competition – “INNOVATIVE IDEAS 2014” at IISER-Pune. Students from the two PMC schools and few other schools around Pune presented their research ideas and designs to leading scientists from CSIR-NCL and IISER. Four teams were selected for the next stage. They will receive mentoring from the Exciting Science Group to develop their ideas into full-fledged research projects.

Photographs of INNOVATIVE IDEAS 2014:





Two civic schools selected for National Science Fair

EXPRESS NEWS SERVICE
PUNE | OCTOBER 12

TWO PMC-run schools have been selected for National Science Fair that will be organised in Bangalore next month. If successful, the teams will represent India at the international event to be held in USA.

Abhijeet Kulkarni and Aman Thori from KC Thakare Vidyapeeth Niketan and Dhanashree Shukla and Pooja Mishra from Hunston Balvir Vidyapeeth have been selected for the event.

Shukla and Kulkarni have designed Owl Inspired Aircraft Wing Design with the help of Anant Kulkarni, a PhD student from NCL acting as their mentor.

"The sound of helicopter wings is audible and we thought of what all can be done to reduce it. Since an owl flies fast and makes no noise, we used our project on owl feathers to design the blades," said Kulkarni.

Another project titled Checking for Left Right Bias in Locomotion of Drosophila Melanogaster larvae by Kulkarni and Thori is the other entrant at the national-level fair.

"Humans use learn to use their limbs and have biases in using them. We tried to see if a simple organism like larva of fruit fly exhibits any bias during locomotion. From our analysis we found that a good percentage of larvae seems to have a preference in

which side to opt," said Thori.

Both the teams are products of Exciting Science Group (ESG), a volunteer group of scientists from NCL and IISER that holds seminars and workshops for school students. Once a month school students between Class 7 and 10 can register to attend sessions at Venue Centre. The workshops give insight on training to students to actually generate science rather than just learn it by rote. All ESG events are free for participants, but prior registration through the official website is required.

"We are very happy to learn that two teams got through to the national fair. ESG is organising a

week-long workshop to introduce 8-11 year old students to the Scratch Programming Environment. The workshop for two batches of 25 students each will take place from October 26 to 31. The workshop is aimed at exposing 11-year-old students to the joys of programming," said Shuddhan Gargani, Associate, ESG.

G Ramakrishnan, member ESG, said, "Students will learn to create games and stories and use the sensor board to communicate between the real and digital world. Registration for this workshop is on a first-come basis and interested students should write to us. This workshop is free for the participants."

पालिकेच्या दोन शाळांची राष्ट्रीय विज्ञान प्रकल्प स्पर्धेसाठी निवड

प्रतिनिधी, पुणे

पुणे महानगरपालिकेची के. सी. टाकरे विद्यानिकेतन आणि हुतात्म बाळवीर शिरीसकुमार विद्यालय या शाळांच्या संघाची राष्ट्रीय प्राथमिकीय विज्ञान प्रकल्प स्पर्धेसाठी निवड झाली आहे. प्रदीप महिषमधे बंगळूर येथे होणाऱ्या प्रदर्शनमधे या शाळांचे संघ सहभागी होणार आहेत.

नेशनल केमिकल कॅम्परेटर (एन्वीएल) आणि ईडियन इन्सिट्यूट ऑफ सायन्स एन्व्हेलपमेंट रिसर्च (अवसर) या संस्थामध्ये संशोधन करणाऱ्या विद्यार्थ्यांनी या शाळांच्या संघात सहभाग घेणे शक्य केले आहे. यावेळी टाकरे विद्यानिकेतन शाळांमध्ये ऑर्गॅनिंग कोम्युनिटी आणि अडव कॅम्पे या विद्यालयांचा सहभाग आहे, तर हुतात्म बाळवीर विद्यालयामधून पारशी सेज्जे आणि प्रमोदी भंडारे या विद्यालयांचे सहभाग होणार आहेत. उत्तम प्राथमिकीय व केवेलमधे पारशी सेज्जे या संघात

अमेरिकेमधे होणाऱ्या अंतरराष्ट्रीय प्रदर्शनमधे सहभाग होताना होणार आहे. हुतात्म बाळवीर विद्यालयाच्या संघाने कॅम्परेटरच्या पॅन्लच्या आवाजात पर्यायी मार्ग तयार करणे प्रकल्प केला आहे, तर के. सी. टाकरे विद्यानिकेतनच्या विद्यार्थ्यांनी प्राथमिकीय स्तरावरील प्रकल्प सादर केला आहे.

