Dr. K. V. RAO SCIENTIFIC SOCIETY

KVRSS

TAMASOMA JYOTHIRGAMAYA

FRIENDSHIP WITH SCIENCE

Annual Report 2023-24

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President's Note

It is with a great sense of satisfaction and pride that we present the Annual Report, 2023-24 of the KV Rao Scientific Society as we enter the silver jubilee of our journey in promoting science.

Through a variety of programs like the Spark Innovation awards, SMART awards, School Talent awards, Science Quiz and more, we have been able to connect with and kindle interest in science in a large number of school children. We now have a pan-India presence thanks to our very active web-site and programmes conducted on-line.

With generous donations from sponsors like M/s Lalitha Varanasi Foundation, Electronic Arts, Amazon, Tatas, we are now able to conduct outreach programmes through like the Mobile Science Lab – reaching out to children in schools lacking facilities for science education. Through these programmes and efforts of NGOs like 'Reach Beyond', we were also able to attract and host a large number of underprivileged children in our well-equipped Science Innovation Centre, strategically located near a metro-station in Madura Nagar, Hyderabad. Watching children from Shishu Vihar and slums of Hyderabad enthusiastically participate in the Centre's activities reminds us of the hidden talents within our country and reassures us that the future of India is in capable hands.

Recognising the vital role science teachers play in nurturing future scientists we conducted a 3-day workshop, 'Teach the Teacher' in collaboration with Dr. AS Rao Awards Council where teachers from four schools participated. The interactions on teaching basic concepts of science with simple, affordable, working models were very promising. We look forward to expanding this programme in the coming years.

The Research Awards, our flagship programme for recognising budding scientists, received nationwide participation. We are grateful to the eminent subject-matter-specialists who undertook the onerous task of evaluating the research papers and selecting the winners.

India has made significant progress since independence and has set for itself the goal of becoming a developed nation by 2047. This is undoubtedly a very challenging task and requires sustained economic growth of 8% annually for the next two decades. Achieving this will necessitate major technological advancements and a robust science and industrial foundation. India must leverage its 'demographic dividend' by nurturing a generation of technically trained youth imbued with scientific temper who can contribute to all sectors of the economy. A strong R&D base is essential for this, and we require huge numbers of talented scientists and technocrats and KVRSS is committed to making its humble contribution towards this monumental task.

We extend our heartfelt thanks to the many eminent scientists and professionals, who participated and guided our activities, the managements of schools and institutions, the teachers and parents who mentored and supported the children, the dedicated staff of KVRSS who toiled round-the-clock to organise the various events - and most importantly, the young participants themselves on whose shoulders rests the task of carrying India into the 'Amrit kaal'.

We look forward to another year of activities with the continued support and engagement of all stakeholders.

Mr. Anil Kumar Kutty

Vice President's Note

I vividly remember my father Dr K V Rao attending the first oration lecture in March 2001 after the society was formed. The society began its journey by instituting a research award in Chemistry. He always strived to spread the awareness of science and cultivate a scientific temper to address issues impacting us.

From a humble beginning, KVRSS has significantly expanded its activities to include all basic science streams. The society has numerous activities and programs for the school children to spread awareness, encourage talent and innovation in science and to promote excellence in research it has research awards to young scholars in research institutes and universities.

We will be celebrating our silver jubilee after the annual event of 2024. It marks a significantmilestone in our journey. As we look back, we crossed many challenges, achieved significant progress in spreading science, and gradually expanded our geographical reach from serving the Hyderabad region to pan India footprint.

As we step into the silver jubilee year, we celebrate our success and at the same time look to the challenging times ahead. While we continue with our existing programs, we need to increase our footprint to include a wider section of the student community, especially those pursuing undergraduate and postgraduate courses.

As India progresses to being the 3rd largest economy in 2027 and as new areas of science and technology make a significant impact on the economy - the activities of the society will have to expand to include a few of these areas.

In addition to our existing programs , we should perhaps start a discussion on new frontiers of science and perhaps begin with guest lectures and webinars on a periodic basis. This will bring awareness to new frontiers of science and also help us to further collaborate with the research institutes on these emerging areas of research.

Needless to add we need additional resources as we ramp up our activities. So far we have been very fortunate to have generous donors who helped us with financial contributions. While we thank you for helping us in our journey and we need your continued support as we expand our activities in the coming years. Funding these initiatives by individuals and corporate entities will encourage us to do more.

