Innovation and Science Promotion Foundation

Annual Report

2023-2024

ISPF
Innovation & Science
Promotion Foundation

BACKGROUND

Experiential learning has a wide range of interpretations. Sometimes a simulation or video showing a phenomenon is categorised under experiential learning; sometimes, an outdoor visit and, in some cases, a demonstration is considered experiential learning. ISPF discovered that the experience of each student working on an activity, holding the respective models in their hands and exploring them in different ways, has a profound impact on the learning and engagement levels of the students. However, this is uncommon, and our vision is to institutionalise hands-on activities in schools across India and develop a culture of tinkering, exploring and discovering, helping children learn, mastering concepts and developing competencies needed to thrive in the 21st century.

ABOUT US

Innovation and Science Promotion Foundation (ISPF), a non-profit trust, has been focused on promoting Innovation and Science amongst children for nearly a decade. ISPF creates and delivers experiential programmes where science can be learnt hands-on, interactively, inspiring innovation and developing other critical competencies like problem-solving.

Over 20,000 teachers have been trained and have extensively used the ISPF pedagogy in their classrooms. Teachers support children to create, experiment, tinker, innovate and learn, mastering concepts and developing competencies needed to thrive in the 21st century. Deploying empowering pedagogy and a constructivist approach, the pedagogy engages children in exploring and discovering knowledge, achieving conceptual mastery with a focus on real-world applications.

ISPF offers STEM learning programmes integrated with I – X grade curriculum and 21st-century competencies offering material kits, resources and teacher empowerment to schools. The ISPF programme has been designed with repurposed materials, that are affordable and easily available from multiple sources. About half the activities need only household materials, available at home or nearby shops and the materials for the remaining half will be available in specialised stores in any small town and online.

RAMAN CLUBS GOLD PROGRAMME

The Gold Programme has been designed by integrating two existing programmes - Annual programme and STEMClubs.
The annual programme for students in Grade 1 to Grade 10 covers 7 activities which are connected to important concepts in their class curriculum. These activities can be integrated into grade lesson plans, significantly improving curricular learning outcomes. This programme is designed to address critical aspects of NEP implementation, covering experiential education, competency development and assessment for learning.
The STEM Clubs for students in Grade 3 to Grade 10 is designed as a structured programme to develop key 21st century skills, including Critical Thinking, Problem Solving, Creativity and Science literacies. Students get opportunities to create a portfolio, showcase their work, excel at national contests and win immersive experiences at some of the best national STEM labs and companies across India.
The Gold programme utilises experiential activities to familiarise students with various concepts. Subsequently, it guides them on an exploratory journey, helping them uncover variables associated with each activity. This approach fosters the development of essential 21st-century skills.

STAGES OF THE RAMAN CLUB PROGRAMME

Selection of Schools
The programme begins with the selection of state government schools from urban Tier 1, urban Tier 2, and rural areas. This diverse geographic inclusion is aimed at bringing a wide range of perspectives and experiences to the programme.

Training for Raman Club Mentors
Mentors undergo a two-day training session to familiarise themselves with the Raman Club programme. Training locations are strategically chosen in each geography to reduce travel for mentors.

Delivery of Experiential Science Activity Kits
Each Raman Club receives a starter kit, which includes individual activity kits for every child, ensuring full participation. Students are also provided with activity sheets to document their observations.

Support for Raman Club Mentors
Mentors gain access to ISPF's in-house digital Customer Relationship Management (CRM) platform for streamlined management, along with real-time support through WhatsApp.

School Exhibition
Each club will host an exhibition, inviting students and parents from both their school and neighbouring schools. External judges, chosen in collaboration with field partners, will evaluate the exhibits using standardized rubrics. The top 10 projects will be shortlisted for the Raman Awards, and mentors will assist these students in submitting their innovations for the awards.

ABOUT THE DONORS FOR THE PROGRAMMES

Synopsys is a global leader in electronic design automation (EDA), semiconductor intellectual property (IP), and software security solutions, enabling advanced innovation in chip design and secure software development. The CSR (Corporate Social Responsibility) arm of Synopsys focuses on leveraging technology and innovation to create positive social impact, particularly in the fields of education, environmental sustainability, and community development. Synopsys supports STEM (Science, Technology, Engineering, and Mathematics) education programs globally, aiming to inspire the next generation of innovators. Through partnerships with non-profits and educational institutions, Synopsys contributes to initiatives that enhance access to quality education, promote environmental responsibility, and address pressing societal challenges. Their CSR efforts reflect a commitment to fostering a better future by empowering communities and advancing sustainable development goals.

