

PUNE KNOWLEDGE CLUSTER

Established by the Office of The Principal Scientific Adviser, to the GoI under The City Knowledge & Innovation Cluster Initiative (CKIC), the Pune Knowledge Cluster aims to bring together Academic Institutions, R&D organizations, Industries, NGOs, Civic Bodies, Local & State governments to collectively work for the betterment of Pune City by leveraging the science & technology capabilities of its partner organizations.

FROM THE PKC DESK

Dear Readers,

We are pleased to introduce PEAKS - our Quarterly Newsletter

In this issue, we would like to highlight key milestones from PKC's journey for the months of February to May 2023. The **Cover Story** and **Sneak Peak** sections highlight key projects from the PKC verticals, while the section - **In Conversation** introduces readers to PKC's partner organizations. Through the **Team Connect** section, we showcase our diverse team which helps realize PKC's vision.

This issue will also give an overview of the **Events, Citizen Centric Talks and Collaborations** that PKC has organized and fostered and inform the readers about **PKC's Offerings**.

Happy reading!

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COVER STORY



A RENDEZVOUS WITH TECH: USING DIGITAL TOOLS IN STEM EDUCATION

PKC's STEM education programs focus on developing and implementing pedagogies that use digital methods to teach STEM concepts in a classroom setting.

Digital education at the school level has become increasingly prevalent in recent years and the pandemic has accelerated its adoption.

With innovative products and approaches in the digital learning space and Government initiatives like the Digital India campaign, National Digital Literacy Mission and National Education Policy 2020 (NEP 2020), we are moving towards a skill-based education system that places a higher emphasis on critical thinking, problem solving and activity-based learning, which in turn will require a significant pool of skilled educators.



One such program being implemented as a pilot in five of Pune's government schools is "Teach with Tech" which aims to address gaps in learning using digital tools and resources for both teachers and students. Funded by Lenovo India through CSR, the program is implemented by PKC in collaboration with District Institute of Education and Training (DIET).

"We conducted a survey with DIET school teachers to understand the use of digital tools for teaching during the pandemic. The results were quite concerning" says Prachi Pasalkar, who leads this program at PKC.

The survey showed that over 90% of the 1500 teachers who participated in the survey did not use any digital tools or resources during the pandemic. This includes open access videos, simulations, games, puzzles, quizzes etc. Students were also not aware of the existence of these tools in spite of having access to a digital device like a phone or computer.

Teach with Tech was therefore designed to empower teachers with digital pedagogy skills, and train students in using digital tools. The PKC team worked with teachers and experts to develop curated lesson plans and training modules which were used to teach over 750 students and train over 350 teachers.

"Our partnerships with reputed institutions like Inter-University Center for Astronomy and Astrophysics (IUCAA), Savitribai Phule Pune University (SPPU) and CS Pathshala allowed us to conduct residential training programs for teachers where they were introduced to digital pedagogy, hands on teaching techniques and effective assessment methods" says Gayatri Kshirsagar, who managed the teacher training sessions.

Over 80 training programs were conducted using state of the art training resources offered by these institutions. During the course of the program, the team noticed that English as a language was a barrier in adopting digital tools in these schools.

Workshops and classroom sessions were hence conducted in a bilingual format. This also led to the realization that more digital resources and content needs to be developed in vernacular languages if we really wish to see large scale adoption of these tools.

Overall, the pilot program was a revealing experience. Assessments pre and post program showed that 34% of the students displayed an improvement in test scores, when assessed on

problem solving and analytical thinking.

"The willingness to learn among students and explore new methods of teaching among teachers played an important role in acceptance of the program. The happiness with which they entered the classrooms, the excitement of holding a tablet in their hands with a genuine desire to learn and explore, gave us much-needed encouragement" says Shraddha Gargatti, who conducted classroom sessions in schools.

Implementing the program has had its challenges. Some schools lacked basic digital infrastructure like a screen, computer and in some cases consistent power supply. In order to ensure that digital initiatives can be sustained in such schools, they need to be equipped with the bare essentials needed to run such programs.

Ms. Pratima Harite, Head - APAC CSR & Philanthropy at Lenovo India concludes, *"The Teach with Tech initiative is close to our heart, as it engages young students in Maharashtra to build upon essential 21st century skills and empowers teachers to use digital pedagogy techniques which in turn transforms STEM education into an enjoyable and practical experience for young students.*

It is Lenovo's endeavour to inspire young students to pick up STEM education and be able to make informed choices in STEM careers in the long run".



For interest in participating or supporting PKC's STEM programs, please get in touch with us contact@pkc.org.in.



