

# PRAYOGAVANI

## Quarterly Newsletter

From April to June, Prayoga has been abuzz with activities on all fronts, with a packed schedule of events. We've seen remarkable growth, both as a cohesive unit and in our capacity to drive impactful research and social initiatives.

On the Anveshana front, students spent this quarter on campus, engaging with their projects and working closely with their mentors. Kriya witnessed two successful TEP workshops. Schools received their new Lab Stations and courseware for the year. The Prerana programs on campus were vibrant. We had the pleasure of hosting students from Assam as part of their Bigyan Darshan program.

We reflect on these months with joy and eagerly anticipate the promising times ahead.

Warmly,  
Team PrayogaVani



By amalgamating education research and social initiative, Prayoga seeks not only to contribute to fundamental and long-lasting changes in education but also makes a tangible difference to the schools, teachers and students from the disadvantaged sections of the society.



Prayoga's team includes Education Researchers, Scientific Researchers, Science and Mathematics Faculty, Data Science experts, Program Management professionals and others working together to find systematic and creative solutions to address the challenges of Indian Education System. Prayoga's academic staff across every district of Karnataka support schools to empower teachers and enable better learning experiences to students.

## Teacher Empowerment Program (TEP) Workshop - 4

12, 13, 14 June 2024



Read the latest blog post  
about the TEP  
Transformers - Agents of Change



87

Participants

20

Facilitators

8

Sessions



This workshop was held for our cohort II teachers. Kriya teachers from government schools across Karnataka stepped into their second year of the Teacher Empowerment Program.

The Director, DSERT, Smt. Sumangala V. visited Prayoga during the TEP Workshop and extended her wishes and support to the program.



She inaugurated the Lab Stations for grade 7 and unveiled the courseware for the academic year 2024-25.



Smt. Sumangala V  
Director DSERT shares her  
views on the Kriya program.

## Teacher Empowerment Program Workshop - 7



5th to 7th June 2024

Participants **07**

Facilitators **20**

Sessions **08**



The third year of engagement with this energetic group of Cohort-I teachers has left us with high hopes!



## Academic Co-ordinator Empowerment Program

16th to 20th April 2024



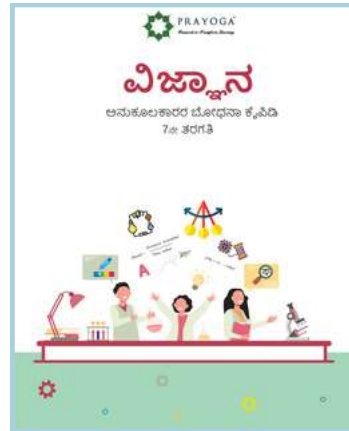
The Academic Coordinator Empowerment Program (ACEP) recognizes the critical role of Academic Coordinators in the effective state-level implementation of Kriya.

Empowering the coordinators enables them to provide unwavering support to teachers.

## »»» Kriya News - 7000+ Courseware Distributed

This quarter, the student workbooks and facilitator copies for the first trimester were distributed for grades 6,7, 8, & 9 across our 65 schools.

These newly designed books will captivate and engage students throughout the year, enhancing their learning experience and fostering a deeper interest in science.



## Kriya News - Lab Stations Dispatched <<<



For grade 7, new Lab Stations with materials required to experientially learn their syllabus were curated. Microscopes and a model of a skeleton was included in this lab station are sure to excite the students!

For the new batch of grade 6 students, consumables were replenished in the existing lab stations.

These lab stations are being inaugurated, ready to facilitate experiential learning in this upcoming academic year.



## ➤➤➤ Anveshana 2024

- ★ Theoretical discussions
- ★ Visits to research institutions
- ★ Fieldwork
- ★ Laboratory Experiments

Students maintained a reflective journal, a new addition to the framework for the Anveshana 2024.

Students will write out their reports and prepare for their viva, set for August 2024.



08

Projects  
in 2024

29

Student  
Participants

07

Institutes and  
Site Visits

### ➔ *Enhancing Bilirubin Oxidase Productivity in White Rot Fungus via UV Mutation and Immobilization Techniques: Exploring the Purification and Characterization Strategies*

Wellness (ANV - PR - 13)

This team visited the Centre For Incubation, Innovation, Research and Consultancy to get microbial cultures and partially purify the enzyme. They also collected samples around the Suvarnamukhi River.



