



**Pune Knowledge Cluster (PKC) in Collaboration with
BVB's Mukhtangan Exploratory Science Centre**

Present

One Day Hands-on Teacher Training Workshop

Organized By	Pune Knowledge Cluster (PKC)
In Collaboration with	BVB's Mukhtangan Exploratory Science Centre, Pune
Date	30 Jan 2024
Location	BVB's Mukhtangan Exploratory Science Centre, Bharatiya Vidya Bhavan Chowk, Off Senapati Bapat Road, Opp. J.W. Marriott Hotel, Pune - 411016
Workshop Description	<p>This hands-on teacher training workshop will cover innovative way of teaching Science & Mathematics Concepts. Teachers will get an idea to teach science through experimentation and hands on activities which in turn help students to clear the conceptual understanding and application of Scientific principles in day today life.</p> <p>Participants will get a chance to see the state-of-the-art laboratories of Physics, Chemistry, Life Science, Mathematics lab. They will also visit Innovation Hub facility.</p>
For whom	Teachers teaching Science and Mathematics to 5 th to 10 th grade
Number of Seats	50
Potential Gains	In this workshop, teachers were trained in activity-based learning. Teachers got the idea to design experiments and activities that could make their teaching more effective in line with the New education policy that stress on experiential learning.

**Trainers**

Bharati Baxi
Tejas Chimbalkar
Rupa Sane
Rutuja Chikate
Jayshree Rane

WORKSHOP SCHEDULE

Time	Training Contents	Lecturer/Instructor
0900 Hrs – 0930 Hrs	Registration and Inauguration	
0930 Hrs – 10 Hrs	Pre-test	
10Hrs – 1100 Hrs	Physics 1	Rupa Sane
1100 Hrs – 1200 Hrs	Physics 2 Lab	Tejas Chimbalkar
1200 Hrs – 1300 Hrs	Biology lab	Bharati Baxi
1300 Hrs – 1400 Hrs	Lunch Break	
1400 Hrs – 1500 Hrs	Mathematics Lab	Rutuja Chikate
1500 Hrs – 1600 Hrs	Chemistry Lab & Innovation Hub	Jayshree Rane
1600 Hrs – 1700 Hrs	Post - test & Certificate distribution	



Physics 1 lab

In Physics 1 lab, **Mrs. Rupa sane** demonstrated experiments - Principle in Reflection and Refraction, Reflection, refraction, and prism activity, Reflection in plain and curved mirrors as per the ray diagram, Refraction in slab and spherical lenses as per ray diagram, Rainbow formation, Eye defects and their correction, Dispersion, 2D Diffraction through cotton piece and formation of lenses using prisms.

Physics 2 Lab

In Physics 2 lab, unique paper circuit activities were conducted for teachers. The demonstrations were given following **Mr. Tejas Chimbalkar** demonstrated Ohm's law (resistor's use in electronics, current carrying capacity, discussion on ohm's law, circuit diagram), Resistors in series combination (discussion and circuit diagram), Resistors in parallel combination (discussion and circuit diagram), Demos and discussion on Electromagnetism (Fleming's left- hand rule, Fleming's right- hand rule, Eddy current and it's application). These concepts were well received by the participants.

Chemistry Lab

In the Chemistry lab, **Mrs. Jayshree Rane** showed a unique model of Atomic structure and electronic configuration of different elements was discussed. Experiments were conducted on Electrolysis and Electroplating.

Life Science Lab

In the life Science lab, **Mrs. Bharati Baxi**, explained concepts of DNA structure, DNA replication, Protein synthesis through models. The method to extract DNA from Strawberry and Banana was shown to teachers. Teachers enjoyed playing a unique game based on Transcription and Translation stages in Protein synthesis. They also played games based on Monohybrid and Dihybrid crosses in Genetics.

Mathematics lab

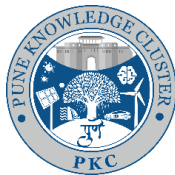
In Mathematics lab, **Mrs. Rutuja Chikate** conducted hands- on activities and the application of the below concepts also explained.

1. Activities for properties of polygons.
2. Activities for polyhedrons Euler's formula.
3. Activity for value of pi and circle properties through models.
4. Surface area and volume activities through models.
5. Algebraic expressions and expansions through models.
6. Exterior angle theorem through model.

Innovation hub-

Teachers visited the Innovation Hub facility. were shown all the Fab lab equipment. The following facilities were explained in detail. **Mrs. Vrishali Sardeshmukh** Conducted the session.

1. Basic information about 3D printer and Laser cutter
2. Working and demo of these machines



Trainer Profiles



Name : Bharati Baxi

Qualification : M.Sc. (Zoology), B.Ed

Designation : Deputy Director- Academics
Guide Teacher – Biology Lab



Name : Rutuja Chikate

Qualification : M.Sc. Statistics

Designation : Guide Teacher – Mathematics Lab



Name : Neha Dhopate

Qualification : M.Sc. Biochemistry

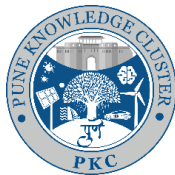
Designation : Guide Teacher – Earth Science Lab



Name : Rupa Sane

Qualification : B.Sc. Physics

Designation : Guide Teacher – Physics lab



Name : Jayshree Rane

Qualification : M.Sc. Biochemistry

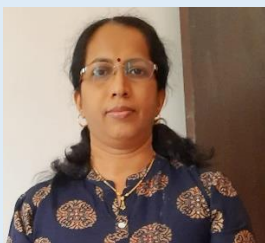
Designation : Guide Teacher – Chemistry



Name : Tejas Chimbalkar

Qualification : M.Sc. Physics

Designation : Guide Teacher – Physics -2



Name : Vrushali Sardeshmukh

Qualification: B.E. Electronics , MCA

Designation: Innovation Hub - Associate



About the Organizer



The Pune Knowledge Cluster (PKC) has been established by the Office of the Principal Scientific Adviser to the Government of India. It aims to bring together academia, R&D institutions, and the industry of Pune and its surrounding areas to address the challenging problems of the region through innovative means, using scientific knowledge and engaging highly skilled human resources. PKC is administered by the Inter-University Centre for Astronomy and Astrophysics (IUCAA). In the initial phase, PKC would focus on Health, Sustainability and Environment, Sustainable Mobility, BIG Data and AI and Capacity Building. For more information, visit: <https://www.pkc.org.in/>

In Collaboration with



The Bharatiya Vidya Bhavan's Muktangyan Exploratory science centre established at Pune in 1992. **Muktangan Exploratory Science Centre is herein referred as MESC.** MESC is a distinctive Science Centre, which aspires to stimulate curiosity and arouse science learning in young children. The Centre values Science as an indispensable tool for understanding the world around us. Children from different Schools are encouraged to experience science by performing experiments and activities in seven well-equipped state-of-the-art laboratories to compliment formal education. At MESC children learn to explore and experiment, invent and innovate. The Centre is working ceaselessly over two and half decades, to generate inquisitiveness, develop scientific attitude and temperament in children. Exploratory takes these budding scientists on an unending journey of exploration. Muktangyan Exploratory Science Centre has set-up state of the art Innovation Hub, which is supported by National Council of Science Museums (NCSM under the Union Ministry of Culture), and Dassault Systemes Foundation.