Kalike is an associate organisation of the Tata Trusts, focused on improving the quality of education in rural and underserved communities in India. Established in 2007, Kalike works primarily in Karnataka to promote holistic learning and development. Its initiatives aim to enhance the educational ecosystem by supporting schools, teachers, and students through various programs, including early childhood education, teacher capacity-building, and community engagement. Kalike is committed to

fostering sustainable, community-driven educational models that improve learning outcomes and empower children with critical thinking and problem-solving skills.

REPORT

Stage 1

A total of 80 schools were selected, engaging 9,0000 students in the Raman Clubs.

Stage 2

With the support of the Block Education Office and the Department of Public Instruction, Government of Karnataka, ISPF scheduled training in four phases across six districts. A one-day training on the RISE programme was conducted for teachers and volunteers in July and November 2023. The training introduced two key ISPF programme components—Observation-Based Learning and Exploration-Based Learning. The trained teachers then implemented the RISE programme in their respective schools.

Stage 3

Seven experiential science kits were distributed to all students, and starter toolkits were provided to 10 new schools. Teachers conducted activity sessions following the plan prepared by the ISPF team. By January 2024, nearly all schools had implemented seven TACtivities, covering the two core programme components developed by ISPF.

Stage 4

Around 25 schools held local exhibitions. The winners from local exhibitions submitted short videos showcasing their activities and explorations, which were uploaded via a web-based platform created by the ISPF IT team. The ISPF team evaluated 215 videos from five districts, and after two rounds of screening, 51 students were selected for the final round of the Raman Club competition.

Stage 5

The Raman Club Finals took place on 4th February 2024 at Sir C.V. Raman's Residence in Bengaluru. A problem-solving contest was held for the 51 finalists, followed by a display of their science models. The programme concluded with three winners from each category—intermediate and senior—who were awarded prizes and certificates.

VISUALS

Capacity-building sessions for teachers and volunteers

Connecting copper strips to a battery in a DIY Base Membrane, Benguluru Government Teachers, Panchavati, Bengaluru

Variations in the Parachute Model by changing thickness, surface area, shape, payload etc, Vidya Poshak Team, Panchavati, Bengaluru

Counting number of breaths at rest in the Tactivity - DIY Respirometer, Government High School Girls, Harapanahalli

Filtering the solution of slaked lime in the TACtivity - DIY Respirometer,
Block Resource Centre Building, Sringeri

Volunteers from Synopsys, experienced hands-on TACtivity sessions at Panchavati, Bengaluru

Government Middle Primary School Hebballi, Dharwad

DRM Government High School, Harihara

Government Higher Primary School Masige, Sringeri

Government High School Harakanalu, Harapanahalli

Government Higher Primary School Viswanatha Nagenahalli, Bengaluru

Activity Implementation

Understanding action-reaction forces using the TACtivity - Straw Propeller, Grade 9, Government High School Harakanalu, Harapanahalli

Testing DIY Headphone, Grade 9, TMAES High School, Harapanahalli

Testing DIY Fire Extinguisher Model using the candle flame, Grade 8 , Government High School Bilasanuru,

Harihara

Demonstrating the property of electric charge using an ‘Electroscope’, Grade 8, Karnataka Public School Bannikodu, Harihara

Observing float and sink of a dropper in a Cartesian Diver Model, Grade 6, Government High School , Masige , Sringeri

Understanding the transportation in plants using filter paper, straws and food colour in the TACtivity Plant - Life Transportation, Grade 7, GHPS Halligeri, Dharwad

Learning the various properties of magnet using the TACtivity - Magnetic Pen Stand, Grade 6, GHPS Mullamuttala, Dharwad

Recording the visual response reaction time in the TACtivity - Nervous System-Sensory Reaction, Grade 5, GHPS Pudakalakatti, Dharwad