**Investigators** - Dr. Venkat Krishna and Mrs. Jayatha BC

**Students** - Raichal, Harshali Rathod, Anushka Chandra, Nandana Raghavendra

**Calcium in Living Color: Investigating the Effects of Anacardic Acids on Intracellular Calcium Levels**

Wellness (ANV - PR - 14)



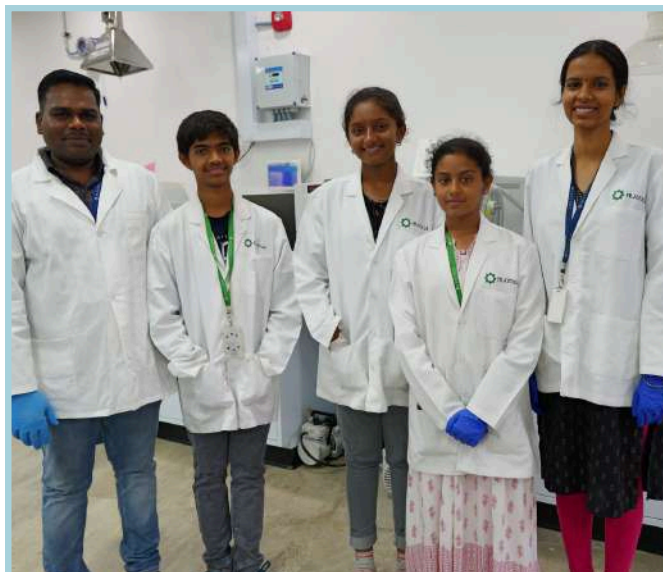
**Investigators** - Dr. K S Nagabhshana and Ms. Shruthi Srinath Chakravarthy

**Supervisor** - Prof. K Sandeep Prabhu, Penn State University

**Students** - Vachana B Hiremath, Chirantana, Gopika

**Investigating and Raising Awareness of Chemical Hazards in Everyday Life**

Wellness (ANV - PR - 15)



**Investigators** - Dr. S Athavan Alias Anand and Ms. Asha C H

**Students** - Usha R, Nalini R and Aniketh V B

**Green Synthesis and Characterization of Bioconjugated Metal Nanoparticles and their Applications** ←  
**in Biomedical Sciences**

Green Chemistry (ANV - PR - 16)



**Investigators** - Dr. Subhadip Senapati, Mrs. Vagdevi Rao, and Mr. Parikshit Kumar

**Students** - Yamini S, Lakshmi G, Kirat Kaur, Reshma

→ **Mineral-Microbe Interactions: Exploring through Milk Fermentation Experiments**  
Earth Sciences (ANV - PR - 18)



**Investigators** - Dr. Biraj Borgohain, Dr. Ajit Singh, Dr. Venkat Krishna B

**Students** - Ananya P, Tanesha Kumaraswamy, Ayyappa, Aprameya SK



→ **Fabrication of Metal Oxide Thin Films for Advanced Electronic Devices**

Advanced And Functional Materials (ANV - PR - 19)

The team visited the **Centre For Incubation, Innovation, Research and Consultancy at Jyothy Institute of Technology** to carry out the electrochemical characterisation for the devices fabricated by Anveshana students, They understood the working of an electrochemical workstation.



**Investigators** - Dr. Omprakash S and Mr. Adarsh V N

**Students** - Bhargava, Shashank C K, Shreyovardhan L, Rakshith Gowda N

**Engineering Cerium Oxide Nanoparticles with Tunable Physicochemical Properties** ←

Advanced And Functional Material (ANV - PR- 20)



**Investigators** - Dr. Ramya Prabhu and Ms. Shwetha N

**Students** - Ojaswin Sastry, Karthik N, Sachith M V

The students visited the **Center for Nano and Soft Matter Sciences, Bengaluru** for material characterization.

➔ **On Lake Sedimentology and Hydrogeology using Geophysical Electrical Resistivity Technique to Identify Potential Sites for Groundwater Recharge - South Bangalore, Karnataka**

Earth Sciences (ANV - PR - 17)

**Students** - Nila Nagaraja, Gurunath Rao, Harini Baskaran, Nitesh C

**Investigators** - Dr. Ajit Singh, Dr. Omprakash, and Dr Biraj Borgohain

The team went 3 sites to collect samples of lake water (Banergatta to Harohalli) and conducted a Geophysical survey on the lake bed of Gabbadi Lake.



Nitesh C. and Nila Nagaraja from this team recently presented their research project at the national conference on Sustainable Groundwater Management for Water Security, organized by the KSTA on June 19, 2024.

They presented their findings during the conference to a panel of judges and received certificates for their work.



## Bigyan Darshan <<<

"Bigyan Darshan" of the Mukya Mantri Bigyan Prathibha Sandhan was organized by the Department of Science, Technology and Climate Change, Government of Assam. Between 13th to 17th May 2024, 100 students from grade 12 across Assam visited Bengaluru.