In this issue of PEAKS, we are In Conversation with **Dr. Sanjay Kolte (IAS), CEO, Pune Smart City**, who talks about the impact and upcoming projects of Smart City Pune, while shedding light on the different kinds of collaborations Smart City has fostered.

IN CONVERSATION

Dr. Sanjay Kolte (IAS) CEO, Pune Smart City

What are the key focus areas for Pune Smart City? Could you highlight a few successful projects in these areas?

Since its inception, the focus of Smart City has been on Sustainability, Smart Mobility and improving overall liveability of the city. Some of the successful projects for Sustainability and Mobility have been: the Smart e-Bus Project, which has reduced carbon emissions from 7% to 4%; the Clean Fuels initiative through which e-rikshaws and e-bicycles have been introduced in the city, and the Smart Street LED Lighting, in which over one lakh sodium and mercury vapour lamps were replaced with LED lamps, leading to an overall 74% saving of energy and maintenance cost for PMC.

Some of the key projects that were instrumental in improving liveability include: introduction of Smart Elements such as WiFi hotspots, Emergency Call Boxes & Sensors in the city, introduction of apps such as ArogyaDheer for tele-consultation, e-Psy clinic for tele-counselling, and My Safetipin, which tracks the safety index of various locations in the city.

What is the Smart City's approach while planning and implementing projects?

Citizen engagement has been at the core of

planning all of our projects. Rounds of consultation with the citizens have been very crucial, especially in the place making projects (theme-based amenity projects), where we have interacted with them to know about their aspirations regarding the amenity spaces and what will be utilized by them the most. Furthermore, their inputs have been crucial during the implementation stage as well, which has led towards addressing their immediate concerns, such as decrease in concretization and improvement of greenery. After completion as well, citizen engagement is required for proper utilization and maintenance.

Apart from this consultation with relevant bodies such as Parisar, Center for Environment Education (CEE), and discussions in common forums such as Nonmotorized transport (NMT) committees within the PMC have been crucial during the implementation of projects.

Since you mention Citizen participation, how does the Smart City envision the role of citizens in achieving its objectives? What kind of citizen-engagement programs do you run?

Citizens play a crucial role, not only in helping us plan the projects efficiently but also in their execution. We ensure to adapt our projects according to their requirements. Further, we routinely conduct several citizen-centric activities such as Hackathons, Ideathons, Datathons, etc. through our subsidiary company Pune Idea Factory Foundation (PIFF). The ideas we receive through these events are popularized in a way that

industries, educational institutions and government bodies can eventually adopt them within their normal practices.

How does the Smart City envision the role of the private sector in achieving its objectives?

Some of our key projects are in collaboration with the private sector. We rely upon their expertise and resources to help achieve our goals. Some examples include, Smart Street LED Lighting with TATA Projects Ltd., promotion of green buildings with India Green Building Council (IGBC), development of a Flood Simulation Model with L&T and Indian Institute of Science, Bangalore, and the Digital Education System (DES) project with Odysys Technologies.

What does the Smart City look for while collaborating with different organisations?

Through our collaborations, we look for organizations that can provide us with their unique knowledge and expertise, or those who approach us with specific projects, and have synergies with our own goals. For example, in order to develop an amenity park for specially abled citizens, we collaborated with Dr. Bhanuben Nanavati College of Architecture (BNCA), wherein their experts helped us design architectural components that are useful for such citizens. On the other hand, collaboration with PKC mainly took place as their initiative - Connectree resonated with our vision of engaging citizens in meaningful civic activities.

Elaborating on that, how has the collaboration with PKC enabled Smart City's initiatives? What role can a cluster like PKC play in helping the Smart City achieve its objectives?

We have collaborated with PKC for increasing the tree cover of Pune by motivating residents to adopt saplings. The monsoon tree plantation drives have been going on now for the past two years. We have tied up our plantation project with the Connectree initiative. Works in the outskirts of Pune, especially in the newly inducted villages, with regards to generating awareness regarding good environmental practices can be conducted with the help of PKC. Clusters like PKC, with its different knowledge partners, academic as well as technical experts, are crucial for furthering the vision of Smart City.

Could you give us a glimpse of some of the ongoing and upcoming projects in Pune Smart City?

Some of the key upcoming and ongoing projects include: The Adaptive Traffic Management System (ATMS) to optimize and promote traffic signal coordination and synchronization, theme-based development of amenity spaces in Aundh-Baner-Balewadi areas, introduction of Health Management Information System (HMIS) in hospitals & dispensaries across the city to provide digitised healthcare services and development of a Flood Simulation Model in order to mitigate flood risks.

For more information about Smart City Initiatives please visit:

<http://www.punesmartcity.in/smart-city/feeds>



SNEAK PEAK

“We are in the process of creating an open access database which will enable research and clinical understanding of a particular disease, in this case-COVID-19, in the Indian context.” says Priyanki Shah, Project Manager, at PKC.

