



# **ESG ANNUAL REPORT**

**APRIL 2017 - MARCH 2018**

## ESG Annual Report: April 2017– March 2018

### Summary

#### About 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.

#### Popular Science Talks:

Held once a month (on the last Sunday) these talks give students a chance to meet scientists and understand the relevance of their work to society. Typically, these talks are filled with live demonstrations and experiments conducted by scientists – so as to kindle a sense of wonderment in the students. A total of **13 Science talks** were organized from April – March 2018. More than **2000 students** have participated in these talks.

#### Workshops:

**2 Half Day Workshops on "What Killed Dinosaurs"** were organized in May 2017 for students currently enrolled in grade 8-10 to introduce participant students to a significant mass extinction event in Earth's history. Additionally participants also did a simple project where they calculated the energy released from the impact of a meteorite and whether that can lead to a global mass extinction. **65 students from 37 schools** participated in the workshops, including 9 students from 3 PMC schools.

**2 Half Day Workshops on "Earthquakes: Locating Epicenters and Calculating Magnitudes"** for students currently enrolled in grade 8-10 were organized in May 2017. The workshops were intended to introduce participant students to the topic with a short lecture session along with a hands-on demonstration of how to locate the epicenter of an earthquake. Participants also learnt to calculate the magnitude of earthquakes using a virtual web application. **56 students from 33 schools** participated in the workshops, including 8 students from 2 PMC schools.

**4 PMC students** participated in a **12 Day Math gaming workshop** organized by Tinkering lab at Venture Center in April 2017. This workshop was aimed at improving logical, analytical and strategic thinking in children by playing games that use mathematical principles and strategies.

**2 Day workshop on "Raspberry Pi Programming" for PMC students** currently enrolled in grade 8 and 9 was organized in July 2017. The workshop aimed to introduce coding on Raspberry Pi, a credit card size computer originally developed for learning basic computer science. It is versatile and useful platform for learning different domains of STEM [Science, Technology, Engineering, & Maths] education. **24 students from 3 PMC schools** participated in the workshop.

**2 Preparatory Workshops** were organized in July 2017 and August 2017 respectively in order to guide students currently enrolled between Class 5 to 12 to submit a research-based project in the INSEF Regional Science Fair to be hosted by ESG in Nov 2017. More than **350 students** participated in these preparatory workshops.

**1 Day Workshop on “Having Fun with Scratch Programming”** was conducted by ESG in collaboration with British Council in Sept 2017 for students between 8-12 years. The workshop was intended to introduce kids to the fundamentals of Scratch, a graphical programming interface developed by the Media Lab – MIT. **11 students from 10 schools** participated in the workshop, including **2 students from 1 PMC school**.

### **Science Club Programme:**

**Talks at PMC magnet schools:** Scientists (from IISER-P and NCL) visit three schools once a month between August to March, and deliver a talk (typically on topics from school textbooks), conduct experiments, and interact with the kids: K.C.Thackeray Vidyaniketan, Near Daruwala Pul; Hutatma Balvir Shirishkumar Vidyalaya, opposite Police lines, and Dr Vasantdada Patil Vidyaniketan, Shukrawar Peth. At the end of the talks, students are given small gift (such as a book, or a science kit that we specially put together) that typically relates to the topic discussed. The students are also provided a snack at the end of the talk.

**Weekly Science Clubs:** From the last four years, we have initiated a weekly “Science Club” programme at two underprivileged schools (K.C.Thackeray Vidyaniketan and Hutatma Balveer Shirishkumar Vidyalaya). From the year 2015, we have expanded the science club activity at Dr Vasantdada Patil PMC Vidyaniketan, Shukrawar Peth. **Starting this year**, we have begun the science club activity at Ahilyadevi Holkar I-Teach School. ESG volunteers conduct weekly science club sessions at the four PMC Vidyaniketan schools. **113 students from the 4 PMC schools** are participating in the programme. The science clubs sessions this year began from August 2017 and will continue until March 2018.

### **Science Club at IISER-Pune:**

This year ESG explored the feasibility of conducting the Science Club Programme for PMC schools at IISER-Pune. As a pilot, starting January 2018, ESG organized the science club sessions for Hutatma School students at the newly built Science Activity Centre at IISER-Pune. This centre houses a spacious laboratory facility for hands-on activities along with a lecture hall with a 250+ seating capacity. This has been an inspiring experience for the students to come to the IISER campus, and made science club more attractive for the students.

### **Summer Internship Programme:**

This is a programme of the Exciting Science Group, to get a few students from Pune Municipal Corporation schools to spend a summer in NCL/IISER labs. The internship provides an opportunity for students to work with mentor scientists and PhD students and experience what it means to work in a research laboratory. The internship lasted over a month with the students spending the entire working week at the labs. **4 students from 3 PMC schools** interned at NCL labs this year.

### **Special Event:**

**Science Circus:** **More than 120 students** invited by ESG participated in a special event called “Science Circus” organized by IISER-Pune in June 2017. This event was designed to allow students to experience and develop skills in problem solving, logic, and critical thinking using just students’ minds, physical agility, teamwork and quick thinking.

**Competitions:**

**Science & Art:** ESG organized the third edition of “Science and Art competition” for school students in November 2017 & February 2018 at IISER-Pune. This competition was open for 5th to 10th grade students. The objective of this competition was to help students understand the correlation between science and art and offer them a platform to apply their imagination and creativity. It offered an excellent opportunity to students who are good in illustration to apply their artistic talents for scientific concepts. The event received **595 participants from 125 different schools including 195 students from 19 PMC schools** across Pune and Chinchwad. As a part of our objective to foster inclusivity and diversity, we invited registrations from special children (disabled children) for Science and art competition 2017. It was an extremely satisfying experience to welcome students from the Mook Badhir Vidyalaya (**Deaf and Dumb school**), Chinchwad.

**INSEF Regional Science Fair:** ESG in collaboration with the Science Society of India organized the first Indian Science and Engineering (INSEF) Regional Fair of Pune in November 2017. The INSEF Regional Fair provided an exciting opportunity for students currently enrolled between class 5-12 to work on research-based science, technology and engineering projects. The Regional Fair received **45 project entries** from Pune including entries from as far as Dubai, Warangal, Ahmedabad, Mandya and Nagpur. Selected teams presented their research projects in the fair hosted at IISER-Pune.

**Mentoring for Research projects:**

Two research-based projects mentored by IISER-P and NCL scientists from the Exciting Science Group made it to the IRIS and INSEF National Science Fairs this year. The research project presented at IRIS (the Initiative for Research and Innovation in Science) organized in New Delhi in November 2017 won the “**Intel Excellence in Computer Science**” prize, while the other project won the **Gold Medal at the Junior INSEF** (Indian Science and Engineering Fair) National Fair organized in Rajkot, Gujarat in January 2018.

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



## Popular Science Talks

**What:** This series of once-a-month talks aims to connect school students to practicing 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.

**When & Where:** The Popular Talks are held once a month at 10 am on Sunday mornings at IISER-Pune, Pashan. 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](mailto:register@excitingscience.org) or through our web site: <http://www.excitingscience.org>.

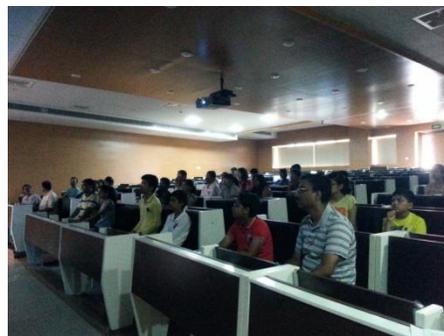
**The attendance in our outreach talks have more than doubled in the last year.**

| Date          | Speaker                                | What was the talk about?  | No of participants |
|---------------|--|---|--------------------|
| 16 April 2017 | Dr Supriya Pisolkar                    | “Polynomials that no can solve”   | 95                 |
| 28 May 2017   | Dr Jayaraj Nithyanandan                | “Exciting Photochemistry”   | 65                 |
| 11 June 2017  | Dr Dilip Kumar Lahiri                  | “ Nuclear Research Reactors and their utilization”  | 128                |
| 23 July 2017  | Dr Rahul Bhambure                      | “Mix it up! The science of mixtures and separation techniques”  | 110                |
| 20 Aug 2017   | Dr Tejas Kalelkar                      | “Euler Plato and Balloons”  | 230                |
| 24 Sept 2017  | Dr Kiran Kulkarni                      | “Cell Migration: The Voyage of Building blocks of life”   | 193                |
| 29 Oct 2017   | Dr Umakant Rapol                       | “Wave particle duality: Some exciting experiments with ultra-cold matter  | 206                |
| 19 Nov 2017   | Dr Sagar Pandit                        | “Plant-Insect Interactions”   | 130                |
| 17 Dec 2017   | Dr Anand Krishnan & Rohit Chakravarthy | “Behavior and Natural History: What we can learn from the birds and the bats!”  | 227                |
| 21 Jan 2018   | Dr Magesh Nandagopal                   | “The Afterlife of your water bottle – The Story of how PET bottles are recycled into T-shirts, pillows and soft toys” | 253                |
| 4 Feb 2018    | Prof Arnab Bhattacharya                | “Light, Color, Action!”   | 235                |
| 18 Feb 2018   | Dr John Mathew                         | “Excursions through Science, Technology and Medicine, employing Case Studies”   | 180                |
| 18 Mar 2018   | Dr Sunil Nair                          | “ When electrons dance in pairs – the story of Superconductivity”   | 135                |

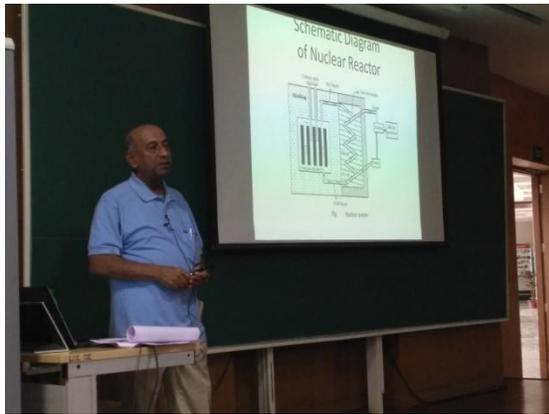
Photographs from the talks:



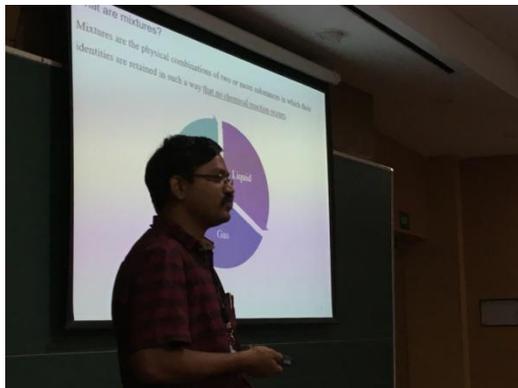
**Talk on “Polynomials that no one can solve” by Dr Supriya Pisolkar**



**Talk on “Exciting Photochemistry” by Dr Jayaraj Nithyanandan, CSIR-NCL, Pune**



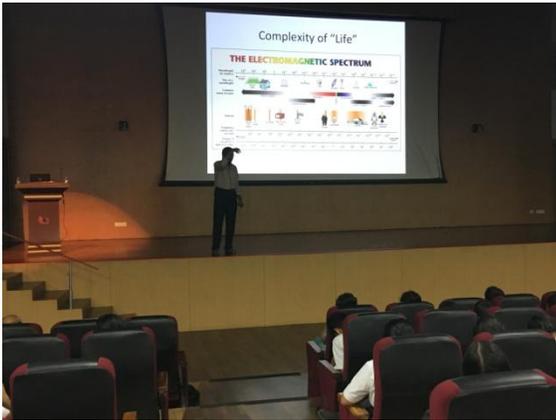
***Talk on "Nuclear Research Reactors" by Dr Dilip Kumar Lahiri, Retired Scientific Officer from BARC***



***Talk on "Mix it Up! The science of mixtures and separation techniques" by Dr Rahul Bhambure, NCL***



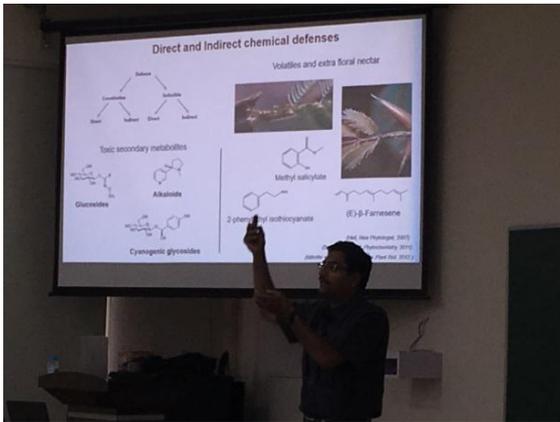
**Talk on “Euler Plato and Balloons” by Dr Tejas Kalelkar, IISER-Pune**



**Talk on “Cell Migration: The Voyage of Building Blocks of Life” by Dr Kiran Kulkarni, NCL**



**Talk on “Wave Particle Duality” by Dr Umakant Rapol, IISER-Pune**



Talk on "Plant-Insect Interactions" by Dr Sagar Pandit, IISER-Pune



Talk on "Behaviour and Natural History" by Dr Anand Krishnan and Rohit Chakravarthy, IISER-Pune



**Talk on “The Afterlife of your Water Bottle” by Dr Magesh Nandgopal, NCL Pune**



**Talk on “Light, Colour, Action” by Prof Arnab Bhattacharya, TIFR Mumbai**

**What the participants who attended the talks say?**

*“Nice talks! Please arrange these talks more frequently and please arrange these talks on space especially black holes.”*

- Vaishnavi, Pawar Public School

*“It is awesome! I understand the concepts due to the presentations shown. The explanation was excellent.”*

- Bhargavi, City International School

*"The lecture was interesting and I got to know a lot about polynomials that I had never known."*

- Rasika, Abhinava Vidyalaya

*"Explanation was fantastic I understood all the talk and interested to come again. I enjoyed listening to talk of Mr.Kiran Sir. He was explaining very nicely."*

- Satyam, Nanded Public School

*"I would highly recommend you to have a talk on the evolution of microbiology or marine, aquatic life."*

- Aiyra Baig, St.Helena's School

*"All the things were good, the explanation and the video But you should increase the number of experiments I have learnt many things through the lecture."*

- Shashank Saini, Air Force School

*"This talk was fantastic. I will attend these talks during exam."*

- Abhiraj Hande, Angel High School

## Workshop: “What Killed Dinosaurs?”

### **About the Workshop:**

The Exciting Science Group organized two half-day workshops on “What Killed Dinosaurs?” on Tuesday, 9 May 2017 for students currently enrolled in class 8-10. 65 students from 37 schools participated in this workshop, including 9 students from 3 Pune Municipal Corporation Schools (3 from KC Thackeray Vidya Niketan, 3 from Dr Vasantdada Patil Vidyaniketan and 3 from Hutatma Balvir Vidyalaya). Through the half-day workshop, students were introduced to a significant mass extinction event in Earth’s history. Participants also calculated the energy released from the impact of a meteorite. Students from PMC schools used scientific calculators provided by the Exciting Science Group, while the other participants from city-based schools brought their own laptops/calculators for the workshop.