As part of their science engagement, a day-long visit to Prayoga's campus (Prerana) was organized. We were happy to introduce Prayoga's initiatives and research in science to the students!

We thank the Assam Science, Technology and Environment Council and the Karnataka State Council for Science and Technology for including Prayoga as part of this "Bigyan Darshan" program. The valedictory session was also conducted at Prayoga.



*My experience at Prayoga was profoundly enriching and enlightening. The state-of-the-art laboratories, innovative research projects and the overall commitment to advancing knowledge left a lasting impression on me. Moreover, the opportunity to engage with the researchers and students was invaluable. Their insights and enthusiasm for their respective fields were contagious and I gained a deeper understanding of the institute's mission and impact. Thank you!*

**Ritumita Roy - CMBPS, Assam**

## ➤➤➤ Silicon City School Students Visit Prayoga!



On 28th June 2024, 24 students and 3 staff members from Silicon City School visited our Prayoga campus as part of the Prerana program.

The visit offered a unique opportunity for students to engage with our innovative educational environment and explore experiential learning.

## Workshop on Indian Knowledge Systems <<<

This workshop on the Indian Knowledge System, led by Shri Acharaya Suryanaryana Jammalamadaka, was essential to reconnect with indigenous philosophies, providing a platform to integrate these into our predominantly Western-influenced education system. Understanding and incorporating Indian philosophies can enrich our educational framework, promoting holistic development and fostering a culturally integrated learning environment.



## ➤➤➤ Trainings and Policy Rollout



Training on Fire Safety, Child Protection Policy, and institutional policies were held this quarter to reaffirm our commitment to ensuring a secure environment for our family and visitors to campus. These trainings were aimed at enhancing awareness and preparedness, prioritizing the well-being and safety of everyone involved with Prayoga.

## Zero Shadow Day 2024



Anveshana students and Kriya researchers enthusiastically participated in Zero Shadow Day at Prayoga appreciating this natural phenomenon and its scientific significance. This event underscored Prayoga's deep commitment to experiential learning and rigorous scientific inquiry, providing a dynamic platform for hands-on research and discovery.

## International Yoga Day 2024



On International Yoga Day, SAMVIDA students and the Prayoga community united in a special celebration of yoga, highlighting the significance of health, well-being, and mindfulness. The Prayoga family came together to honour this vital aspect of our national identity and for promoting the integration of ancient practices into modern education.

Gallery



Senior Leadership, Merck, India



Senior Leadership, Merck, USA



Visit of MBRDI Technical Team to Assess the Sustainability Garage Project



SBI Foundation Visit



CMBPS, Assam Visit Prayoga



MOU With AJAX Engineering Pvt. Ltd Signed on 26.06.2024

## ➤➤➤ New Members - Social Impact



Mr. Mallikarjuna Swamy  
Sr. Academic Coordinator



Mr. Kishan BS  
Academic Coordinator



Ms. Divyashree A  
Academic Coordinator



Ms. Bhavana B.R.  
Academic Coordinator



Ms. Vidyashree M N  
Academic Coordinator



Mr. Pradeep N  
Academic Coordinator

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## New Members - Research <<<



Mrs. Bhavana B. Dongre  
Senior Faculty, ERT



Ms. Rakshitha N  
Trainee  
Research Associate



Ms. Neelambika  
Trainee  
Research Associate



Ms. Bhoomika N  
Statistician

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## ➤➤➤ New Members - Program Management and Admin



Mr. Srikanth Biradar  
Electrician



Ms. Sharanya Gupta  
Project Manager



Ms. Sushma V  
Trainee  
Accounts Associate



Mr. Vijay B S  
H R Manager

## Current Status of Assessment of Experimental Skills in Science Education: A Perspective from India



**Journal of Education and Practice**

This article reviews how experimental skills are currently assessed and the importance of evaluating these skills in science at a younger age. It focuses more on the evaluation system in India.

Dr. Venkata Krishna Bayineni, Senior Researcher, Life Sciences



## Addition and Subtraction of Numbers Through Visualisation Using the Number Grid Technique Among Primary School Students

**QEIOS Journal**

This article introduces a visual method to teach primary students addition and subtraction through the use of a number grid. This approach simplifies numerical concepts, making learning interactive and effective. We would like to thank Subhashree Pattanayak for her assistance. Special thanks to Dr Nagabhushana K S sir, for providing valuable insights and guidance throughout the project.

