

National Science Day at Azim Premji University

'If you think you are not a science person, we think you are wrong!' With the idea to bring 'Science to All', Azim Premji University students and faculty celebrated 'National Science Day' to commemorate C.V. Raman's confirmation of the discovery of the 'Raman Effect' on 28th February in 1928. An action packed day unfolded with a focus on the interface between science and society, as well as science in the school curriculum.

Interesting stalls were organized hosting various fun activities based on the themes of sound, light, projectile motion, Newton's law, centrifugal force, electric circuit (conductivity), pressure, center of gravity, etc. Over 150-plus students, faculty and administrative staff got to engage with science experiments on their own. They crafted whistles out of straws and witnessed how longitudinal waves travel. They were mesmerized by magical 'diver', 'crazy ball' and experiments with dry ice. The centrifugal force was demonstrated with a couple of real life problems. Various puzzles and models pushed visitors to think through the 'why' by observing 'what' they observed instead of seeking readymade answers usually given in texts. Questions like 'how do you know?' were thrown by presenters at the visitors. The amusement and joy of 'seeing' things work which they had only read or heard about earlier was evident in Sangeeth's words, ***"This is the first time I have felt that science is actually fun."*** (MA Dev, 1st year Student).



Involved discussions about the pedagogical implications of hands-on science in school setting happened across the exhibits. ***Kushal Ghosh exclaimed, "Some wonderful experiments. Will certainly be interesting for children. I wish my teachers had taught me this way"*** (University Resource Centre Staff). There were other in-depth activities as well - 'open' sessions through the day, 'slotted' sessions and an enriching lake-walk with discussion around the Kaikondrahalli lake.

The various sessions included:

Slotted Sessions

Urban Mobility. Anchor: Manu Mathai

The session started with a walk to Konnappana Agrahara bus-stand from Pixel Park: B block of the University. Three broad questions were used to guide participants' observations: *How do users of different transport modes interact in and negotiate this public space? What is the experience of pedestrians and public-transport users? What attributes of this space mediate this experience?* We became aware of the differences inside and outside the campus as we walked, with respect to pollution, noise levels, negotiation of spaces by members of different socio-economic groups, interaction between structures, commuters and pedestrians, different modes of transport and the different demands these make on infrastructure, etc. The walk was followed by a classroom discussion which involved students making a map of the route we took and identifying its key attributes.



Sustainable Water Usage. Anchors: Sujit Sinha, Nazrul Haque

This session began with discussions pertaining to various issues related to water: access, quality, sustainable management, water footprint, how much water we use for our crops and overall usage in food production, etc. There were questions raised such as: *Why we need to be bothered about fluoride and arsenic in our drinking water? What can be some of the reasons for water being found with high level of these contaminants? Why is there excessive extraction from our groundwater reserves? Should school students be aware of these things? Can they calculate the annual rainfall in their area and find out possible alternatives/solutions,* etc? Some initiatives such as the WIPRO Earthian program were also explored. There were also some simple water-testing activities based on parameters to check for hardness and presence of fluoride and chlorine with the kit developed by an NGO called 'Development Alternatives'.

Science, Scientists and Society. Anchor: Richard Fernandes

This discussion threw up several questions pertaining to science, scientists and emergent ethical concerns. The session began with a questioning of this assumption based on examples taken from the book 'Free Radicals' by Michael Brooks which features Einstein's personal life and its 'separation' from his life in

science. This discussion was followed by a closer look at the tobacco industry and the validation provided by scientists in favour of tobacco and cigarette smoking, emphasizing personal interests over public health consequences.

Public participatory research in biodiversity mapping. Anchors: Prabhakar R, Thomas Vattakaven, Rohit George and Chitra Ravi

Participants were given an overview of the India Biodiversity Portal: <http://indiabiodiversity.org/> and also sensitized through this process, on the complexities involved in accurately mapping and describing India's biodiversity and maintaining this record in open-access form as a single repository. This discussion also created awareness on the public participatory model and its rich potential in developing public engagement with biodiversity, as well as raising timely alarm calls with respect to the status of endangered species.

Kaikondrahalli lake walk

a. Multiple imaginations of an urban lake and challenges for its protection. Anchor: Seema Mundoli



Kaikondrahalli Lake is an example of a lake that was restored thanks to citizen action and a responsive government. In doing this an attempt was made to balance the recreational and livelihood needs of its multiple users, and at the same time protect the ecology. The lake walk highlighted these different facets of an urban lake—ecological, economic, social and cultural. Different persons have different imaginations of what the lake should be used for; consensus is never easy and ensuring equitable access to urban elite and urban/migrant poor alike is challenging. What is important is to recognize that the science or ecological knowledge of water bodies needs to connect with the social and cultural context in which lakes are located for enabling their continued preservation.

b. Insect-Plant interactions. Anchor: Divya Uma.