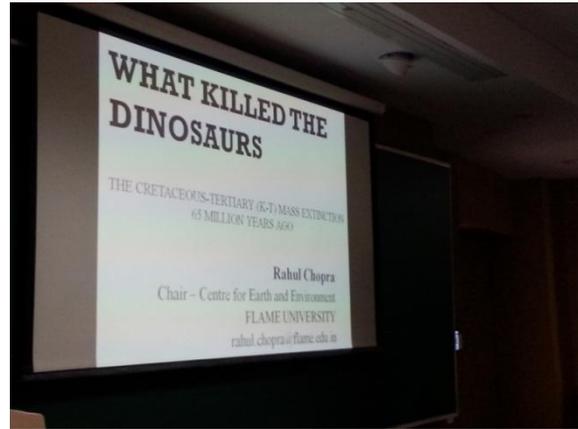
### **Details:**

| Date                | Speaker                                | Title                  | Duration | No. of Participants | No. of Volunteers |
|---------------------|--|------------------------|----------|---------------------|-------------------|
| Tuesday, 9 May 2017 | Dr Rahul Chopra, FLAME University Pune | What Killed Dinosaurs? | 2.5 hrs  | 65                  | 2                 |

Workshop sessions were conducted by Dr Rahul Chopra, Chair of Centre for Earth and Environment and Associate Professor at FLAME University, Pune. Dr Chopra introduced the participants to a significant mass extinction event in Earth’s history through a short lecture. The Cretaceous-Tertiary (K-T) extinction occurred 65 million years ago and a significant number of species including dinosaurs were wiped out then. Different hypothesis that seek to explain this event include massive volcanic activity in India that created the Deccan Volcanic Province and its subsequent effect on the climate and the effects of a meteorite impact. During the workshop participants examined the potential causes of this mass extinction event. Additionally they also did a simple project where they calculated the energy released from the impact of a meteorite and whether that can lead to a global mass extinction.

All participants received a certificate of participation. The Speaker was felicitated with a gift and a ESG mug. The overall coordination of the workshop was done by Shraddha Gargatti. The registration of participants and volunteering during the workshops was done by both Shraddha Gargatti and Gayatri Kshirsagar.

**Photographs from the Workshops:**



**Dr Chopra explaining the mass extinction event to the workshop participants**



**Speaker explains about the energy released from the impact of a meteorite**



**Workshop Participants**

**What did the participants who attended this workshop say?**

After the workshop, kids were asked to fill up an evaluation form in which we had asked the kids to rate us between 1 and 5 (1-Poor; 2-Okay; 3-Good; 4-Very Good; 5-Excellent) on each of the activity (content, explanation by faculty, overall rating, etc). Overall, the workshop got a rating of either 4 or 5. We also took a feedback on the part of the workshop they enjoyed the most. More than 55% of the participants equally enjoyed the explanation, presentation, and doing the project.

Also, the students were asked for their feedback and suggestions, the following are what they had to say:

*"It was a great experience to learn as to what actually happened that killed dinosaurs  
The topic was very interesting."*

- Prisha Budhiraja, St Helena's School

*"Very good, interesting explanation. I enjoyed it. There was a little problem at  
first with calculations but then it was easy. Thank you!"*

- Anay Sasane, Vibgyor High School

*"I loved the workshop and hope that these kinds of workshops are held throughout the  
year"*

- Ashika Bakre, Global Indian International School

*"This workshop was really effective for the fundamental structure of my knowledge and  
the encouraging teachers should be appreciated."*

- Miheera Kashelkar, Millenium National School

*"The workshop was very good. The topic was excellent though. Request you to keep  
taking excellent informative topics as such for all workshops."*

- Anurag Talele, Loyola High School

*"An excellent workshop, cleared all my doubts in context of the topic. I thoroughly enjoyed the experience. Cheers!"*

- **Ritvik Vaishnav, Army Public School Dehu Road**

*"I liked the explanation given for both the causes to have taken place. Earlier I knew 'what' killed the dinosaurs, the workshop enabled me to answer 'how' to the 'what'"*

- **Rutuja Rokade, K C Thackeray Vidyaniketan**

*"I love this exciting workshop. I learnt what killed dinosaurs. I like the presentation very much. I liked the explanation of Rahul Sir very much. Thank you."*

- **Adarsh Kadam, Dr Vasantdada Patil Vidyaniketan**

*"Awesome lecture, awesome lecturer, great understanding due to the content showcased and the calculations were really good as well."*

- **Aditya Varma, Pawar Public School**

*"Nice topic and presentation."*

- **Aadit Mane, Millenium National School**

*"Good Work! Looking forward to many more such projects and workshops in the future. The graphs helped understand the concepts in a much easier and simplified way."*

- **Soham Karkhanis, Dr Vikhe Patil Memorial School**

**Workshop: “Earthquakes: Locating Epicenters and Calculating Magnitudes”**

The Exciting Science Group conducted two half-day workshops on “Earthquakes: Locating Epicenters and Calculating Magnitudes” for students currently enrolled between Class 8-10. These workshops were held on Friday, 12 May 2017 at IISER Pune. 56 students from 33 schools participated in the workshop, including 8 students from 2 PMC schools (5 from K.C.Thackeray Vidyaniketan and 3 from Hutatma Balvir Vidyalaya). Through the half-day workshops, students were introduced to the topic through a short lecture followed by hands-on demonstration on locating the epicenter of an earthquake.

**Details:**

| Date                | Speaker         | Title   | Duration | No. of Participants | No. of Volunteers |
|---------------------|-----------------|---|----------|---------------------|-------------------|
| Friday, 12 May 2017 | Dr Rahul Chopra | Earthquakes: Locating Epicenters and Calculating Magnitudes | 2.5 hrs  | 56                  | 2                 |

Additionally participant students also learnt to calculate the magnitude of earthquakes. In this workshop participants were introduced to an interactive web based activity from the Virtual Earthquake application (<http://www.sciencecourseware.com/VirtualEarthquake/>). They used real seismic data to locate epicenters of recent large magnitude earthquakes such as those in San Francisco, Southern California, Mexico and Japan. At the end of the activity, participants received a personalized Certificate as a "Virtual Seismologist" from the sciencecourseware website.

The Speaker was felicitated with a gift and a ESG mug at the end of the workshop. All participants received a certificate of participation. Participants were also provided with refreshment during the workshops. All participants received a certificate of participation at the end of the workshop. The overall coordination of the workshop was done by Shraddha Gargatti. The registration of participants and volunteering during the workshops was done by both Shraddha Gargatti and Gayatri Kshirsagar.

**ESG REPORT**

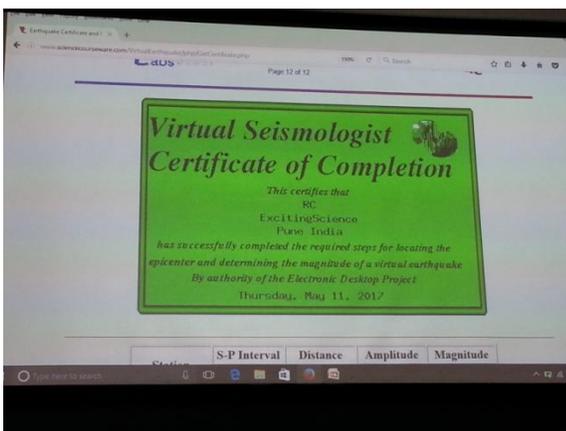
**Photographs from the Workshops:**



**Dr. Chopra introducing the topic to the participants through a short lecture**



**Participants exploring the Virtual Earthquake application during the workshop**



**“Virtual Seismologist” Certificate from the Science courseware website**



**Workshop participants with their certificates**

### **What did the participants who attended this workshop say?**

After the workshop, kids were asked to fill up an evaluation form in which we had asked the kids to rate us between 1 and 5 (1-Poor; 2-Okay; 3-Good; 4-Very Good; 5-Excellent) on each of the activity (content, explanation by faculty, overall rating, etc). More than 70% participants gave an overall rating of 5. We also took a feedback on the part of the workshop they enjoyed the most. Almost 50% of the participants enjoyed the virtual application software the most.

Also, the students were asked for their feedback and suggestions, the following are what they had to say:

*“Workshop was extremely informative and interesting.”*

- **Aryan Wadhavkar, Symbiosis School**

*“The workshop was very good. I liked it very much.”*

- **Sharon Thankachan, KVRHE Khadki**

*“It was very basic and explanatory. I enjoyed it and would like to attend more of the workshops.”*

- **Harsh Rokade, K C Thackeray Vidyaniketan**

*“Today’s workshop has greatly fascinated me towards science.”*

- **Khamkar Arti, SJH Gurunanak High School**

*“It was very good and fun and the sir was nice. He explained everything and cleared our doubts.”*

- **Ankush Dewangan, Wisdom World School**

*“Overall it was an excellent workshop to work with the software and all.”*

- **Anurag Talele, Loyola High School**

*“It was a very good workshop. I would like to come here again for another one.”*

- **Prachi Balla, K C Thackeray Vidyaniketan**

## Workshop on “Raspberry Pi” Programming

The Exciting Science Group (ESG) organized a 2-days workshop on “Raspberry Pi programming” for Pune Municipal Corporation (PMC) schools on 24 - 25 July 2017. The workshop was conducted by Dr. Girish Arabale who is a founding director of a startup called Molqbits which is working on soil analytics.

A total 24 students from three PMC schools (8 from Dr Vasantdada Patil Vidyaniketan, 8 from KC Thackeray Vidya Niketan, and 8 from Hutatma Balvir Vidyaniketan) attended the workshop.

| Date                | Speaker           | Title                    | Total Duration | Total Participants | Total Volunteers |
|---------------------|-------------------|--------------------------|----------------|--------------------|------------------|
| 24 and 25 July 2017 | Dr Girish Arabale | Raspberry Pi programming | 6 hours/ day   | 24                 | 2                |

Through the 2 day workshop, students were introduced to the open-source hardware tool known as Raspberry Pi which is a credit card-sized computer developed by the Raspberry Pi Foundation, UK, to promote basics of computer science in schools. It is an extremely versatile device which can be used to design and build electronics projects that interact with the real world. The device has gained popularity recently as an effective means to engage in exploring STEM concepts and practices.

During the workshop, students learned how to use command line interface, how to solve problems with Wolfram- Alpha- a computable search engine on Raspberry Pi. Once they become a little comfortable in using Raspberry Pi device, they were introduced to Mathematica and Wolfram programming language that are freely available on Raspberry Pi.

The students successfully learned to calculate even, odd, and prime numbers using Mathematica. Later on they wrote programs for simple conversions like Fahrenheit to Celsius, and more advanced like finding Palindrome numbers and Perfect Numbers. They also learned about GPIO and to connect LEDs to different pins on Raspberry Pi device.

Participants were provided with Raspberry Pi boards and computers arranged by ESG along with refreshments during the workshop.

At the end of the workshop, speaker Dr Girish Arabale was felicitated by a gift and ESG mug. All the participants received certificate of participation. The registration of participants and overall coordination was done by Gayatri Kshirsagar. Shraddha Gargatti and Gayatri Kshirsagar helped Dr Arabale run each workshop session.