Over the past 2 years, PKC's health vertical has been working in collaboration with several hospitals, research organisations and civic bodies to collect and curate epidemiological, clinical as well as genomic data related to COVID-19. The clinical data, particularly the data of patients hospitalised during the pandemic, is now being used to prepare this database.

“Each patient has two types of data that is recorded during their stay in the hospital- the lab files, which include all the clinical tests that were conducted and the patient files which include the treatment procedures that were administered. One of the most crucial but challenging steps in

this entire process is the digitization of these files. We would like to thank our collaborators – EPIC-HIM and GI Bots, for enabling this.”, says Niharika Gogate, Research Assistant at PKC who has worked extensively on this project.

The process of creating such a database has led to many insights. Lack of organized digital data and uniform practices for data collection, storage and sharing across hospitals are significant bottlenecks in accessing data and making it usable.

“We hope that this project will facilitate a thought process and interest towards generating more such databases, including data management processes that can impact medical research and disease management in the Indian context.” signs off Priyanki.



NATIONAL & INTERNATIONAL EVENTS

This section showcases events PKC has hosted to promote building of collaborative networks and also highlights events and meetings where PKC has been invited to present its initiatives.

Smart City and Innovation Roadshow 14 February, Pune



Co-organized by PKC together with the Consulate General of Sweden in Mumbai, Vinnova, IVL, Smart City Sweden and Business Sweden India, this roundtable facilitated discussions to foster growth and innovation opportunities in India and Sweden.

Sweden-India Leaders' Roundtable on Innovation and Sustainability 11 March, Pune



Dr. Priya Nagaraj, CEO, presented PKC's work at the roundtable organised by the Consulate General of Sweden in Mumbai and the Embassy of

Sweden in New Delhi as part of the celebrations of 75 years of bilateral relations between India and Sweden.

10th International Symposium on Creative Education Technologies 20 April, Online



Ms. Prachi Pasalkar (Program Manager), showcased PKC's STEM education programs such as Teach With Tech, Atal Tinkering Labs (ATL) and Gamification in learning in this symposium organized by the Council for Creative Education (CCE).

Science 20 (S20) Summit on – Disruptive Science for Innovative and Sustainable Development 1 May, Lakshadweep



Ms. Priyanki Shah, Sr. Project Manager, Health represented PKC at the S20 summit, which hosted conversations around universal holistic health and building of a universal health ecosystem.

**Indo-Norway Energy Cooperation
Roundtable
11 May, Pune**



Co-organized by PKC, and the Royal Norwegian Consulate General in Mumbai and Team Norway India, the roundtable meeting focused on exploring synergies and collaboration opportunities between Norway and India in the green energy sector.

CITIZEN CENTRIC TALKS

PKC's citizen centric talks are aimed at making science accessible to citizens and increasing scientific curiosity. The talks are available on our Youtube channel. They are held online to ensure nation-wide and global participation.

**Speaker: Dr. Yogesh Hairbhau Kulkarni (Principal Architect-CTO Office, Icertis)
Date: 11 March, 2023
Topic: From Zero to ChatGPT**



Dr. Kulkarni gave an overview about machine learning, artificial intelligence, deep learning, natural language processing, and elaborated on chatGPT and its various applications. The talk can be viewed [here](#).

Speaker: Dr. Priyadarshini Karve (Managing Director, Samuchit EnviroTech)

Date: 22 April, 2023

Topic: Carbon Accounting for Investing in a Safe Future on Earth



Organised on the occasion of Earth Day 2023, as part of our Sust-En Talk Series, Dr. Karve introduced the science of climate change and discussed the importance of carbon accounting in mitigating the challenges of climate change. The talk can be viewed [here](#).

Speaker: Dr. Sudha Rajamani (Associate Professor and Principal Investigator, IISER)

Date: 4 May, 2023

Topic: The Astrobiological Narrative of Life's Origin



Dr. Rajamani gave an overview of the transition of life from chemistry to biology on the earth, to contribute towards the life forms we currently know of and appreciate. The talk can be viewed [here](#).

**Speaker: Dr. Asha Kembhavi (Head, Technology Center, Chr-Hansen, Pune)
Date: 19 May, 2023
Topic: From academics to the corporate world**



As part of PKC's Women Role Model Talk Series, Dr. Kembhavi spoke about her professional journey, highlighting different opportunities that came her way and the importance of a role model in pursuing her goals. The talk can be viewed [here](#).