The guidance of the scientists and professors is invaluable as we foray in new areas. We are ever indebted to the scientists from the industry and universities who have helped immensely by their active participation. We look forward to guidance and help from this community.

We rededicate ourselves to the vision of Dr KV Rao and we wish to reiterate our commitment to promote Science in the years to come and promote innovation in schools, leading research labs and universities.

We thank you for your support and look forward to working with you for a better tomorrow.

Mr. K. Ramamurthy

Secretary's Note

Greetings from KVRSS!!!

It is a proud moment for KVRSS as it enters the silver jubilee year with the conduct of the annual function for the year 2024.

Started with a small thought of awarding one research scholar of Andhra Pradesh in the field Chemistry, way back in 2001 to impacting more than 8000 thousand students annually, it has been a journey of knowledge sharing, recognition and mentoring in science, impacting more than 70000 students till date.

The year 2023-24 started with KVRSS continuing its mission of reaching out to students to provide hands-on experience for learning science concepts through both the Science Innovation Centre and Mobile Science Lab (MSL). The facilities were availed by about 20 schools and more than 6000 students were impacted. The methodology of teaching was highly appreciated by teachers and schools which led to some schools requesting for training their science teachers. The students have found the experience not only enriching but also fun.

This year has been very special in that KVRSS has got the opportunity not only to address school children but also children from marginalized sections of society. The girls from Shishu Vihar got to experience hands-on learning of various science concepts in a month-long program. The children were very enthusiastic and looked forward to the visit of MSL and our teaching resources daily. Slum children with support from another NGO, Reach Beyond, attend lab sessions every Friday at the Innovation Centre.

Various annual awards events of KVRSS were conducted successfully for the year 2023-24. These included the Research Awards, SPARK Innovation Awards, SMART Awards and School Talent Awards. All events have been witnessing very good participation, leading us to work on making the selection process more robust with the support from various scientists.

This year SPARK Innovations Awards event was unique in that all the judges for final presentations have been our Research Awardees from various years including the Chief Guest, Prof. R. Sai Santosh Kumar, who is now faculty at IIT Hyderabad. It was a proud moment to have so many of our awardees coming back to serve science.

It is not only important to recognize talent and award it but generating interest in science among students is a very important aspect. Thus, KVRSS also conducts many other events for school children throughout the year in this endeavour.

KVRSS celebrates both National Science Day (28th February) and Pi Day (14th March) through interesting activities. This year a “Science Games Competition” was held wherein Class 9 students from some schools near KVRSS office were invited to participate. Games based on concepts in Physics, Chemistry, Biology and Math were developed and competitions held. Dr. Shailaja, Chief Scientist, Chair and Head, Business Development & Resource Management, CSIR-IICT, Hyderabad, was the Chief Guest and encouraged the students with her talk on the careers available in science.

Science Safari Camps were started in 2023 give a fun element to concept and hands-on learning through games and interesting experiments during holidays. The first camp proved to be very successful and prompted KVRSS to conduct two camps in the 2023-24 academic year.

There has always been a discussion that it is not enough to address the students and mentor them. It would be more beneficial to the society to train the teachers/educators as it leads to a manifold impact among students. KVRSS, considering this aspect and the request from some schools embarked on this task and recently conducted a three-day workshop "Teach the Teacher" in collaboration with Dr. A. S. Rao Awards Council, where teachers from four schools participated. The workshop was designed to impart knowledge on various pedagogy and ICT tools used in science education and various sessions with hands-on activities to teach the concepts. It was a learning process for the teaching resource staff of KVRSS also.

KVRSS has achieved success in its endeavours and has been able to sustain and grow mainly due to the contributions by its committee members, technical committee members, judges' panels, volunteers, and its staff members.

The Judges panels comprising of eminent scientists, awardees, teachers and other academicians play a key role in selecting the right students for awards. KVRSS would like to salute all our judges for their fair and impartial judging because of which the awards have now become very competitive and prestigious and have helped many students in the growth of their careers.

KVRSS has been fortunate to get support from various quarters during its journey. We wish to place on record our sincere thanks to Electronic Arts Company, Hyderabad, Lalitha Varanasi Fund, California, Amazon and TATAs, Mr. Karedla Phanindra, Mr. Shashikant Parekh, and all the other individuals who have contributed to the growth of KVRSS in its vision of popularizing and promoting Science. We are at this juncture working towards generating support and funds for our ambitious project for developing a Science City, which we are sure will help a generation of students get interested in science and be part of development of new technologies and provide scientific solutions to problems and plan scientific strategies for a developed India.