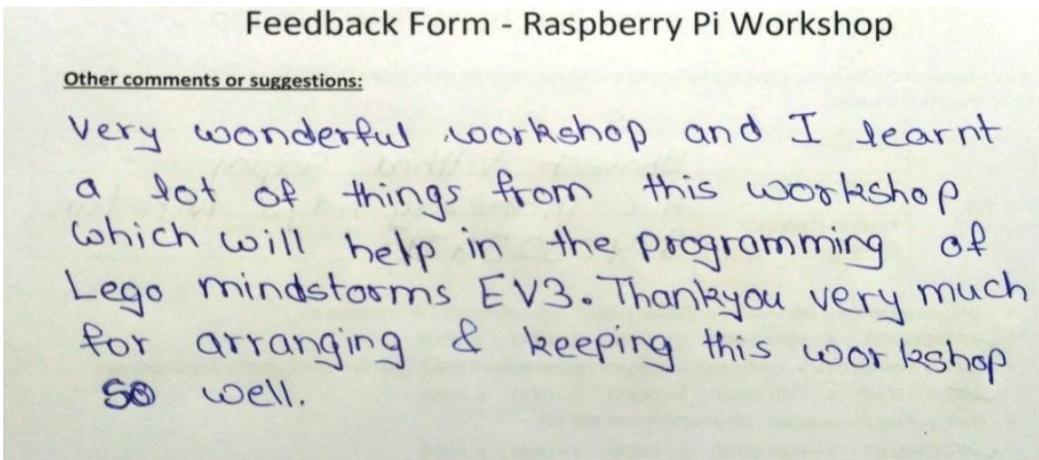
**What did the participants who attended these talks say?**

After the workshop, kids were asked to fill up an evaluation form in which we had asked the kids to rate us between 1 and 5 (1-Poor; 2-Okay; 3-Good; 4-Very Good; 5-Excellent) on each of the activity (content, explanation by faculty, overall rating, etc).

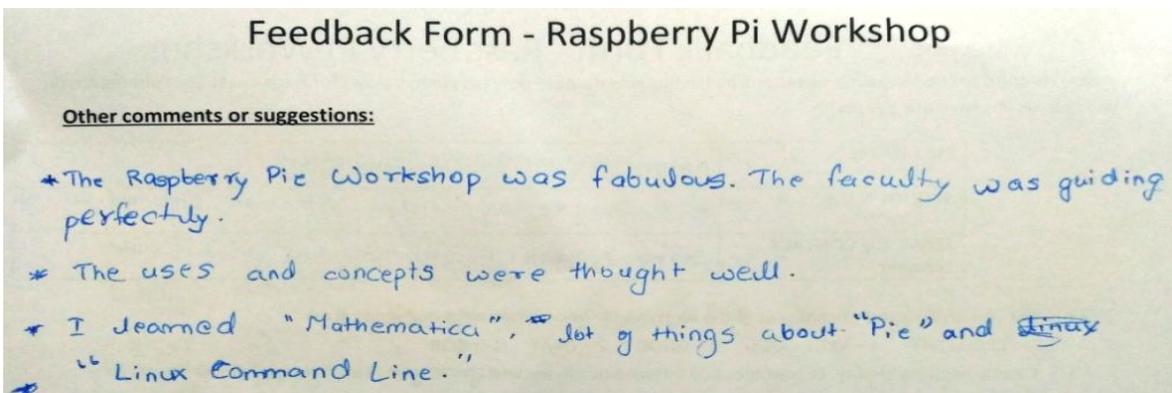
Overall, the rating of this workshop is 4.8 out of 5. We also took a feedback on the part of the workshop they enjoyed the most. More than 80% of the participants equally enjoyed the explanation, presentation, programming languages like Mathematica and Wolfram Alfa and Electronics .

Also, the students were asked for their feedback and suggestions, the following are what they had to say:

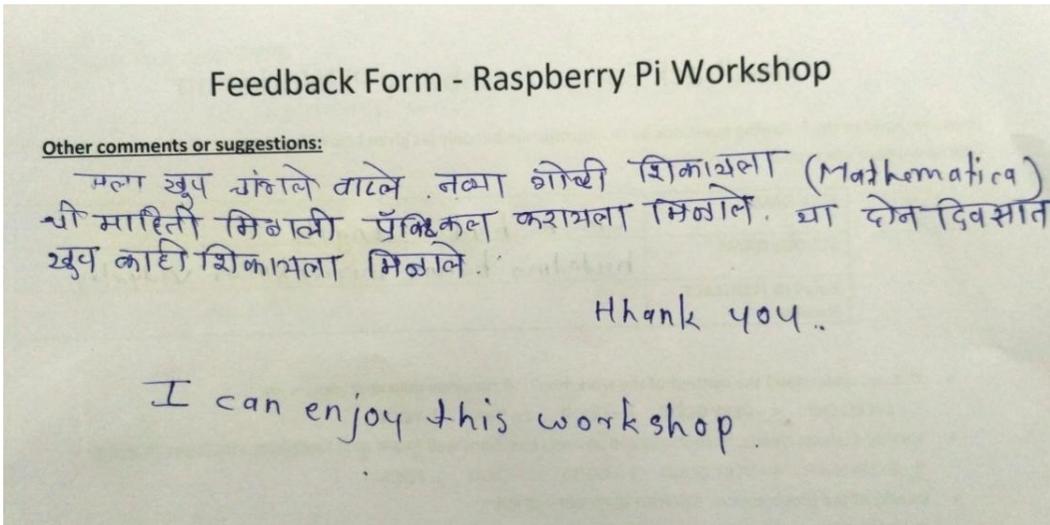
**1) Bhavesh Sapar (K.C. Thackeray Vidyaniketan) : 8<sup>th</sup> std**



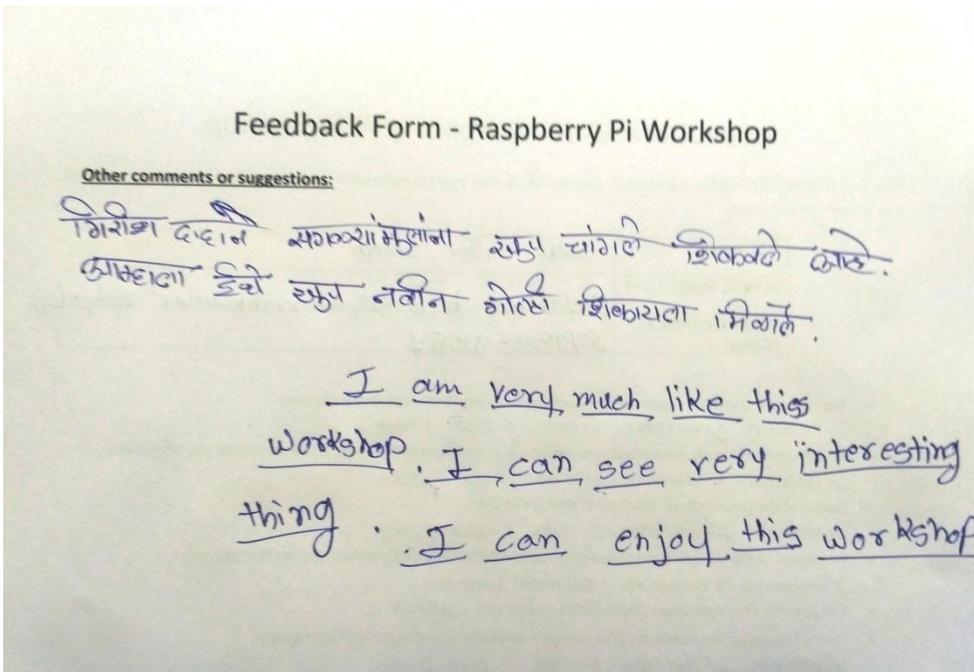
**2) Karan Solanki (K.C. Thackeray Vidyaniketan) : 9<sup>th</sup> std**



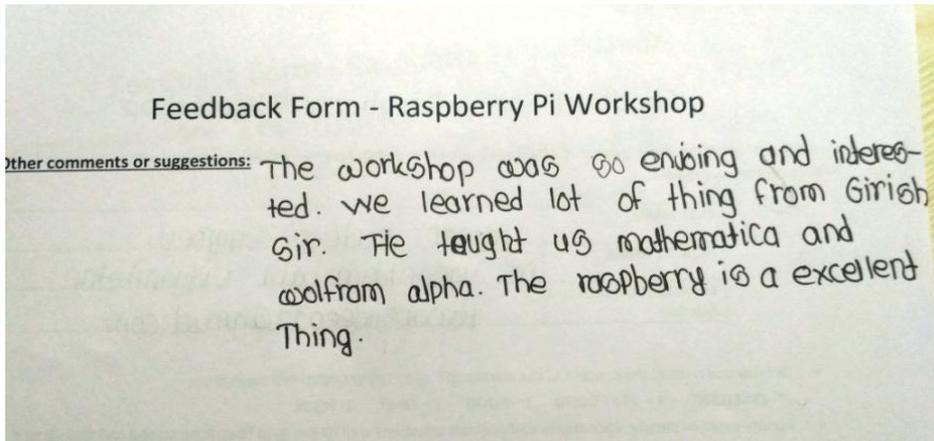
3) Umesh Ingale ( Hutatma Balveer Shirishkumar Vidyalaya ) : 8<sup>th</sup> std



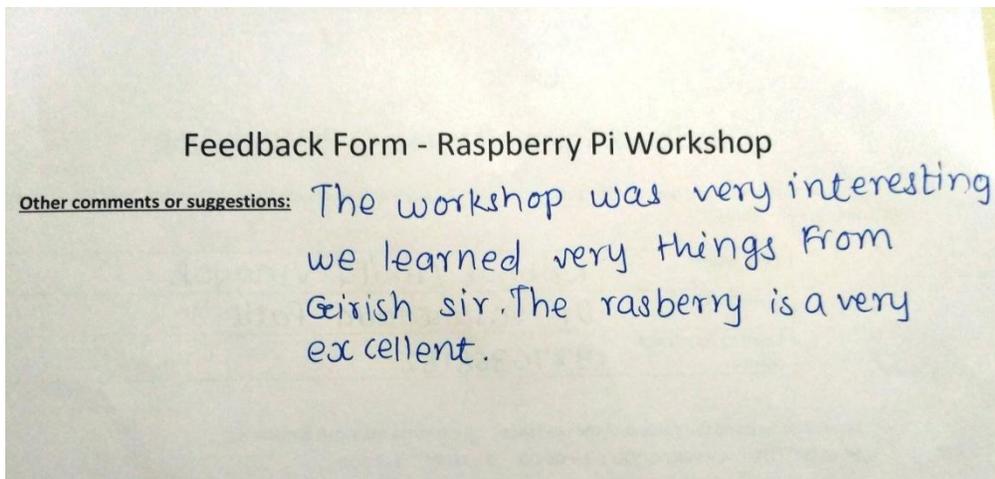
4) Sahil Shaikh ( Hutatma Balveer Shirishkumar Vidyalay ) : 8<sup>th</sup> std



5) Sudeep Pawar : Dr Vasantdada Patil Vidyaniketan ( 9<sup>th</sup> std)



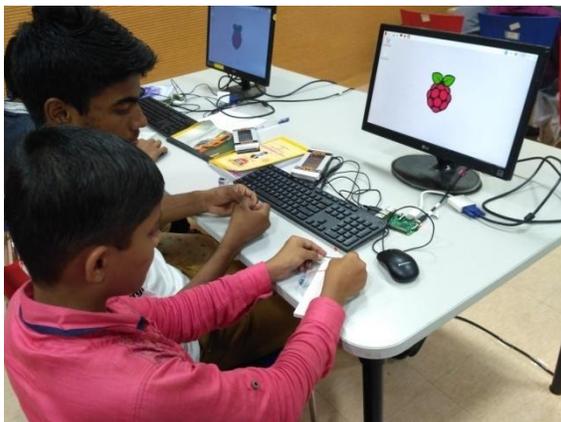
6) Nikita Kalbhor : Dr Vasantdada Patil Vidyaniketan ( 9<sup>th</sup> std)



**Photographs**



*Dr Girish Arabale explaining about Raspberry Pi during the workshop*



*PMC student participants in the workshop*

**Participants learning to connect LED**



**Workshop Participants with the Speaker Dr Girish Arabale**



**Workshop: Having Fun with Scratch Programming**

The Exciting Science Group conducted a 1-Day workshop on “Having Fun with Scratch Programming” on Saturday, 16 September 2017. This workshop was hosted by the British Council, Pune and was targeted at children between the ages 8 – 12. 11 students from 10 schools participated in the workshop, including 2 students from 1 PMC school (Hutatma Balvir Vidyaniketan). Through the full day workshop, students were introduced to the fundamentals of Scratch, a graphical programming interface developed by the Media Lab – MIT, and available for free download.

**Details:**

| Date                   | Speaker           | Title                               | Duration | No. of Participants | No. of Volunteers |
|------------------------|-------------------|-------------------------------------|----------|---------------------|-------------------|
| 16 Sept 2017, Saturday | Shraddha Gargatti | Having Fun with Scratch Programming | 6 hours  | 11                  | 2                 |

The workshop sessions were conducted by Shraddha Gargatti, Senior Associate, ESG. Students from PMC schools used laptop provided by ESG, while the others brought their own laptops. Ms Gargatti introduced logical structures and programming through the scratch interface. Interesting animation and games were demonstrated using controls and webcam. At the end of the workshop, children were able to develop their own animation, games and graphic stories. During the workshop, participants were given a chance to develop their own story or game. Gayatri Kshirsagar, Associate ESG and a parent volunteered during the workshop and helped Shraddha run the full-day session. The registration of participants was coordinated by the British Council, Pune.