Somagutta Vennala, Dr Karuna Simha, Vallish Herur, and Krishnan VP

## Lemon Peel Activated Carbon: A Sustainable Solution for Lead Ion Removal from E-waste Bioleachate



**Sustainable Chemistry for the Environment**

Our study demonstrates the efficacy of activated carbon produced from discarded lemon peels in adsorbing lead ions from waste-printed circuit boards.

Dr. Athavan Alias Anand, Senior Researcher, Chemistry





## Exploring Educational Transformations Through the Innovative Flipped Learning Instruction Project (IFLIP) Symposium

**Advances in Physiology Education**

Publication in collaboration with Southern Illinois University Edwardsville, US, conducted through the Innovative Flipped Learning Instruction Project (IFLIP), highlights the transformative impact of Flipped Teaching (FT) in STEM education. Faculty implemented FT methods, with 93% intending to implement them in future courses.

**Dr. Athavan Alias Anand**, Senior Researcher, Chemistry

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## From Classroom to Laboratory: A Case Study of Two First-Generation Girl Students from a Rural High School in India Engaged in Scientific Investigations



**International Journal for Science and Research**

This case study on the experiences of rural students in the Anveshana research projects marks the first report from the country highlighting the participation of rural high school students in scientific investigations. IJSR is an Indian open-access, double-blind peer-reviewed journal indexed by the University Grants Commission (UGC)

**Dr. Venkata Krishna Bayineni**, Senior Researcher, Life Sciences

**Padmapriya Rajan**, Research Associate, Physics



## Self-cleaning formulations of mixed metal oxide silver micro-nano structures with spiky coronae as anti-microbial coatings for fabrics and surfaces

**Materials Advances** (Royal Society of Chemistry)

"This work represents a significant advancement in the field of sustainable technology, discussing the innovative potential of nanostructured hybrid materials in energy storage. This work was carried out at CeNS in collaboration with scientists of IISc and ISI Bengaluru.

**Dr. Ramya Prabhu B**, Researcher Chemistry

## Magazine Publications <<<

Two recent magazine publication discuss the Anveshana program.



### Cooking up a Fragrance

Teacher Plus-The magazine for the contemporary teacher

Vanisha Gupta, Umang Sultania, Gouri Nayak, and Anamika Sharma

### Learning by doing: Research with in the Curriculum Teacher Plus-The magazine for the contemporary teacher

Anamika Sharma and Vismitha B G



## >>> Poster Presentation

### Exploring The Role Of Professional Development Training in Empowering Teachers With Experiential Learning Pedagogy

Published as a Conference Paper at the 2-day International Conference on “Global Trends and Challenges in Teacher Education” organized by the Education Department of Bangalore University on 5th and 6th April 2024.

Anitha BU\*, Subhashree Pattanayak\*, Dr. Karuna Simha, Lakshmi BM, Dr. Nagabhshana KS

## Blogs <<<



### El Nino and La Nina effects and their relation to the Indian Monsoon system

Dr. Ajit Singh,Principal Researcher,Earth Sciences



### Can an Ant Fathom and Appreciate the Forest?

Deepika S and Dr. Nagaraja H S

Prayoga has a vision to transform society by enhancing the utility and quality of learning through research. Prayoga is a unique not-for-profit organization poised to evolve into a Globally Unique Trans-disciplinary Education Research Institution.

Prayoga's domain research in the thematic areas of Wellness, Green Chemistry, Advanced and Functional Materials, Food and Agriculture, and Earth Sciences has resulted in this institution being recognised by the DSIR, Govt of India, as a Science and Industrial Research Organisation in 2023. In 2024, the IT Department awarded Prayoga a 100% tax exemption for donations under section 35(I)(ii), for research purposes.

At Prayoga, a team of education and scientific researchers, mathematics specialists, data science experts, program management professionals, and field teams collaborate to find innovative solutions that address the challenges faced by the Indian education system. It is a unique not-for-profit organization poised to evolve into a **Globally Unique Trans-disciplinary Education Research Institution.**

## Partner with Prayoga

### Social Impact Programs

Transform schools, empower teachers, and enrich students across the country, especially those lacking access to learning resources in rural areas of socio-economically disadvantaged communities.

### Research Activities

Domain Research with significant real-world impact and Education Research to engender a paradigm shift in education, taking society towards a sustainable future.

### Infrastructure @ Prayoga

The vibrant campus serves as the hub for research and education, sustaining programs and initiatives to serve the nation's needs for decades to come.

Your invaluable support will empower us to expand our reach, innovate, and bring about positive, lasting change in the lives of countless young minds.

80G ✓ FCRA ✓ CSR ✓ 35(1)(ii) ✓



[www.prayoga.org.in](http://www.prayoga.org.in)