KVRSS is proud to have as the Oration speaker for Awards function 2023-24 the main architect of "Make in India" vaccine Covaxin for Covid, Dr. Priya Abraham, Senior Professor at CMC Vellore. She was the Director of National Institute of Virology, Pune and it was under her able leadership that the vaccine was developed which helped India in containing the fury of Covid.

It is a privilege to have Mr. Partho Pratim Kar, Joint Managing Director, Jaykay Enterprises Ltd., New Delhi, as the Chief Guest for the Annual Awards Function to provide the Industry perspective of the need of Science to the Society.

KVRSS has completed 24 years of functioning, and as we move towards our Silver Jubilee year, the Society has a vision to reach out to many more students and participate in research for societal benefit. It has been an exciting journey so far and we look forward to inspiring many more people to make Friendship with Science.

Dr. K. Ratna

Programmes conducted in 2023-24

I. Annual Awards

KVRSS conducts a number of events from school to University level each year in its quest to spot talent and award the students. This year the following events were conducted:

School Talent Awards

(Awards sponsored by Mr. Karedla Phanindra)

The School Talent Awards event was conducted for the students from Andhra Pradesh on 13th December 2023 in coordination with APCOST (Andhra Pradesh Council for Science and Technology).

National Children's Science Congress (NCSC) under the Department of Science & Technology conducted the event at district level and selected 26 projects to participate at the National level competition. The selected teams from different districts of Andhra Pradesh were invited by KVRSS to present their work and were reviewed by a panel of professionals and scientists. The students were also given recommendations on the key aspects of the project, content, and presentation to support these youngsters in the final presentations at the NCSC. The projects presented were based on the theme "Understanding Eco-System for Health and Well-Being".

The presentations were held Online, and over the years it has been noted that the quality of the projects and the presentation skills of the students had increased significantly over the years. We are happy to note that majority of the students hail from Zilla Parishad Schools and Government Schools.

The panel of judges selected the following students for awards and scholarships.

N Kusuma Latha
Class: X

School : ZPHS School Kaikaram, Eluru, Andhra Pradesh

Project Title : Palmyrah Orchard- The New Future Farming for Barren Lands/Around the Boundary of the Fields

Guide Teacher : Kunati John

The Work : Palmyrah is called KALPAVRIKSHA by our ancient people because of its usefulness. Usually, farmers cut the existing plants which are around the fields. This tree is going to be endangered soon. For that new Palmyra Orchard – The New Future Farming for Barren Lands as well as agricultural lands have been introduced. Products from the Palmyrah tree are Thati Neera, Palm Jaggery, Palm Shoots etc. These palmyrah tree products can create lot of income to the famers when utilized in a proper manner.

N Lakshmi Prasanna & N Sravanthi
Class: IX

School : ZPHS, Bhimavaram Mandal, West Godavari District, Andhra Pradesh
Project Title : Sanitary – Bio Napkins
Guide Teacher : Ponnada Revathi
The Work : Sanitary napkins are non-biodegradable and affects women's health. Dumping these in landfills, creates a major problem to the environment. To overcome this challenge, naturally available cheap materials like banana fibre, water hyacinth and cotton which are easily available, biodegradable and cost effective were used in making sanitary bio-napkins. These fibres are naturally super absorbent and highly effective at locking away menstrual fluid. The other advantage is its porosity and retention of fluid for a longer time.

Reddy Baradwaj
Class: IX

School : GVMC High School, Prakasaraopeta, Visakhapatnam, Andhra Pradesh
Project Title : Human Made Oxygen by Electrolysis
Guide Teacher : G.Venkata Lakshmi
The Work : Electricity is taken from solar energy, and the released oxygen from electrolysis is stored in a compressed or liquid state in an intermittent storage tank to buffer its production rate for steady state operation of biogas ATR (AutoThermal Reforming) process, and it can be supplied to industries such as furnaces and glass melting.

P Shanmukha Priya
Class: IX

School : St John's E M High School, Gunadala, N T R District, Andhra Pradesh
Project Title : Attic Energy
Guide Teacher : Zilani Shaik
The Work : Attic energy is a viable option that can be installed at home. This energy source remains available throughout the year with minimal energy loss. It utilizes the pressure difference between hot and cold air, causing the roof ventilator to rotate. This rotational energy is then converted into electrical energy using a generator. The generated electrical energy is stored in a battery, as the used motor is a DC generator. An inverter is employed to convert DC to AC to fulfill the energy demand.