**Photographs:**



**Speaker Shraddha Gargatti explaining the Scratch Interface and Programming to the participants**



**Workshop Participants**

**What the participants had to say?**

After the workshop, kids were asked to fill up an evaluation form in which we had asked the kids to rate us between 1 and 5 (1-Poor; 2-Okay; 3-Good; 4-Very Good; 5-Excellent) on each of the activity (content, explanation by faculty, overall rating, etc). 8 participants gave a rating of 5 and 3 participants gave a rating of 4. All the participants gave a feedback that they feel confident using the Scratch interface after this workshop. Also, the students were asked for other feedback and suggestions, the following are what they had to say:

It is awesome!!! I would really recommend you to come to these workshops.

- Rishabh Chopra, St.Mary's School

"Very Good workshop. Great for beginners! I also met others and we helped each other as well. Overall, this workshop was great"

- Arrooh Karnani, Vidya Valley School

"Excellent Workshop. If more events come up please tell me. Even if it is about science or any other subjects. I am from std 6"

- Rucha Ganu, Dr Vikhe Patil Memorial School

"I felt it was excellent."

- Anuja Kulkarni, Gurukul School

**Science Club Programme at PMC Schools**

**What:**

The students are mentored by research students from IISER-P and NCL during the weekly sessions. It gives a plenty of opportunity for the children to do hands-on science and enhance the science they learn in their classes. 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. These science clubs are structured to take the student participants through a journey that starts with discovering the excitement of science; then transitions to learning the scientific method of making observations, framing hypotheses and arriving at conclusions; and winds up learning how to ask and frame research questions and develop an approach to answering this question.

**When and for how long:**

Once a week. Typically 1- 1.5 hours.

**Where, Who attends, Volunteers:**

The science clubs are run in the following schools:



**K.C. Thackeray Vidyaniketan  
Daruwala Pul (KCT)**

Number of students attending per week: 28  
Grade: 8



**Hutatma Balvir Vidyalaya  
Police Lines (HB)**

Number of students attending per week: 26  
Grade: 8



**Dr. Vasantdada Patil Vidyaniketan  
Shukrawar Peth (VDP)**

Number of students attending per week: 26  
Grade: 8



**Ahilyadevi Holkar I-Teach PMC School  
Chavan Nagar, Baner (AH)**

Number of students attending per week: 30  
Grade: 8

{ ESG REPORT }

**Photographs of the Science Club Sessions:**

**Hutatma Balveer Vidyalaya**



**K C Thackeray Vidyaniketan**



**Dr Vasantdada Patil Vidyaniketan**



**Ahilyadevi Holkar School**



**Photographs of the Science Club Sessions:**

**Hutatma Balveer Vidyalaya**



***Science Club sessions for Hutatma School at Science Activity Centre, IISER-Pune***

This year ESG explored the feasibility of conducting the Science Club Programme for PMC schools at IISER-Pune. As a pilot, starting January 2018, ESG started organizing the science club sessions for Hutatma School science club students at the newly built Science Smt.Indrani Balan Science Activity Centre at IISER-Pune. This centre houses a spacious laboratory facility for hands-on activities along with a lecture hall with a 250+ seating capacity. We believe it will be an inspiring experience for the students to come to the IISER campus, so much so that it will make science club more attractive for the students.

With high-quality resources and infrastructure, it give us a scope for better execution of hands-on activity in the laboratory space at the IISER Science Activity Center and qualitatively engage these students in inquiry-based sessions to enhance their approach to scientific methodology.

Our students get a lot to learn at the “Indrani Balan” lab at IISER. Our students from Science Club get hands-on experience while handling the abundant amount of equipment’s available for them. Also, as they get to interact with the equipment’s and mentors they come up with a lot of questions. The answers given by the mentors to their questions help the students to understand the experiments thoroughly. Also the interaction with the mentors helps our students to build up their confidence. The student to equipment’s ratio is 4:1 which is really good. Every student gets decent enough time to handle the equipment and hence help them understand the objectives of the experiments. As our students get a chance to study outside of the regular school environment, the learning becomes joyful for them.

The internet session conducted on 13<sup>th</sup> January 2018 was very informative for the students. Every student was given a separate machine and was methodically taught how to use Google for research work. I am sure that sessions like these will be very well received by the students if conducted regularly.

- Neeta Gulawani, Science Teacher, Hutatma Balvir Vidyalaya

The Science Club Fellows conducting the Science Club sessions at the 4 PMC schools:

**Ahilyadevi Holkar I-Teach PMC school:**



*Swastik Mishra*  
3<sup>rd</sup> year BS-MS, IISER-P



*Dhyanesht Dubal*  
PhD Student, IISER-P



*Anup Singh*  
PhD Student, NCL Pune

**Hutatma Balveer Vidyalaya:**



*Kunal Kothekar*  
Research Scholar, IISER-P



*Hitesh Wankhede*  
2<sup>nd</sup> year BS-MS, IISER-P



*Muzammil Khan*  
Ph D student, NCL

**K C Thackeray Vidyaniketan:**



*Zakhiya P C*  
3<sup>rd</sup> year BSMS, IISER-P



*Anwesh Bhattacharya*  
4<sup>th</sup> year BSMS, IISER-P



*Sankalp Chaudhari*  
2<sup>nd</sup> year BSMS, IISER-P

Dr Vasantdada Patil Vidyaniketan:



*Shekhar Jadhav*  
4<sup>th</sup> year BSMS, IISERP



*Shilbhushan Shambharkar*  
4<sup>th</sup> year BSMS, IISERP



*Lokesh Tayade*  
4<sup>th</sup> year BSMS, IISERP

## Talks at PMC Magnet Schools

### What:

Scientists (from IISER-P and NCL) visit three PMC magnet schools once a month, and delivered a talk (typically on topics from school textbooks), and interact with the kids. ESG typically organizes 5 talks at the schools during the academic year. At the end of these talks, students are given small gift (such as a book, or a science kit that we specially put together) that typically relates to the topic discussed. The students are also provided a snack at the end of the talk.

These talks happen during the science club and as a part of these talks we enable school students from these PMC schools to directly interact with IISER-P faculty and NCL scientists.

### Schools covered:

- *K C Thackeray Vidyaniketan, Near Daruwala Pul, Shaniwarvada*
- *Hutatma Balvir Shirishkumar Vidyalaya, Opp Police lines, Shivaji Nagar*
- *Dr Vasantdada Patil Vidyaniketan, Shaniwar Peth*

### When, How Often:

These talks are typically planned once a month:

| Date  | Speaker                  | What was the talk about?               | Gift given to students                    | No of students |
|---|--------------------------|--|---|----------------|
| August 2017                                   | Anuya Nisal, NCL-Pune    | What is so interesting about proteins? | Book titled "Vanaspati che anokhe vishwa" | 76             |
| September 2017                                | Tressa Jacob, IISER-Pune | Genetics                               | Book titled "Doing Science is Fun"        | 67             |
| January 2018                                  | Kiran Kulkarni, NCL Pune | Cell Migration                         | Book titled "Safar Vigyan Katachi"        | 85             |
| February 2018                                 | Nishad Matange, IISER-P  | Insulin and Diabetes                   | Book Titled "Shot in the Arm"             | 87             |
| March 2018*<br>(*Talk postponed in 2 schools) | Anil Zankar              | Strength of Indian Science             | Book Titled "Chanda Akashdarshanachi"     | 39             |

**Photographs of the talks:**



**Talk on "Proteins" by Dr Anuya Nisal, NCL Pune**





**Talk on “Genetics” by Dr Tressa Jacob, IISER-Pune**



**Talk on “Cell Migration” by Dr Kiran Kulkarni, NCL Pune**



**Talk on “Insulin” by Dr Nishad Matange, IISER-Pune**

What did the teachers say?

NCL Lecture - 20/9/17

आज र्कीच्या विद्यार्थ्यांसाठी डॉ. त्रिशाजेकव या आचार्यांच्या मॅडम गुणसुत्रांमुळे माझी देख्यासाठी झाल्या होत्या. त्यांच्या सोबत गाथीतही होती.

गुणसुत्रे, त्यांचा अभ्यास का करावचा हे विद्यार्थ्यांना- Film, P.P.T. द्वारे उदाहरणांसह स्वरूप छान पध्दतीने स्पष्ट करून सांगितले. त्यात प्रभावी, अप्रभावी गुणसुत्रे कोणती हेही उदाहरणांकरून समजावून द्या. चिकटलेली कानाची पाठी, न चिकटलेली कानाची पाठी यात न चिकटलेली प्रभावी असते. दुसरे उदाहरण जिजेची पुंगळी म्हणजे rolling tongue windows peak हेही प्रभावी गुणसुत्रांमुळे असते.

तसेच phenylthiocarbamide (PTC) paper च्या सहाय्याने टेस्ट केली. स्वरूप कडू टेस्ट लागली पण काहीना अभिवाव कडू जाणवले नाही.

यावरून विद्यार्थ्यांना आपल्या मध्ये आई व वडीलांकडे कसे प्रभावी गुणधर्म आपल्यात येतात व आपण कसे आईवडील, नातेवाईकांसारखे असतो हे समजवले.

तसेच पिढ्यांमधील रोग, दोष कसे येतात त्यांचा कसे दोषनिवारण करावचे हेही स्पष्ट केले.

Blood ग्रु. वरुनही समजावले. इ.गळीत हा अभ्यास आहे. ते यांना र्कीत कळले. स्वरूप आवडले.

स्वीना

धन्यवाद...

Mrs Neeta Gulawani, Science Teacher, Hutatma Balvir Vidyalaya

डॉ. वसंतदादा पाटील माध्यमिक विज्ञानिकेतन  
300, शुक्रवार पेठ पुणे 2

यावर्षी science club मध्ये सहिवापासून मुळ आला पहिले लेक्चर डॉ. अनुशा निमाल यांचे डॉ. K. N. पंतलाय यावर झाले सिल्व्हेट आ जास्त उत्पादन चीनमध्ये होणे. भारताचा दुसरा क्रमांक. स्वामी किड्याचे जीवनचक्र कसे असते हे सांगितले. सिल्व्हेट मजवून असते. त्यांनी स्वामी किड्याचे कोष व वेगवेगळ्या प्रकारचे कोष दाखविले.

Mrs.Asavari Gumaste, Science Club Coordinator, Dr Vasantdada Patil Vidyaniketan

## Summer Internship Programme

**About the programme:** Exciting Science Group has been organizing Summer Internship Programme for PMC students between April to June since the year 2015. The objective of the internship programme is to provide an opportunity for PMC students to work with mentor scientists and PhD students at NCL and experience what it means to work in a research laboratory.

This year, we selected 4 students through Research Idea competition which was organized by ESG in March 2017 for our partner PMC schools. The winners of this competition were from these Vidya Niketan schools: Hutatma Balveer Shirishkumar Vidyalaya, K.C Thackeray Vidya Niketan and Dr. Vasantdada Patil Vidya Niketan.

The four students also attended **Math gaming workshop** from 17 April to 29 April 2017 at Venture Center, in which they were trained to improve logical, analytical and strategic thinking through fun games which were based on mathematical principles and strategies. Later, the students completed the **Summer Internship** from 2 May 2017 to 9 June 2017 in research laboratories at CSIR-National Chemical Laboratory, Pune.

| Name of the student | Name of the school                     | Name of the Scientist |
|---------------------|--|-----------------------|
| Neha Kalbhor        | Dr. Vasantdada Patil Vidya Niketan     | Dr. Chetan Gadgil     |
| Saurab Khandekar    | K.C. Thackeray - Vidya Niketan         | Dr Ulhas Kharul       |
| Sumit Pandit        | Hutatma Balveer Shirishkumar Vidyalaya | Dr. Chetan Gadgil     |
| Avinash Bhende      | Hutatma Balveer Shirishkumar Vidyalaya | Dr.BLV Prasad         |

Dr. Chetan Gadgil, scientist at CSIR-NCL, along with his PhD student Shraddha Puntambekar mentored Neha Kalbhor and Sumit Pandit in data visualization and analysis. The students extracted and compared the data from various resources and they learnt to plot graphs and analyze the results.

Dr.BLV Prasad, scientist at CSIR- NCL, mentored Avinash Bhende. He worked with Post doctoral student, Dr Vijay Choudhary. Avinash learnt about periodic table, atomic structures of elements, nano-particles and few experiments involved in synthesis of Nano-particles.

Dr Ulhas Kharul, scientist at CSIR- NCL, mentored Saurabh Khandekar. He worked with PhD student Shabib Hussain. Saurabh learnt about membrane filtration, its types, uses and applications.

We organized orientation session on 2 May 2017, to introduce the interns to their mentors and PhD students. On the first day, the students were also briefed about safety precautions to be followed in research laboratories.

The students maintained a weekly report of the work done by them in the laboratory. These activities helped them to record and interpret observations. They also learned to present the data of their laboratory work. Gayatri Kshirsagar coordinated with these students during the internship programme.

A felicitation event was organized on 9 June 2017 to meet these students and their mentors at the end of this programme. The students gave a brief presentation of their work and also shared their learning experience during the event. At the end of this event, the students were felicitated by their mentor Scientist with certificate of participation.