Linked to the above-mentioned perspectives, were the many insect-plant interactions around the region of the lake. We witnessed different kinds of insects: solitary and social spiders, praying mantises, ants, wasps, spiders mimicking ants, predator-prey relationships, different kinds of insect nests, bird species, etc. All of these observations and discussions further sensitized us to the biodiversity around the lake, and the need for its protection.

‘Open’ sessions, conducted through the day

Different forms of Energy. Anchor: Rajaram Nityananda

This ‘stall’ on different forms of energy captured the theme beautifully using hand-drawn posters and schematic diagrams. Besides sensitizing us to different forms of energy, links to science concepts, and its implications on our consumption, there were also everyday analogies: such as 1 MJ linked to the energy produced on consumption of a masala dosa, etc.!

‘Fun Science activities’. Anchors: M.A. Education and Development students led by Adwait Deshpande and Aakash Chowkase.

Students, faculty and administrative staff visited stalls with fun activities based on themes such as: sound, light, projectile motion, Newton's law, centrifugal force, electric circuit (conductivity), pressure, center of gravity, etc. They crafted whistles out of straws and witnessed how longitudinal waves travel. There were demonstrations of: ‘magical diver’, ‘crazy ball’ and experiments with dry ice. Centrifugal force was demonstrated with a couple of real life problems. Various puzzles and models cognitively stretched them to think through the ‘why’ by observing ‘what’ from observations, instead of seeking ‘ready-made’ answers given in textbooks. Questions like ‘how do you know?’ were raised by the facilitators to participants. Involved discussions about pedagogical implications of hands-on science in school settings happened across exhibits.

‘Traffic’. Anchor: Kripa Gowrishankar

This session was a video installation and demonstration to explore different aspects of motion and ‘traffic’. There were simple demonstrations of movements using battery-powered toys and its unique structure linked to particular kinds of motion.

Activities / Experiments on ‘Light’ in commemoration of the ‘Year of Light’: Anchors: Juny Wilfred and Mujahid.

This ‘stall’ used visually remarkable demonstrations pertaining to reflection and refraction using hand-made instruments such as the spectroscope. Participants engaged with the exhibits, were enthralled, and also learnt a few concepts based on school science, in an engaging and fun-filled manner!

On the whole a thought-provoking and eventful day. We hope that actionable outcomes and projects with a long-term focus, will be initiated based on these themes. This is just a beginning!



Hear it from the participants:

Awesome experience. Was fun seeing the activities. *(Swarna G., 1st year student)*

Simple things but so insightful. *(Kaushal, MA Edu, 1st year)*

Great to understand simple phenomenon with technological view so that we can solve great problems. *(Kuldeep, 1st Year student)*

It was a good learning experience - fun activities that can be shown to kids and are easy to remember. *(Preeti, MA Edu, 1st year)*

Things looked very simple. But never realized the principles behind them. I wish my science teacher during school days taught me science this way. *(Srinath, MA Edu, 2nd year)*

I learnt and taught science in school but did not really understand the concept of how sound is generated. Good work Aakash! *(Soumya, MA Edu, 2nd year)*

Only if science was taught in schools this way. Practical understanding and demonstration helps in better learning. Great initiative guys. *(Sadaf, MA Dev, 2nd year)*

I have learnt what fun science can be! Kudos guys for making science fun. *(Ranjith, MA Dev, 2nd year)*

It was a great experience. Had great fun relearning science with such experiments. Please do plan more such sessions in the future. *(Sarah, MA Dev, 1st year)*

A fantastic amalgamation of learning and fun, made attractive by the enthusiasm executed by the volunteers. Great way to prove that science can be fun in the most unconventional ways. Teaches us to question our learned values, superstitions and stereotypes. *(Alina Alam, MA Dev, 1st year)*

And some more...

“Absolutely loved all your experiments. They were so much fun.”

“Did not know science would be so much fun.”

“Quite an effort put up by everyone. A needed break from 'Social Science' “

“Simple ways of knowing complex stuff and also very easy to make. Therefore can be replicated.”

“Such nice experiments! Simple ways in knowing some great work! Really enjoyed! Science is super fun!”

“I got to learn so much science in one day! Wow!! It is awesome.”

“I feel it has a lot of importance in teaching-learning process if we use it.”

And we like this one ...

“May the centrifugal force be with you!”



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