एनवीएल आणि अवसरमध्ये संशोधन करणारे विद्यार्थी एनव्हेलपमेंट सायन्स ग्रुप हा उपक्रम चालवतात. या उपक्रमामध्ये एनवीएल आणि अवसर या संस्थेचे स्वतंत्रपणे राष्ट्रीय विद्यार्थ्यांसाठी गुंतवणूक फंड सेटअप करण्यात येऊन, त्यांचे वेळोवेळी विद्यार्थ्यांचे सहभाग घेणे शक्य केले आहे. एनवीएलमध्ये एनव्हेलपमेंट अनेक शाळा सहभागी झाल्या आहेत. या उपक्रमामध्ये अडवकामध्ये प्रकल्प घेणे सहभागी केले आहे. २५ ते ३१ ऑक्टोबर या प्रकल्पघेवणे ही कार्यवाही होणार आहे.

From PMC school to natl science fair

Four students from civic-run schools have been chosen to present their research projects at the Indian Science & Engineering National Fair in Chennai this month

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Their schooling has been simple, their economic background none too extravagant, but a love for science, honed by the Exciting Science Clubs organised in two schools run by the Pune Municipal Corporation (PMC), has brought four students national recognition.

The clubs, mentored by scientists from the National Chemical Laboratory (NCL) and the Indian Institute of Science Education and Research (IISER), began in 2012.

Dhanashree Shelke and Pragati Bhakre from Hutatma Balveer Shirishkumar Vidya Niketan and Abhijeet Kallure and Azam Torvi from KC Thackeray School were selected for the national finals of the Intel-CII-DST Science Fair, Bangalore, in October last

year. The girls will now present their research projects at the Indian Science & Engineering National Fair, organised by the Science Society of India in Chennai, from January 10-11. The silent flight of owls inspired the duo to propose wing designs that reduced aircraft noise, while Abhijeet and Azam experimented on fruit fly larvae.

Pragati's family of four lives in a single room in a slum near Shivaji Nagar railway station. "She (Pragati) was responsible about her academics, but not extraordinary. The science club got her interested — she even dismantled the alarm clock at home and used the battery for her work," said Pranal, Pragati's older sister who is in her final year of BCom. Father Dhanraj Bhakre works in a saloon nearby and mother Vanita is a homemaker. "Our older daughter studied in the same school we have faith in



The Exciting Science Club was a stepping stone for Dhanashree Shelke and Pragati Bhakre (seen inset with their science teacher)

the teachers," Vanita said.

Dhanashree, meanwhile, is known for being bright but moody at home. Her family lives in a small house

inside Shivajinagar's Railway Colony.

Dhanashree is the youngest of four siblings. Jayashree Shelke, her older sister, said, "She is mischievous, but

serious when it comes to studies."

For Pragati and Dhanashree however, this is merely a stepping stone. "We are glad this got us recognition, but we are interesting in further work with scientists," said Pragati who is yet to decide on a career path. Dhanashree on the other hand has already decided to take up science.

Neeta Gulavane, science teacher at Hutatma Balveer School, said, "We are happy to know our kids are making use of this opportunity." Principal Sandhya Jadhav said, "These achievements are noteworthy and will change the impression people have of PMC schools."

Shradhdha Gargatti, Associate, Exciting Science Group, NCL, said, "This is a project to encourage students towards pure science and research. Junior and senior scientists from NCL and IISER go every Saturday to conduct these sessions."

City students bag silver medal at ISEF

Mukund Bhute

ANUP SATPHALE

reporters@sakaaltimes.com

Pune: Two city students won silver medals for their projects at the Indian Science and Engineering Fair (ISEF) organised by the Science Society of India (SSI) at Chennai recently.

Dhanashree Shelke and Pragati Bhakare of the Pune Municipal Corporation managed Hutatma Balvir Shirishkumar Secondary and Higher Secondary School won medals at the fair.