**Photographs from the Summer Internship Programme 2017:**

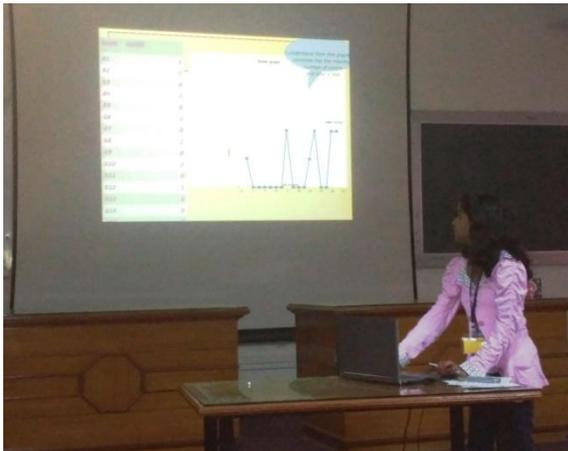


***Orientation session for the interns and their parents (2 May 2017)***



***Summer Interns Neha, Sumit, Saurbah and Avinash along with their Mentors Dr Chetan Gadgil and Dr BLV Prasad at NCL***

**Students explain their research work at the Felicitation event (9 June 2017)**



**Neha Kalbhor**



**Avinash Bhende**



**Saurab Khandekar**



**Sumit Pandit**



**Summer Internship Programme: Felicitation Event: 9 June 2017**

**Feedbacks:**

After the internship programme, the PMC students were asked for their feedback and suggestions, the following are what they had to say:

*"I like working with computers and luckily I got opportunity to work on data analysis. Dr. Chetan and Ph.D students resolved all the queries. I got chance to see various labs in NCL. Thank you for giving me an opportunity."*

- **Sumit Pandit : ( Hutatma Balvir Vidyalaya)**

*I enjoyed Summer Internship at NCL. I learnt about filters, its types and application in day to day life and in industries. Thank you for giving me an opportunity."*

- **Saurabh Khandekar (K.C. Thackeray Vidyaniketan)**

*I enjoyed Math gaming workshop and learnt a lot from Dr. Chetan and his Ph.D students at NCL. In internship, I learnt to compare the data and plot graphs.*

- **Neha Kalbhor (Dr. Vasantdada Patil Vidyaniketan)**

*"I learnt properties of various elements from periodic table. I saw various instruments like weighing balance, Magnetic stirrer, centrifuge, and spectrophotometer and learnt their uses. I also learnt various chemical reactions."*

- **Avinash Bhende : ( Hutatma Balvir Vidyalaya)**

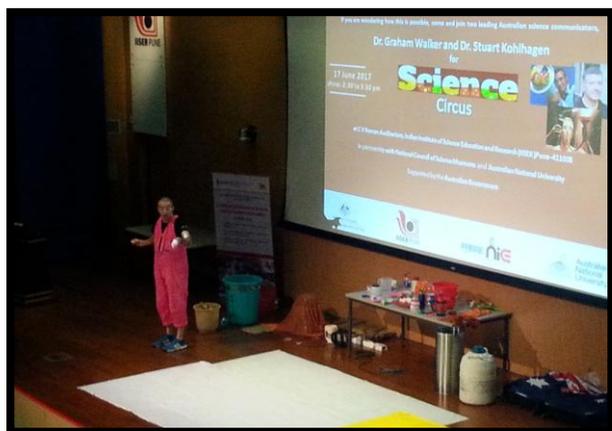
## Special Event: Science Circus

A special event called “Science Circus” was organized by IISER-Pune on Saturday, 17 June 2017. More than 120 students invited by Exciting Science Group participated in this event.

During the 60 minute event, Australia’s foremost science communicators Dr Graham Walker and Dr Stuart Kohlhagen made the audience think, laugh and question. Can you really launch marshmallows out of a vacuum cleaner, make rockets from common household items, improve your cricket skills with physics and eggs, or launch teddy bears using liquid nitrogen? The speakers demonstrated exciting experiments to answer these questions, exploding their way through the chemistry and physics of things. There was loads of audience involvement, laughs, exciting experiments, and learning. It was a celebration of the wonder of science.

This range of activities were designed to allow students to experience and develop skills in problem solving, logic, and critical thinking using just students’ minds, physical agility, teamwork and quick thinking.

### Photographs of Science Circus:



*Dr Graham Walker performing some exciting experiments during “Science Circus” at IISER-P*

## Science and Art Competition – Phase I

The Exciting Science Group (ESG) organized "Science and Art competition" on Saturday, 11 November 2017 at IISER-Pune from 9 am to 1 pm. This competition was open to 5<sup>th</sup> to 10<sup>th</sup> grade students. This was the third time, ESG organized "Science and art competition" for the students and ESG received more than 400 registrations from 105 different schools across Pune and Chinchwad.

**Science and art have certain aspects in common - imagination, ideas, innovation and creativity.**

*The goal of this competition was to help students understand the correlation between science and art and offers them a platform to apply their imagination and creativity. It offered an excellent opportunity to students who are good in illustration to apply their artistic talents for scientific concepts.*

**This competition was conducted in two groups:**

Group 1: Junior category: For 5<sup>th</sup> and 7<sup>th</sup> standard students

Group 2: Senior category: For 8<sup>th</sup> and 10<sup>th</sup> standard students

*For the competition, following extempore topics based on Science and technology were given:*

| Sr No | Junior category (5 <sup>th</sup> to 7 <sup>th</sup> std) | Senior category (8 <sup>th</sup> to 10 <sup>th</sup> std) |
|-------|--|---|
| 1     | If I were an astronaut !                                 | If I were a scientist!                                    |
| 2     | A day in Science lab                                     | Futuristic transport                                      |
| 3     | My dream discovery                                       | Climate change and its effects on living organisms        |

Prof Milind Watve (IISER Pune) was invited as the chief guest for the event. He is a great researcher, musician, poet and artist. He shared his experience about his research work and art. He also addressed the questions related to fields like ecology, astronomy and evolution. The students were very happy to interact with him. Artist Jayanti Patil was a judge of the competition. ESG felicitated Prof Watve and artist Patil for their time and valuable contribution.

During the competition, all the participants received drawing sheet, certificate of participation from the Exciting Science Group. Participants and volunteers were also provided with refreshment during the events.

The winners were felicitated with trophies at the end of the competition. Ms. Gayatri Kshirsagar handled the event publicity, and coordination with the chief guest, judges, teachers, students and volunteers. Ms Shraddha Gargatti, volunteers from IISER and Cognizant CSR team helped in registration, distribution of drawing sheet, refreshments and feedback forms.

All the volunteers received certificate of appreciation and a small gift from Exciting Science Group.

**Volunteers who helped us during the event:**

| <b>Name of IISER Volunteer</b> | <b>Name of Cognizant volunteer</b> |
|--------------------------------|------------------------------------|
| Vaibhav Ingale                 | Israil Khan                        |
| Lokesh Tayade                  | Arabinda Palai                     |
| C Dilsha                       | Rahul Agarwal                      |
| Chetna Taneja                  | Gunjan Rao                         |
| Ananya Bandopadhyay            | Anjana A                           |
| Debiprasad Panda               | Mrunal Rajput                      |
| Satyam Saurabh                 | Aarthy A                           |
| Dnyanesh Dubal                 | Rahul T                            |



**Prof Milind Watve addressing the students during the Science and Art competition**



***300+ students participated in the event***

Photographs of the event:



**Inclusivity Drive**

As a part of our objective to foster inclusivity and diversity, we invited registrations from special children (disabled children) for Science and art competition 2017. And it was an extremely satisfying experience to welcome students from the **Mook Badhir Vidyalaya (Deaf and Dumb school), Chinchwad.**

*We are glad that with this one small step, we have not only crossed the language barrier by opening it to all the schools (State board / CBSE / International schools) but also created an unique platform for special children to express their ideas about Science through art. ”*



8 students from Mook Badhir Vidyalaya participated in this competition.  
  
*One of the students also received second prize in Junior Category.*



***Drawings made by Special Children***

**Results of “Science and Art competition” held on 11 Nov 2017**

**1. Group 1 : Junior Category : 5<sup>th</sup> and 7<sup>th</sup> standard students**

| Position  | Name              | School                          | Topic                   |
|-----------|-------------------|---------------------------------|-------------------------|
| Winner    | Swaraj Landage    | Army Public School, Dehu Road   | My dream discovery!     |
| Runner Up | Manasi Vishwakara | Chinchwad Mook Badhir Vidyalaya | My dream discovery !    |
| Third     | Riddhi Lokhande   | Air force school, Chandan Nagar | A day in a science lab! |

**2. Group 2: Senior category : 8<sup>th</sup> and 10<sup>th</sup> standard students :**

| Position  | Name           | School                        | Topic  |
|-----------|----------------|-------------------------------|--|
| Winner    | Manasi Nikam   | City Pride school             | Futuristic Transport !                           |
| Runner Up | Suraj Jagadale | Army Public school, Dehu road | If I were a scientist !                          |
| Third     | Eshan Chaubal  | SES Gurukul School            | Climate change and its effect on living organism |



**Winners with Chief guest Prof Milind Watve and Artist Jayanti Patil**

Winners of Science and Art competition 2017

Junior category

Senior category



**What did the chief guest, volunteers and teachers had to say?**

“This is a really grand event “ – **Prof Milind Watve (IISER Pune)**

“I could feel “Tare Zameen par” beacuse of this event” - **Dnyanesh Dubal (IISER Pune)**

“Science and art both are different subjects but the competition was the combination of both. We saw our students , thinking in scientific way and sketching that on art paper with free hand. This competition was different than other competition.” – **Meena Kadam ( Teacher , Nanded City Public School )**

“Thank you for inviting us. It was pleasure seeing such creativity that all the kids have in their drawings.”- **Arbinda Palai (Cognizant)**

“Thank you for giving us opportunity to contribute for this event. All the volunteers are really happy to be part of it.” - **Aboli Mahajan (Cognizant)**

“The students had exam on the same day but they were excited about this comptition. After finishing the exam, they came to participate in the event.”- **Vasanti Vibhandik (Teacher, Modern school)**

“The competition was well organised. We are really thankful to ESG for creating platform for the students” - **Pranjali Dixit (Teacher, MSS High school, Chinchwad)**

“Its More like Tare Zameen Par moments , live.”- **Israil Khan (Cognizant)**

## ***What did the participants have to say?***

After the event, the school students were asked for their feedback and suggestions, the following are what they had to say:

“ A great experience . You should conduct more competitions so that art also get more promotions and more people will gain interest in drawing and they will attract towards science.” - **Nishtha Shukla (Air force School ) : Std 10<sup>th</sup>**

“It is nice platform to promote science and technology. Through this, students understand science and they also enjoy it to a point and draw. This competition should hold every year to grow knowledge and promote science.”

- **Saniya Shaikh (Angel High school) : Std 8<sup>th</sup>**

“ With the help of competition like this , we get a new experience of doing a different work. Also, we can improve our art and education in this and from this. I enjoyed this competition and learned something new.” **Kashat Shiledar ( BVP English Medium school) : Std 8<sup>th</sup>**

“I feel, I am in big competition” – **Haris Shaikh (SBP school) : Std 5<sup>th</sup>**

“I liked coming here and saw IISER Institute 1<sup>st</sup> time. The event was very nicely managed.” **Bhumi Tantia ( Delhi Public school ) : Std 6<sup>th</sup>**

“This competition should be held in every school to express the creativity through art.” - **Prasann Teradal (Army public school, Dehu road ) : Std 8<sup>th</sup>**

## INSEF Regional Science Fair

Exciting Science Group in collaboration with the Science Society of India (SSI) organized the first Indian Science & Engineering Regional Fair (INSEF) on **25 November 2017 (Saturday)** at IISER-Pune. The Science Society of India runs INSEF at Regional levels followed by a National level fair every year in association with a local institution to inculcate project based learning among students. The Pune Regional Fair provided an exciting opportunity for students currently enrolled between class 5-12 to work on research-based science, technology and engineering projects.

### The categories were as follows:

- 1) Junior category: Class 5 to Class 8
- 2) Senior category: Class 9 to Class 12

The Regional Fair received **45 online project entries**. Apart from Pune, the fair received entries from as far as Dubai, Warangal, Ahmedabad, Mandya and Nagpur. 25 projects were shortlisted out of which 20 presented their research projects to eminent scientists from IISER-Pune and NCL at the fair. After the judging process, the fair was open for public viewing followed by the valedictory function.

L.S.Shashidhara, Professor in Biology Department, IISER-P was invited as the Chief Guest for the valedictory. In addition to Certificates for all participants & Medals for all the winners, the Exciting Science Group also gave away cash prizes for Gold and Silver Medal winning projects. Dr Raghav Rajan, Faculty IISER-Pune helped ESG in coordinating for the event.