COLLABORATIONS

In the last quarter, PKC has signed MoUs for several initiatives under the Health, Sustainability and Environment verticals, with the Pimpri Chinchwad Municipal Corporation (PCMC), Pune Zilla Parishad (ZP), H. V. Desai College and Samuchit Envirotech.



AUDIENCE CONNECT

Did You Know that the local variety of berries "**Baneri Bor**" (**Jujubes**) is native to the Baner area of Pune, and is on the verge of extinction? Their survival would improve if we can plant, as well as monitor, their growth.

Through PKC's web-based platform **CONNECTTREE**, sapling growth can be monitored regularly, ensuring that such local native species thrive.



Scan QR Code
to know more
about Connecttree



DID YOU KNOW

TEAM CONNECT

PKC is happy to provide a platform for young and dynamic individuals who are keen to broaden their horizons and explore new opportunities. Our team consists of individuals with diverse backgrounds and skill sets. Some are showcased in this issue.



Dr. Ritika Ganguly

Project Manager, Capacity Building

After gaining extensive experience in research, I wanted to move away from academia, but find a role that would help me retain my love for science. Through my current work at PKC, I play the role of a manager and mentor and help young enthusiasts discover their own way into the journey of Science.

Mr. Shantanu Goel

Program Manager, Sustainability & Environment

Having a diverse set of experiences in the sustainability sector- right from grass root level implementation to policy-level ideation, I have witnessed certain gap areas in the identification of problems that require policy interventions. At PKC, I utilise my skills to solve unique, unexplored problems at scale.



Ms. Niharika Gogate

Research Assistant, Health

I joined PKC as an intern and now work full time as a Research Assistant. I work to build collaborations for PKC's health projects that can bridge the gap between hard-core science and its translation to community impact in public health.



Ms. Akanksha Mahajan

Research Assistant

Having completed a bachelor's degree in biotechnology, I was looking for avenues that would allow me to pursue my love for studying, along with my ambition of having an impact on society. Through my work at PKC, I got a chance to use my aptitude for maths, my keen eye for detail, broaden my knowledge and abilities as well as establish useful relationships.

Dr. Madhura Panse

Project Manager, Communications & Branding

Having a keen desire to fulfil my share of scientific social responsibility, I use my creative, analytical and communication skills to showcase PKC's work and impact to our stakeholders and the community.



Ms. Prachi Pasalkar

Program Manager, Capacity Building

Passionate about creating new pedagogies, I conceptualize and manage STEM education programs at PKC. I work with teachers and students to integrate new teaching-learning methods in schools.

Prof. Ninan Sajeeth Philip

Senior Advisor

A researcher and entrepreneur with a passion for innovation, I leverage my expertise in Artificial Intelligence and Machine Learning to build inter-disciplinary projects using AI to address research problems in biology, chemistry and astronomy at PKC.



Dr. Disha Sawant

Assistant Program Manager, Big Data & AI, Sustainability & Environment

I am passionate about making science accessible to a larger community. Building the PKC's citizen science programs such as One Million Galaxies, ConnecTree and Carbon Neutral Campus at PKC lets me apply my analytical skills in data-driven projects and engage with the public to communicate the value of science and technology.

OFFERINGS AND OPPORTUNITIES

Through this section, we would like to give the readers a peak into some of PKC's unique offerings and opportunities.



SCHOLARSHIP PROGRAM FOR WOMEN IN CHEMISTRY & ALLIED AREAS

महिलांसाठी शिष्यवृत्ती कार्यक्रम रसायनशास्त्र आणि संबंधित क्षेत्रांमध्ये

ELIGIBILITY

Scholarship Program A - Academic Research Project

- Women in final year of graduate program (B.Sc. / B.Tech./ B. E./ B. Pharm. & equivalent degree)
- Women in final year of the graduate program (M.Sc./ M.Tech./ M.E./ M. Pharm. & equivalent degree)

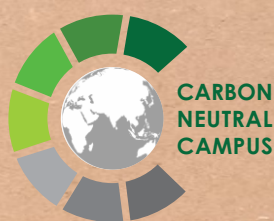
PROGRAM OFFERINGS



IMPORTANT DATES : CALL OPENS: 1ST April 2023 | CALL CLOSES: 25th August 2023



For detailed information about WEnyan Scholarship Guidelines, **Scan the QR Code** or visit www.pkc.org.in
For inquiries contact: wenyan@pkc.org.in | 7823892474



Carbon Neutral Campus is aimed at providing baseline carbon accounting for educational campuses and industry premises with the help of renowned experts.

Service deliverables:

- Baseline survey of carbon emissions
- Data collection and analyses, driven and managed by students/ employees
- A detailed report with customised remedial solutions

Know more about the service and its benefits here. Contact us: treeverse@pkc.org.in



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