The awards were given by the Vice Chairman, University Grants Commission, H Devraj.

Dhanashree and Pragati toiled hard for one-and-half-years to make an 'Owl Inspired Aircraft Wing Design' where the blade texture of the aircraft were similar to the structure of owl wings to reduce the sound of the wings.

"Aircraft sound comes from its motor, blades and transmission. In our project we focused on the sound coming from the blades. We tried various material like velvet and sand paper as owls have wings like velvet. Sand paper of certain specifications reduced the wing sound," Dhanashree



Dhanashree Shelke and Pragati Bhakare with their project. The duo bagged the silver medal at the Indian Science and Engineering fair (ISEF) organised by the Science Society of India (SSI), in Chennai.

Pragati added that both of them enjoyed making the project.

"The award that we won shall surely inspire us to take up many more innovative projects," she added.

The school has a science hobby club, where student make projects on several subjects.

These students get guid

ance from the students of National Chemical Laboratory (NCL).

Amruta Kulkarni, a PhD student at NCL and in-charge of the project said that concept of the project came from both the students. "And we inspired them to take it up as a challenge. It is their enthusiasm and hard work that was recognised," added

Principal elated

Sandhya Jadhav, Principal of school said that the girls worked on their project during vacations. "Considering their financial condition, the school science teacher Meeta Gulwani, helped them a lot. She even took them home for carrying out experiments," she added.

Unique projects dominate 'Innovative Ideas 2014'

ST CORRESPONDENT
reporters@sakaaltimes.com

Pune: Projects like the automated fish feeder, automated drip irrigation system, eco-friendly ways to tackle river pollution etc, marked the 'Innovative Ideas 2014 Competition', on Saturday.

The competition was organised by the Exciting Science Group, an Initiative of the National Chemical Laboratory (NCL) and Indian Institutes of Science Education and Research (IISER), Pune.

Students of seven schools from the city and its adjoining areas participated in the competition.

"It is organised with an aim to encourage students to present their ideas in any field. The best teams will then be selected for mentoring from the Exciting Science Group to develop their ideas into full-fledged research projects," stated Sutrith Dey, scientist from IISER.

Dey added the students



Vaibhav Thombare

EXPLAINING AN IDEA: Students explaining their research ideas to visitors at the 'Innovative Ideas 2014 Competition' organised at IISER, Pashan Road, on Saturday.

LIST OF WINNERS

- Bharati Rajput and Aishwarya Khiste from Hutatma Balbir School
- Shubhangi Deshmukh and Kalpana Chavan from Hutatma Balbir School
- Shreya Parchure and Kimaya Bedarkar from Abhinava Vidyalaya
- Jay Ratnaparkhi and Sanket Shinde from KC Thackeray School

participating in the competition are in the age group of 13 to 16.

"We had conducted this competition last year but at that time it was restricted to

PMC schools. This time we have opened it for all schools in the city," added Dey.

Last year, the two teams mentored by the Exciting Science Group were selected for the national finals of the Intel Science Fair.

A team of eight scientists from NCL and IISER judged the performance of each team and selected the best four teams.

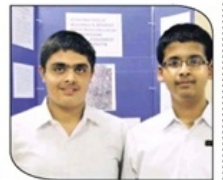
QUOTE-UNQUOTE

I made an automated fish food feeder. One of our neighbours used to leave her fish tank with us when she went out of station. I used to be confused as to when to feed the fish. Hence, I developed this model which feeds food to fish in a controlled manner at regular intervals. I found that this helps in keeping the fish healthy.



— **MANASI TAMGOLE,**
Dr Kalmadi Shamrao High School

We had done a survey on Senapati Bapat Road on the effect of high rise buildings on the surrounding environment. We found that the heat in the area has increased considerably and the level of ground water also depleted a lot in the past few years.



— **YASH JOSHI AND YASH PARGAONKAR,** Abhinava Vidyalaya



We have always been interested in astronomy. We were curious to know how sunsets look like in different planets. For this, we collected the data on atmospheric conditions of different planets and their distance from the sun.

— **RUCHA WANI AND CHINMAY KULKARNI,** Vidyanchal School