### Shortlisted projects for the INSEF Regional Fair at Pune:

| Award   | Category         | Project Title  | Participant/s          | School   |
|---|------------------|--|------------------------|--|
| <i>GOLD (Qualified for Senior INSEF National Fair-B'lore)</i> | <i>Biology</i>   | Microchip for the detection of pathogenic DNA using LAMP assay: Development of a Point-of-Care; sample to result; temperature independent; quantitative nucleic acid amplification test using Loop Mediated Isothermal Amplification | <i>Dev Narang</i>      | Bhavans Lloyds Vidya Niketan; Bhugaon Road; Wardha |
| <i>GOLD (Qualified for Senior INSEF National Fair-B'lore)</i> | <i>Chemistry</i> | Darbha Membrane Filter Plant   | AKHANDJYOTI GUPTA      | Sant Shri asharamji Gurukuldabad ;Gujarat          |
| <i>GOLD Qualified for Junior INSEF National Fair-Rajkot</i>   | <i>Biology</i>   | Can unheard sounds make seeds germinate faster? Testing the effects of infrasonic and audible low frequency vibrations on the germination of Kala Chana (Cicer Arietinum)  | <i>Sonit Sisolekar</i> | Blue ridge Public School; Hinjewadi; Pune          |

|                    |                      |   |  |   |
|--------------------|----------------------|---|--|---|
| SILVER             | Environment          | Sole and Tile generator: A smart way of generating electricity by walking                               | Chakreesh Minnal   | Delhi Public School Bharuch                       |
| SILVER             | Technology (Junior)  | Silage & Cattle Fodder banks – an Innovative approach to address fodder shortage during drought seasons | Velide Gayatri & Vennela Rathod                          | Delhi Public School; Warangal                     |
| SILVER             | Environment (Junior) | Water conserving pot  | Ishita Pushkar Darade                                    | Sri Sri Ravishankar Vidya Mandir; Bhugaon; Pune   |
| SILVER             | Computer Science     | Mosquito detector Arduino kit based on sound sensors  | Vikram Vinay Jirgale                                     | Jnana Prabodhini Prashala                         |
| BRONZE             | Technology           | Green pen saves plastic pen   | Janhavi Sanjay Adisare                                   | Abhinava Vidyalaya English Medium Primary School  |
| BRONZE             | Engineering          | RoadVisor: A Smartphone App to Sense Bumpy Conditions on Indian Roads                                   | Shreya Sandurkar   | Amanora Pearson School                            |
| BRONZE             | Engineering          | SMART-BIN 1.0   | Shivam Vijay Bomble & Advait Avinash Bendre              | Dr.Kalmadi Shamrao High School;Ganes h Nagar;Pune |
| BRONZE             | Engineering          | Multipurpose Agriculture Machine  | Mast. Ritik Rupchand Ramod & Mast. Yash Vijay Yenurkar   | Bhavan's B P Vidya Mandir; Ashti. District:Nagpur |
| BRONZE             | Energy               | A Practical solution to reduce turbocharger lag   | Anshul Vardhan   | Delhi Public School; Mohammadwadi; Pune           |
| HONOURABLE MENTION | Technology           | Ecofriendly Multipurpose Equipment  | Mast. Gautam Umesh Krishnan & Mast. Badal Jitendra Rathi | Bhavan's B P Vidya Mandir; Ashti. District:Nagpur |
| HONOURABLE MENTION | Physics)             | footstep electricity generator  | Sandeep Ramesh Ranmode                                   | Vidya Pratishthan's New English Medium school     |
| HONOURABLE MENTION | Environment          | Eco-Bin   | Kushagra Goel  | Akshara International School Pune                 |

|                           |                  |  |   |   |
|---------------------------|------------------|--|---|---|
| <i>HONOURABLE MENTION</i> | Chemistry        | Floating cups  | SOHAM BABAR & PARTH JOSHI                               | Jnana Prabodhini Prashala                         |
| <i>HONOURABLE MENTION</i> | Biology          | Best Out of Household Waste  | Mast. Arjun Jitendra Gautam & Mast. Ninad Arun Wadaskar | Bhavan's B P Vidya Mandir; Ashti. District:Nagpur |
| <i>HONOURABLE MENTION</i> | Computer Science | Element flame colours: Relationship with their arrangement / position in periodic table? | Ananya Amit Gandhi                                      | Abhinava Vidyalaya Eng. Med. High School; Pune    |
| <i>HONOURABLE MENTION</i> | Biology          | Effect of music on plants  | SOUMITRA MAHASHABDE & OMKAR CHAVAN                      | Jnana Prabodhini Prashala                         |
| <i>HONOURABLE MENTION</i> | Computer Science | Advance Messenger service  | Samarth Rahul Tarkunde                                  | DES NEW ENGLISH SCHOOL                            |

Photographs of the event:

*Participants presenting their projects to scientists from IISER-P and NCL, Pune*



Public Viewing of the INSEF Regional Fair hosted by ESG at IISER-Pune



**Valedictory Function:**



**Opening Remarks by Dr Raghav Rajan, IISER-P**



**Judge Steven Spallone sharing words of encouragement with participants**



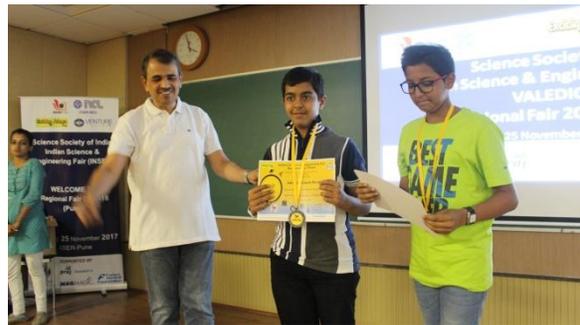
**Prof. L.S. Shashidhara, Chief Guest for the Valedictory Function, addressing the participants**



**Project guides being felicitated with certificates by Prof. Shashidhara**



**Honourable Mention**



**Bronze Medal Winners**



**Silver Medal Winners**



**Gold Medal (Junior) Winner – Sonit Sisolekar**

**Gold Medal (Senior) – Dev Narang**

**Sonit Sisolekar won the Gold Medal at Junior INSEF National Fair held at Rajkot in January 2018**

**Dev Narang won the Gold Medal at the Senior INSEF National Fair held at Bengaluru in January 2018**



**Felicitation of Chief Guest, Prof. Shashidhara by Dr. Guruswamy**



**Felicitation of SSI President, Narayan Iyer by Dr. Sutirth Dey**



**Group Photograph**

**What participants had to say?**

*"I really enjoyed the whole experience. It helped to illustrate a project and also how to project my invention".*  
**Anshul Vardhan, DPS Pune**

*"It was very awesome to participate in the regional science fair. I was very impressed about the way the fair was conducted right from the setup, orientation, judging and also public viewing! Please accept my sincere thanks for a wonderful day at INSEF Regional Fair."*  
**Chakresh Minnal, DPS Bharuch**

*"The fair was well organised and the management was excellent. I got to learn many new things. Overall it was an excellent experience."* - **Yash Venurkar, Bhavan's Vidyamandir, Ashti**

## Mentoring for Research Projects

### ESG Mentored Project Wins Intel Excellence Prize at the IRIS National Fair

Pune student, Shreya Sandurkar from Amanora school, participated in the National Science Fair (called IRIS, the Initiative for Research and Innovation in Science) organized in New Delhi in November 2017 and won the “Intel Excellence in Computer Science” prize. The IRIS is organized annually with support from the Department of Science and Technology, Intel Corporation and the Indo US Science and Technology Forum. About 70 projects from school students around the country were selected to the National Finals, and Shreya was the sole representative from Pune. Unlike other science fairs, IRIS selects only research based projects that have a significant component of originality and innovation.

Shreya’s project was inspired by bad road conditions, and uses sensors built into most smartphones to record road conditions like potholes, speed breakers, sharp turns, etc. When this information is overlaid onto location information from GPS, a map of road conditions can be obtained. Crowd sourcing such data will yield reliable road quality information that will be of use to local government to prioritize repairs or to individuals planning their travel routes.

Shreya’s first prototype was presented to scientists from NCL and IISER at the Exciting Science Group research fair in Pune earlier this year. Their guidance helped her improve her project, and helped her qualify for the IRIS national finals. Describing her experience at IRIS, Shreya said, “I was very tensed a few days before IRIS. Advice from Prof. Bhas Bapat helped me at every step and by the end of the first day in the Manekshaw centre, I was actually enjoying myself. It is with support from the Exciting Science Group that I have won a special award in my first IRIS!”



***Shreya Sandurkar receiving the “Intel Excellence in Computer Science” award at IRIS Fair in November 2017***

Shreya’s project was also selected for INSEF Regional Fair organized by ESG at IISER-Pune in November 2017. She won a bronze medal at the fair.

**What Shreya had to say?**

I was very tensed a few days before IRIS, and I would like to thank Gayatri and Shraddha ma'am for supporting and guiding me. Even before I registered for IRIS, I had told you about RoadVisor, and since then, I have had great support from your side.

I would like to thank Dr.Bhas Bhatpat who guided me. Thank you so much sir. Your advice helped me at every step, and by the end of the first day in Manekshaw centre, I was actually enjoying myself. You knew about my nervousness, and helped me tactfully overcome it. I'm very thankful to you, sir.

I would also like to thank Dr.Guruswamy, as he relieved my tension when he came to my stall on the first day and gave a few words of encouragement. Thank you so much sir. Now I actually have some good friends I made in Iris who I chat with everyday!

I couldn't have made it till here without the support and guidance from you. Thank you very much.

It is with your support that I have won a special award in my first IRIS!

I won the 'Intel Excellence in Computer Science' certificate along with 200 USD as a cash prize. This is a huge motivation for me as I wasn't expecting anything.

I will try again next year, and will try my best to make it to ISEF.

Now, with the guidance you have provided, I know how to present, what kinds of projects they look forward to and how to make my project stand out.

It was just yesterday when I found out that I have been selected for INSEF as well. I'm very excited for that as well! I can't wait to come and meet you and Shraddha ma'am again!

Thank you again!

Shreya Sandurkar

## Mentoring for Research Projects

### ESG Mentored Project Wins Gold Medal at JUNIOR INSEF National Science Fair

Sixth grade Pune student, Sonit Sisolekar, from Blue Ridge Public school, participated in the INSEF National Science Fair (called the Indian Science and Engineering Fair) organized in Rajkot, Gujarat in January 2018 and won the Gold Medal in the Junior Category. The Science Society of India runs INSEF at Regional followed by National level every year in association with a local institution to inculcate project based learning among students. About 14 projects from school students around the country were selected to the National Finals, and Sonit was the sole representative from Pune.

Sonit's project was on "Can Unheard Sounds Make Seeds Germinate Faster? Testing the Effects Of Infrasonic and Audible Low Frequency Vibrations on the Germination and Growth of Kala Chana (Cicer Arietinum)". Prior to this research, Sonit had made a model a bone conduction hearing aid last year. While reading about bone conduction, he came across some literature which mentioned that infrasonic and low frequency vibrations travel to longer distances in earth than higher frequencies; and some animals like elephants and snakes can sense these vibrations. This led to the thought/question that germinating seeds and roots of plants (which are below the ground) might be getting affected by these subsoil vibrations too. This lead to further reading about plants' perception and the choice of the project (since very little is known about the effects of vibrations on germination).

After the Pune Regional Fair, Sonit received mentoring from IISER scientist from the Exciting Science Group for refining his study design and statistical analysis with various statistical tools. His guidance helped him improve his project, and present his research work confidently at the National Fair.

#### ***What his parent had to say?***

My son Sonit has won the gold medal in the INSEF NATIONAL Junior Science fair held at Rajkot yesterday (28 January 2018). I am really thankful to Gayatri for helping us find the great mentor like Dr Sutirth Dey, and to Dr Sutirth who was so patient with us and was always happy to help us. Sonit not only got the medal, but was also very much appreciated and praised by the judges for the work done on the statistics part of his research project.

All this was possible only because of the timely help Sonit received from Dr Sutirth. Dr Sutirth guided him in refining his study design and with the statistics part. Detailed, research level, statistical analyses with various statistical tools were a really difficult thing to understand for a 6th grade student, but Dr Sutirth explained those to Sonit so well and patiently that Sonit understand that all and also could explain those analyses with ease. I am really thankful to Dr Sutirth for the hard work and patience in helping him out.

**Another important point, I would like to mention is that, all the exciting science lectures have also helped in developing a scientific temper and the curiosity level in Sonit. This is a really important thing we got from the exciting science group, which will be an asset for life.**

Securing a gold medal at such a prestigious national level competition is a great thing indeed, but the journey, the learning experience and the excitement of doing science with great people like Dr Sutirth and all of you is really more valuable, in the long run, in my son's overall development in life. This is the biggest prize that he has got. Thanks again. - ***Dr Santosh Sisolekar***



*Sonit Sisolekar from Pune receiving the Gold Medal at the Junior INSEF National Fair on 28 Jan 2018 at Rajkot, Gujarat*



## Science & Art Competition – Phase II

The Exciting Science Group (ESG) organized "Science and Art competition" for PMC School Students on Saturday, 10 February 2018 at IISER-Pune from 9 am to 1 pm. This competition was open to 8<sup>th</sup> and 9<sup>th</sup> grade students.

This was the third time, ESG organized "Science and art competition" for PMC school students and ESG received **195 registrations from 19 different municipal schools** across Pune.

***Science and art have certain aspects in common - imagination, ideas, innovation and creativity.***

*The goal of this competition was to help students understand the correlation between science and art and offers them a platform to apply their imagination and creativity. It offered an excellent opportunity to students who are good in illustration to apply their artistic talents for scientific concepts.*

*For the competition, following topics based on Science and technology was given on the spot:*

| SI No | Junior category (5 <sup>th</sup> to 7 <sup>th</sup> std) |
|-------|--|
| 1     | If I were an astronaut!                                  |
| 2     | A day in Science lab!                                    |
| 3     | Science in nature around you !                           |
| 4     | A world without water!                                   |

Prof Pushkar Sohani (IISER Pune) was invited as the chief guest for an event. His area of research is in Historic Preservation, Islamic Architecture, Indo-Persian Cultural History, Early Modern Trade Networks, Numismatics, and Archaeology. He addressed students on the topic "Science and art". He briefed them about correlation of science, architecture and various other art forms. The students were very happy to interact with him. Scientist and Artist, Prof Ambika judged the competition.

During the competition, all the participants received drawing sheet, coloring materials, and certificate of participation from the Exciting Science Group. Participants and volunteers were also provided with lunch during the events.