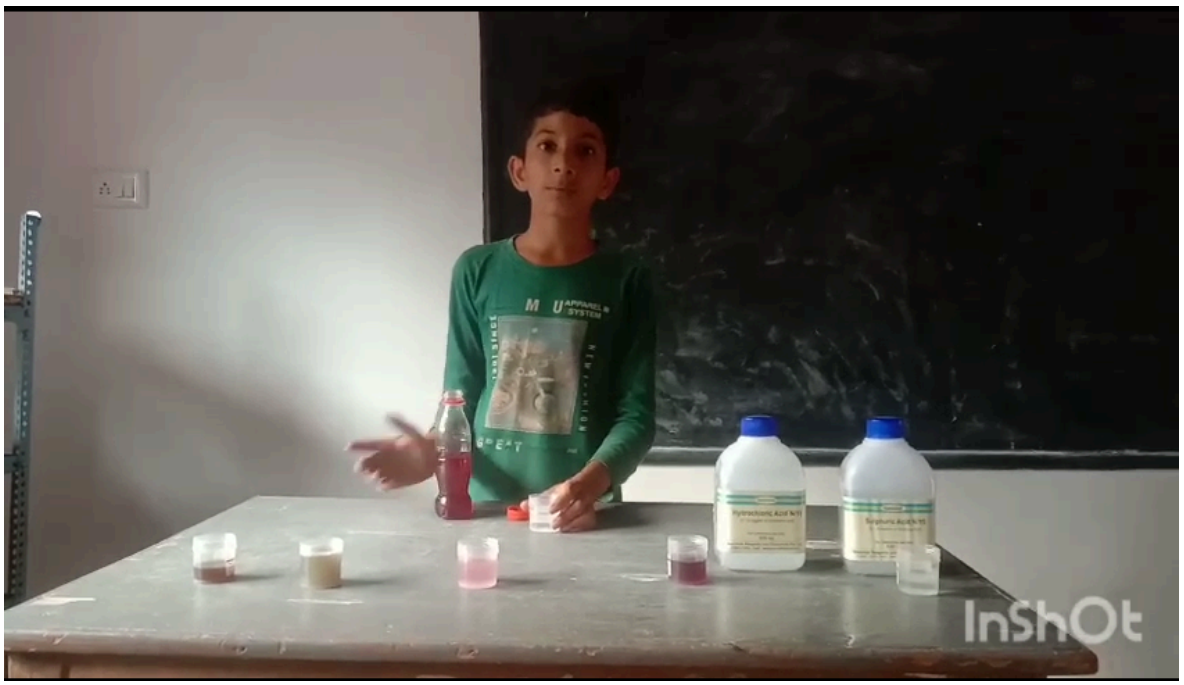
Observing multiple images of a foam ball using the optical instrument Box Kaleidoscope, Grade 8, GMPS Yeshvanthpura, Bengaluru

All set to view the inverted image of a candle flame using Box Pinhole Camera , Grade 8
GHPS Aradeshanahalli, Bengaluru

Local Exhibitions

Students participating during the local exhibition with the display of science models,
GHPS Nagenahalli, Bengaluru

Demonstrating the variations in the Roly Poly Model for the final round selection by Shambhavi, Grade 9, Karnataka Public School Bannikodu, Harihara



Identification of acids and bases using Hibiscus flower petals as an indicator by Srinidhi H M, Grade 7, GHPS Gandagatta, Sringeri

Raman Club Finals

Registration desk for Raman Club Finalists at Panchavati, Bengaluru

A participant testing the Thread Climber Model, Intermediate Contest, Panchavati, Bengaluru

Participants solving problem statement on DIY -Base Membrane, Senior Contest, Panchavati Bengaluru

An orientation for the judges, Panchavati, Bengaluru

Raman Club Participant explaining the variations in a straw propeller to RYSI students, Panchavati, Bengaluru

Visitors interacting with Raman Club Finalists, Panchavati, Bengaluru

Evaluation by the judges for the intermediate category, Panchavati, Bengaluru

Feedback session with the Government School Teachers, Panchavati, Bengaluru

Raman Club Finalists were awarded with participation certification by Ms.Jyoti Thyagarajan, Panchavati, Bengaluru

Teachers and participants gather for the Award Ceremony, Amphitheatre, Panchavati, Bengaluru

Mrs. Shashikala D, Assistant Teacher from Government High School Girls, Harapanahalli was felicitated by Ms.Jyoti Thyagarajan, Panchavati, Bengaluru

Mr.Darshan Hosadurga, ISPF Volunteer was rewarded with certificate and gift, Panchavati, Bengaluru

Arundathi B N, Intermediate Category Runner-up, GHPS Masige, Sringeri

Yashaswini H E, Intermediate Category Runner - Up, GHPS Darekoppa, Sringeri

Kiran Kallur, Intermediate Category- Winner, GHPS Narendra, Dharwad

Gangamma Gourihalli, Senior Category Runner- Up, GHS Harakanalu, Harapanahalli

Parashurama K, Senior Category Runner - Up, AMKV GHS Thouduru, Harapanahalli

Aditya Parasappa Mulagund, Senior Category - Winner, DRM Government School, Harihara

Vidya Poshak Team with participants from Dharwad district

Teachers and participants from Harapanahalli taluk

Raman Club Finalists and teachers from Sringeri taluk