The winners were felicitated with cash prizes at the end of the competitions. Ms. Gayatri Kshirsagar handled the event publicity and coordination with PMC education officer, the chief guest, judges, teachers, students and volunteers. The volunteers from IISER helped in registration, distribution of drawing sheet and feedback forms.

All the volunteers received certificate of appreciation and an honorarium from Exciting Science Group.

**Prof Pushkar Sohani addressing the students during the Science and Art competition**



**Scientist and Artist Prof Ambika during judging**



The participants engrossed making drawings based on Science and technology



**Results of “Science and Art competition” held on 10 Feb 2018**

Category : 8<sup>th</sup> and 9<sup>th</sup> standard students

| Position  | Name           | School                                | Topic                     |
|-----------|----------------|---------------------------------------|---------------------------|
| Winner    | Roshan Aade    | Hutatma Balveer Shirishkumar Vidyalay | The world without water ! |
| Runner Up | Simran Erande  | Hutatma Balveer Shirishkumar Vidyalay | A day in Science lab !    |
| Third     | Nikita Kalbhor | Dr Vasantdada Patil Vidyaniketan      | The world without water ! |

**Winners with Chief guest Dr Pushkar Sohani , Artist and Professor Ambika , PMC Education officer Mr Mali and ESG Team**

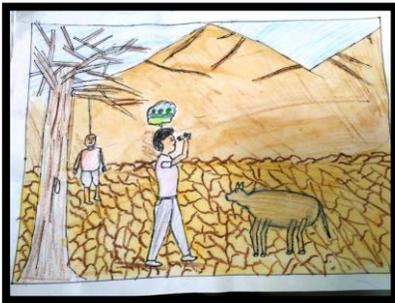


**Winners of Science and Art competition 2017:**

Roshan Aade

Simran Erande

Nikita Kalbhor



**Feedback: Science and art competition 2018**

**Feedback form: Science and Art competition 2018**

Name: निशिता वसंत कांबळे Std: 9<sup>th</sup>

School Name: कर्मवीर भाऊराव पाटील विद्याभिकेतन

- Do you feel this competition is an unique platform to promote Science and technology through art? Yes / No
- Overall rating: 2: poor 3: Ok 4: Good 5: Fantastic

Any suggestions

मला या स्पर्धेचा भाग घेऊन खूप छान वाटले. मी परिचयदाव विज्ञान स्पर्धेचा भाग घेतला. त्यामुळे जोडा अनुभूति भावा. खूप छान वाटले. सर्वांनी खूप छान-छान चित्र काढले. फिलम या विषयावर अनेक चित्रे सर्वांनी काढली.

**Feedback form: Science and Art competition 2018**

Name: स्नेहलता विठ्ठल खोटे Std: 8<sup>th</sup>

School Name: आनंद शशिनी सनास कर्मा विद्यालय

- Do you feel this competition is an unique platform to promote Science and technology through art? Yes / No
- Overall rating: 2: poor 3: Ok 4: Good 5: Fantastic

Any suggestions

मला येथे येऊन खूप सज्जा केली आम्हाला येथे चित्र काढणे आवडते. आम्ही येथे पाणी दिवाच जगा या विषयावर चित्र काढले आम्हाला चित्र काढताना खूप मज्जा आली. आम्ही येथे आम्हीवर खूप सज्जा केली.

**Feedback form: Science and Art competition 2018**

Name: बल्ला महादेव धानवळे Std: 5<sup>th</sup>

School Name: कै. लाडगावली सनास कर्मा शाळा

- Do you feel this competition is an unique platform to promote Science and technology through art? Yes / No
- Overall rating: 2: poor 3: Ok 4: Good 5: Fantastic

Any suggestions

मला येथे येऊन खूप छान वाटले इथला निसर्ग सज्जा खूप खूप आवडला. मागील मला विज्ञान काढून छान वाटले कारण मी या माधी कधीच विज्ञान काढले नवत त्यामुळे तुमचा धन्यवाद.

**Feedback form: Science and Art competition 2018**

Name: Nilmita Anil Lonhde Std: 8<sup>th</sup>

School Name: Babasaheb Sanas Kanya

- Do you feel this competition is an unique platform to promote Science and technology through art? Yes / No
- Overall rating: 2: poor 3: Ok 4: Good 5: Fantastic

Any suggestions

मला विज्ञान काढून खूप छान वाटले. सर्वांचे चित्र खूप छान आहे. नंतर येऊन नाही पाऊ मला मज्जा आली चित्र काढताना. येथे खूप छान वाटले. येथे खूप काही पाहायला येते मला खूप खूप छान वाटले.

**Feedback form: Science and Art competition 2018**

Name: सोमेश बापू कर्वे Std: \_\_\_\_\_

School Name: श्री मती सावित्री बर्ड फुले प्रशाळा अकोले पेट

- Do you feel this competition is an unique platform to promote Science and technology through art? Yes / No
- Overall rating: 2: poor 3: Ok 4: Good 5: Fantastic

Any suggestions

मला इथे येऊन खूप आनंद वाटला. मी इथे आल्यावर मला फेरा वाटले. मी खूप आनंदाने मॉडेल की मला इथे येण्याचा चास मिळाला. खूप खूप साभार.

**Feedback form: Science and Art competition 2018**

Name: Hemangi Satyawan Korche Std: 8<sup>th</sup>

School Name: Dr. Vasantdada Patil Madhyamik Vidyaniketan 300 Shukrawar Peth, Pune-2

- Do you feel this competition is an unique platform to promote Science and technology through art? Yes / No = Yes
- Overall rating: 2: poor 3: Ok 4: Good 5: Fantastic

Any suggestions

मला हा कार्यक्रम खूप आवडला. चित्रांचे विषय पण खूप छान होते. चित्र काढताना खूप मज्जा आली. हा कार्यक्रम मी कधीच विसरू शकत नाही.

This year, 195 students participated from 19 PMC schools in 2<sup>nd</sup> phase of Science and Art competition 2018



## ESG TEACHER TRAINING WORKSHOP

Exciting Science Group organized a teacher training workshop on 10th February 2018 at the IISER Science Activity Centre. This workshop aimed to train PMC school science teachers and corporate volunteers in fun and activity based learning method of pedagogy by demonstrating few experiments of various kinds from all subjects of science, which are given in the NCERT science textbook. This three-hour workshop was conducted by three IISER Pune students, Dnyanesh Dubal, Abhijit Pendse and Saurabh Kadam with total 50 participants: 37 science teachers from municipal schools around Pune and 13 corporate volunteers.

The workshop was divided into following three sessions:

1. Introduction to scientific enquiry and methodology.
2. Demonstrations of experiments
3. Hypothesis building and experiment designing

### **Introduction to Scientific Enquiry and Methodology:**

This session was directed towards building the rational thinking and scientific enquiry. Dnyanesh explained the scientific methodology by highlighting its four steps: Observation, Question, Hypothesis and Experiment. He emphasized the importance of hypothesis building and explained the definitions of scientific and non-scientific hypothesis using the falsifiability test.

### **Demonstration of Experiments**

The aim of this session was to demonstrate three methods of conducting experiments in the class room: Group demonstrations, Hands-on Activities and Charts and Models. Abhijit conducted group demonstration type of experiments for explaining gas laws using balloons and dry ice. The main focus of this activity was to show how to capture students' attention by showing fascinating and amusing things and then gradually build towards the heavy concepts behind the experiments. Later, Saurabh explained how to perform hands on activities for ray optics experiments by using laser and smoke. Such experiments are easy to construct and safe to handle. Thus, these experiments can be given to students where they can learn through hands-on experience.

Finally, Dnyanesh showed how to explain charts and models, which are particularly helpful for teaching Biology. He emphasized the importance of analogies and stories while explaining charts and models as they capture students' attention and boost their imagination towards visualizing the real systems.

### **Hypothesis Building and Experiment Designing**

To test the understanding of teachers on scientific methodology, volunteers conducted a small experiment. They gave them one of their most important problems of the 16th century, which was the generation of life. People back in those days were puzzled by the problem of maggot formation on raw meat. The question was, can life come from nonliving objects? In this exercise, they told them to construct a hypothesis based on this observation imagining that they live in 16th century Europe and construct experiments to falsify the stated hypothesis.

They got a good response from teachers, but very few of them wrote the answer by assuming that they have no prior knowledge and many of them wrote answers which they thought are the correct explanation. This made us realize that for teachers it is important first to make them forget what

they know and then think about the problem from scratch. Most of the time they presume that one is testing their knowledge and try to scientific answers. This activity was thus important for us so that we could tell them that it is not the right answer we are looking for but the right way of thinking is what matters.

The workshop was concluded by a question and answer session followed by a feedback session. The volunteers guided them in the end by providing right online resources for various experiments.

Any other specific feedback/comments/suggestions for improvement:

① New concepts were explained. ② Came to know why experiments are necessary to perform and how to convey them to students.

समजण्यास सोपे आहे कारण प्रयोग बघून शिकतांना लवकर कळते. समजले किंवा वांका निरसन आले. सर्वात खोऱ्या वण महत्वाच्या गोष्टी शोण्यामार्गाने समजल्या. उदाहरण दिल्याने संकल्पना व्यवस्थित समजल्या जे तीन कालेनटिअर आहेत. सांगतांना समजेल व कळेल अशा सोप्या शब्दात सांगितले phy ची आवड वारली, Bio सोपे वारले डॉ सोपे वारले.

The presentation, explanation & demonstration was overall very useful & Excellent.

Feedback:- It was very important for me and it help me a lot. In this 2 to 3 hours I got all clear ideas about science. The 3 volunteers they all were so good and great. with more and nice example.

The practices they a lot and all ideas go clear. comment:- Great work doing. Keep it up it will help a lot. all the Best!

**Photographs of the workshop**



***Participants of the ESG Teacher Training Workshop***

## ESG RESEARCH IDEA COMPETITION

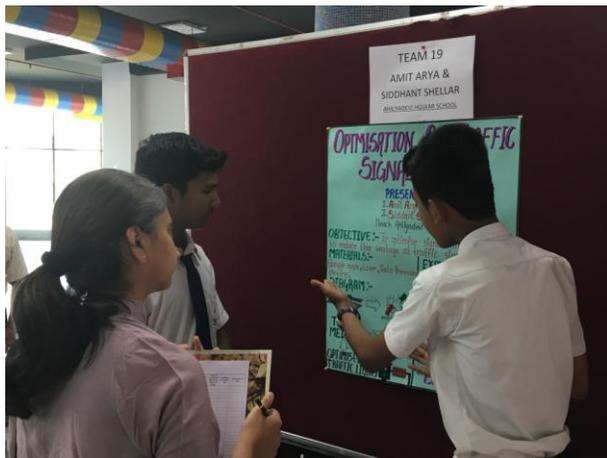
ESG organized a Research Idea Competition for PMC schools in March 2018 as a culmination of the science club programme. Research Idea Competition is an important way for us to get the PMC school students introduced to research and to the scientific method. The competition was held in 2 phases: Preliminary Round at the school level followed by the Final Round at IISER-Pune. **36 students viz. 19 teams from 4 PMC schools** selected in the preliminary round participated in the competition held on Sat, 17 March 2018 and presented their research ideas to judges Dr. Mugdha Gadgil, Dr Guruswamy, Dr. Kavita Joshi from CSIR-NCL and Dr Harinath Chakrapani from IISER-P at the final event. The judges selected the following teams as winners:

| POSITION    | NAME OF THE STUDENTS             | NAME OF THE SCHOOL         |
|-------------|----------------------------------|----------------------------|
| FIRST       | Prathamesh Bangal & Suraj Thorat | Hutatma Balvir Vidyalaya   |
| SECOND      | Fatima Shaikh & Shruti Kamble    | K C Thackeray Vidyaniketan |
| THIRD       | Ganesh Soni & Atharva Abnave     | K C Thackeray Vidyaniketan |
| CONSOLATION | Atul Zadpe & Priya Mishra        | Ahilyadevi Holkar School   |

The winners were felicitated with cash prizes along with a ESG certificate and a medal. All participants received a certificate of participation as an appreciation for their efforts. The teachers were felicitated with ESG mug as an appreciation for their support to the science club programme at their schools. The judges were also felicitated with a small gift for their efforts to volunteer for judging the event. ESG organized breakfast and lunch for all the participants, judges, science club fellows and accompanying teachers during the event.

**Photographs of the event:**

**Participants presenting their research ideas to the judges:**





**Felicitation of Participants:**



**Winners felicitated with prizes, certificates and medals:**



**Teachers felicitated with ESG Mug**





**Winners of ESG Research Idea Competition 2018**



**Participants of ESG Research Idea Competition 2018**

**Feedback on the Science Club Programme:**

IF there were no science club sessions then it would have made a lot of differences such as :-

1. We would not have got the opportunity to be familiar with different concepts and experiments.
2. It have not been not be aware of thinking <sup>about</sup> different questions and coming to the conclusion by myself.
3. It have been not helped me to be innovative and creative.

मला वाटे की, जर सायन्स क्लब नसता असेल तर Science या विषयाबद्दल जास्त काही माहिती मिळायची नसती. आठवड्यातून एकदा का होईना पण science club मुले आम्हा Science हा विषय प्रकट झाला नसतो.

सायन्स क्लबमुळे मला भरपूर काही शिकायला मिळाले. मला अगोदर सायन्स रूप अवघड जाण्या आणि मला सायन्स विषय आवडत नव्हता. पण जेव्हा सायन्स क्लबमधून मला दादा शिकवायला आला तेव्हापासून मला सायन्स विषय आवडायला लागला. जर दादा सायन्स क्लबकडून शिकवायला येत होता तेव्हा मला सायन्स ह्या विषयामधील मला खोली कळाली, बुद्दीचे सायन्स कळाले. त्यामुळे मी सायन्स क्लबला रूप एकू म्हणते.

I really loved the scientist talk about Diabetes. It was very useful for me to gain knowledge about Diabetes. There are two types of Diabetes such as type 1 and type 2. Type 1 happens mainly to the young children and type 2 happens mainly to the old people. I came to know the different causes, effects and suggestive measures.

The science club session helps me with the following :-

1. To be innovative and creative.
2. To know about different reasons of a specific topic.
3. To understand different variety of experiments.
4. To describe me as a scientist.
5. To think <sup>and write</sup> like a scientist.
6. Different scientist talk helped me <sup>knowing</sup> about different topics in science-related and application-based.
7. To gain as much as knowledge it can.
8. To ask different questions and come to the answer by own.
9. To come with novel ideas.

## PRESS COVERAGE

### MAHARASHTRA TIMES – APRIL 2017



**डॉ. वसंतदादा पाटील विद्यालयाचे यश**

पुणे : महानगरपालिकेच्या डॉ. वसंतदादा पाटील स्कूलमध्ये एनसीएल इन्व्हेस्टिगेशन पार्क (चाणण) तर्फे इयत्ता आठवीच्या विद्यार्थ्यांसाठी सायन्स क्लब चालविला जातो. या ग्रुपतर्फे संशोधक कल्पना स्पर्धेचे आयोजन करण्यात आले होते. या स्पर्धेत नेहा विनायक काळभोर वॉटर स्प्लायर व दिव्या दिलीप गांधी व हार्पिता विजय राणे यांची वृक्ष सायबडोची उपाययोजना याही कल्पना मांडण्यात आल्या होत्या. सायन्स क्लबचे मार्गदर्शन ऋद्धा गरगट्टी, ज्ञानेश डुबल, नभा शहा, निशांत सिंग यांनी केले. व्यवस्थापन प्रस्तालातर्फे विलासराव सुर्वे आणि आसावरी गुमास्ते यांनी केले. तसेच, शाळेत नुकताच नवनिर्वाचित नगरसेवकांचा सत्कारही करण्यात आला. महापौर मुक्ता टिळक, हेमंत रासने, राजेश येनपुरे, अॅड. गायत्री खडके, रुपाली धाडवे यांचा सत्कार करण्यात आला. तसेच, अशोक येनपुरे, दीपक माळी, शिल्पकला रोधवे, मुख्यध्यापिका सीमा चव्हाण, भाग्यश्री करकंडे उपस्थित होत्या. कार्यक्रमाचे सूत्रसंचालन प्रतिभा पाटक यांनी केले.

**स्कूल मेट**

च प्रिती आनंद पाटील यांच्या आपत्ती व्यवस्थापन या कल्पनेला प्रथम क्रमांक मिळाला. या स्पर्धेत प्रियांका देवे व त्रिवेणी सिन्धुरकर यांना सॉसर बॉल यांना उत्तेजनार्थ बक्षिस डॉ. लिलावती नारळीकर व डॉ अमोल कुलकर्णी यांच्या हस्ते मिळाले. नेहा विठ्ठल राऊत व प्रजा अशोक जगताप यांची स्मार्ट

डॉ. लीलावती नारळीकर व डॉ. अमोल कुलकर्णी यांच्या हस्ते बक्षीस स्वीकारताना प्रिती पाटील, नेहा काळभोर.

### TIMES OF INDIA – MAY 2017

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## Pune scientific body plans summer workshops for class 8-10 students

TNN | Apr 29, 2017, 03:27 PM IST



PUNE: The Exciting Science Group, a volunteer group of scientists from Council of Scientific and Industrial Research (CSIR) - National Chemical Laboratory and Indian Institute of Science Education and Research (IISER), Pune, will organize workshops on "What Killed Dinosaurs?" and "Earthquakes: Locating Epicentres and calculating magnitudes" on May 9 and 12, respectively, for class 8-10 students.

"Each workshop will be conducted in two batches of 30 students at IISER-Pune. The workshop on "Dinosaurs" is aimed to introduce participants to a significant mass extinction event in Earth's history and examine the potential reasons for such a dramatic event including volcanism in India and the meteorite impact hypothesis," said an official release.

In addition to this, the participants will also do a simple project where they will calculate the energy released from the impact of a meteorite. "The workshop on "Earthquakes" will include a hands-on demonstration of how to locate the epicentre of an earthquake. Additionally participants will learn to calculate the magnitude of earthquakes. In this workshop participant students will also be introduced to an interactive web based activity from the Virtual Earthquake application. These workshops will be conducted by Rahul Chopra, Chair of the Centre for Earth and Environment at FLAME University, Pune," the release stated.

Registration for these workshops funded by Praj Foundation, the Persistent Foundation and the Forbes Marshall Foundation, is free and on a first come basis and interested students should visit <http://www.excitingscience.org/> for the details.

**SAKAL TIMES - 13 NOVEMBER 2017**



आयसर : विज्ञान आणि कला चित्रकाला स्पष्ट विज्ञानविषयक चित्र रेखाटण्यात मग झालेली मुले.

## विद्यार्थ्यांनी रेखाटल्या विज्ञानातील गमती

पुणे, ता. १२ : विज्ञानाच्या प्रयोगशाळेतील गमती-जमती, अंतराळातील कल्पनाविश्व, तंत्रज्ञांच्या आधारे भविष्यातील जगाचे आराखडे, विज्ञान विश्वाबाबत मुलांच्या विविध कल्पना रेखाटण्याची मजा शालेय मुलांनी अनुभवली. निमित्त होते आयसर येथे आयोजित 'सायन्स अँड आर्ट' चित्रकला स्पष्टे....

द एकसायटिंग सायन्स ग्रुपतर्फे आयोजित या स्पष्टेमध्ये शहरातील विविध शाळांमधील पाचवी ते

दहावीमधील चारशे मुलांनी सहभाग नोंदविला. दोन भागांमध्ये झालेल्या या स्पष्टेतील विजेत्यांना आयसर येथील संशोधक डॉ. मिलिंद वाटवे यांच्या हस्ते पारितोषिक प्रदान करण्यात आले.

या स्पष्टे सहभागी विद्यार्थ्यांनी कला आणि विज्ञान यांचा मेळ साधत विविध कलाकृती रेखाटल्या. विशेष म्हणजे काही विद्यार्थ्यांनी 'थ्री डी आर्ट' प्रकारातील चित्रांचे सादरीकरण केले. प्रदूषणमुक्त परिसर,

अद्ययावत वाहतूक व्यवस्था आणि अंतराळविश्व यांसारख्या विषयावर चित्र काढण्यात मुले रमली होती. या वेळी डॉ. वाटवे यांनी मुलांशी संवाद साधत त्यांच्या शंकांचे निरसन केले.

स्पष्टेमध्ये लहान गटात स्वराज लांडगे (प्रथम), मानसी विश्वकारा (द्वितीय), रिद्धी लोखंडे (तृतीय) यांना, तर मोठ्या गटात मानसी निकम (प्रथम), सूरज जगदाळे (द्वितीय) व इशान चौबळ (तृतीय) यांना क्रमांक मिळाला.

**SAKAL TIMES – 25 November 2017**

## Standard IX student wins prize for app that helps improve road conditions

**MANASI SARAF JOSHI**  
reporters@sakaltimes.com

**Pune:** A Std IX student, Shreya Sandurkar, from Amanora School would become restless whenever she stepped out of her housing society. She would see bad roads and ponder over the problem to find a solution.

One day she suddenly found the answer: As everyone uses a smartphone, why not use it to improve the road condition? She started her research and created a mobile app, Road Visor. This app recently won her a special award at the National Science Fair, called IRIS (The Initiative for Research and Innovation in Science) held in New Delhi.

Shreya told Sakal Times, "The sensors in the smartphone were used to collect data of poor road conditions. Later, data would be collected from different locations. Overlaid data can be sent to Google Maps. I am planning to send this data to the Ministry of Roads and Highways so that they can fix such spots."

"Besides repairing roads, a person who is travelling on a road for the first time can use it to locate potholes, dangerous turns or any construction work, which could delay or affect the journey. The app primarily senses potholes, turns, speed bumps as we have seen how roads can affect our journey in a number of ways such as accidents, delays, fights, damage or traffic congestion," she said.

"To avoid all this, we need to first download this app on our smartphone, then put it on, whenever we are travelling. This app then would automatically record data, which will get transferred to my data and then the average data can be sent

### FAIR AT IISER



➤ On Saturday (November 25), the Exciting Science Group is organising the Indian Science & Engineering Regional Fair (INSEF) at the Dining Hall complex at IISER-Pune. In all, 20 projects will be displayed, including **Shreya Sandurkar's**. This fair is open for public viewing from 1.30 pm to 3 pm. For more information regarding the fair, one can send an email to [register@excitingscience.org](mailto:register@excitingscience.org)

to concerned authorities," she explained. Aspiring to become a mechatronics engineer (mechanical and electronics), Shreya said, "The app works best for cars as she designed it keeping a car or four-wheel drive in mind. In future, I would see how this app can be used for two-wheelers."

Shreya's first prototype was presented to scientists from the NCL and the IISER at the Exciting Science Group research fair in Pune earlier this year.

"Advice from Prof Bhas Bapat helped me at every step," she said. IRIS is organised every year with support from the Department of Science and Technology, Intel Corporation and the Indo-US Science and Technology Forum. Among 70 different participants selected from across the country, Shreya was the only one from the city.

**INDIAN EXPRESS – 1 FEB 2018**

## Pune student wins gold at National Science Fair

**EXPRESS NEWS SERVICE**  
PUNE, FEBRUARY 1

A SIXTH grade student in Pune won the gold medal at the INSEF National Science Fair in Rajkot in January.

Sonit Sisolekar, a student at the Blue Ridge Public School, won the medal in the junior category.

The Science Society of India runs INSEF at the regional and national level every year in association with a local institution. This year, at least 14 projects from school students around the country were selected for the national finals, and Sonit was the

sole representative from Pune.

Sonit's project was on "Can Unheard Sounds Make Seeds Germinate Faster? Testing the Effects Of Infrasonic and Audible Low Frequency Vibrations on the Germination and Growth of Kala Chana (Cicer Arietinum)". Prior to this research, Sonit had made a model of a bone conduction hearing aid last year.

A press release issued Thursday said Sonit was mentored by IISER Pune faculty, Dr Sutirth Dey, who is the coordinator of the Exciting Science Group (ESG). Dey helped Sonit refine his study design and use a variety of statistical tools for his data analysis.

**SAKAL TIMES – 2 FEB 2018**

# Student of Blue Ridge Public School wins gold at INSEF

Sisolekar's project was based on sound & germination of seeds

**ST CORRESPONDENT**  
reporters@sakaaltimes.com

**Pune:** City-based Sonit Sisolekar studying in standard VI from Blue Ridge Public School won a gold medal at the Indian Science and Engineering Fair (INSEF), National Science Fair which was held in Rajkot, Gujarat recently.

Sisolekar was the only representative from Pune out of the 14 projects from school students across the country.

Sisolekar's project was on 'can unheard sounds make seeds germinate faster?' Testing the effects of infrasonic and audible low-frequency vibrations on the germination and growth of kala chana (cicer arietinum)'.  
Prior to this research,

Sisolekar's project was on 'can unheard sounds make seeds germinate faster?' Testing the effects of infrasonic and audible low-frequency vibrations on the germination and growth of kala chana (cicer arietinum)'.  
Sisolekar, had made a model of a bone conduction hearing aid last year. "While reading about bone conduction, I came across some literature which mentioned that infrasonic and low-frequency vibrations travel to longer distances in the earth than higher frequencies; and some animals like elephants and snakes

these vibrations," he added.

"This led to the thought that germinating seeds and roots of plants may be getting affected by these sub-soil vibrations too. Since very little is known about the effects of vibrations on germination, I decided to do a project on this," he added.

Sutirth Dey, Coordinator of the exciting science group and faculty at IISER, Pune had mentored Sisolekar for this project and helped him with the presentation to participate in the science fair.

The Science Society of India organises INSEF at the regional level followed by national level every year in association with a local institution to inculcate project-based learning among students.

## SAKAL TIMES – 16 FEBRUARY 2018

### Science, art contest held by Exciting Science Group

ST Correspondent | Friday, 16 February 2018



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The topics for the competition were 'If I were an astronaut, A day in science lab and Science in nature around you.'

**PUNE:** Roshan Aade from Hutatma Balveer Shirishkumar Vidyalaya has won the Science and Art Competition organised by the Exciting Science Group, a volunteer group of scientists from Indian Institute of Science, Education and Research (IISER) and Centre for Scientific and Industrial Research - National Chemical Laboratory (CSIR-NCL).

Simran Erande and Nikita Kalbhor of Hutatma Balveer Shirishkumar Vidyalaya and Dr Vasantdada Patil Vidyaniketan, School respectively bagged the second and third position. The competition was for the students of Std VIII and IX from the Pune Municipal Corporation (PMC). As many as 200 students took part in the competition.

This was the fifth year of the competition and Professor Pushkar Sohani (IISER Pune) was the chief guest for the event while scientist and Artist Professor Ambika judged the competition.

Gayatri Kshirsagar, an associate with the group, said, "Science and Art are correlated; both are based on imagination, innovation and creativity. It is a unique platform for the students to express their ideas about science through art."