SMART Awards – (Science Meets ART)

(Awards sponsored by Mr. Shahshikant Parekh)

SMART awards competition aims to help children visualize Science through art forms and make the students think creatively. The competition is held to celebrate National Science Day which is observed on February 28 every year to mark the discovery of the Raman effect by Indian Physicist Sir C V Raman. The competition is conducted for school students from 7th to 12th grades across India.

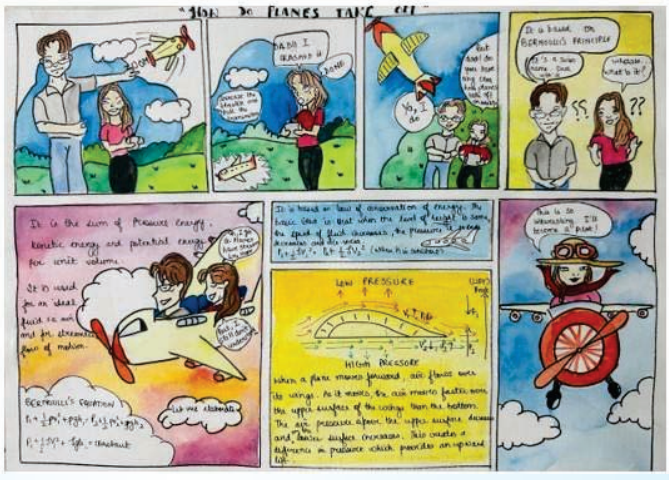
This year our focus was on expressing science concepts through stories using cartoon pictures. The event received 132 entries for initial scrutiny from which 15 were screened for final selection. The entries were judged by a panel of experts in the field, who evaluated the stories based on their originality, creativity and artistic ability. The top three stories were selected for awards and consolation prizes were given to two more cartoons.

Winner

Ira Saxena - VIII
Tagore International School,
Vasant Vihar, New Delhi
Topic: Newton's Laws of Motion

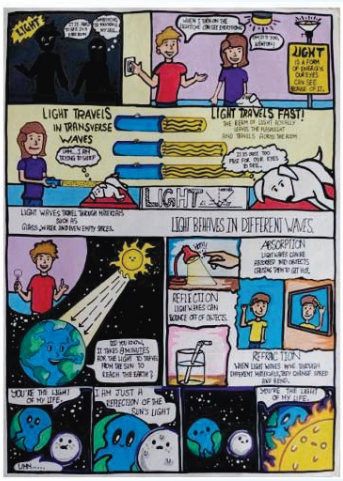
Runner up I

Saisha Narang - XI
Bal Bharathi Public School,
Gangaram, New Delhi
Topic: "How do Planes take Off"



Runner up II

Shreyansh Bhardwaj - VII
Indraprastha International School,
Dwaraka, New Delhi
Topic: Light-The Way to Vision



Consolation Prize

Atharva Keswani - IX
Bal Bharathi Public School,
Gangaram, New Delhi
Topic: Asteroid Mining
Limitless Possibilities

Consolation Prize

Shriya Pasricha - IX
Amity International School,
Gurgaon, Haryana
Topic: The Elemental Gala-
Starring the Nobles

SPARK Innovation Awards

The Annual SPARK Innovation Awards event, started in 2011, provides a platform for young minds to showcase their creativity, critical thinking, and problem-solving skills. The focus is on fostering the spirit of scientific enquiry and promoting innovation among school children. Such events also create a supportive environment where students can share their ideas, learn from each other, and be inspired by the exciting possibilities within the fields of science and math. The proposals are also encouraged to focus on the application of the concepts in daily life and help them develop their scientific skills, understand concepts deeply, and navigate their projects effectively.

The competition is open to school students from classes 7 to 12 and held in the four basic sciences and awards presented in each field separately as follows:

Math – **KVRSS SPARK GANITAM** Awards, Chemistry – **KVRSS SPARK RASAYANAM** Awards,

Biology – **KVRSS SPARK JEEVANAM** Awards and Physics – **KVRSS SPARK BHOUTIKAM** Awards

This year, 2023-24, there were around 263 applications (555 students), from 66 schools from all over India. Some of the states from which we received applications include New Delhi, Haryana, Tamil Nadu, Uttar Pradesh, Telangana, Karnataka, Punjab, West Bengal etc. After two rounds of preliminary evaluations, top 10 projects in each field were selected for the final presentation at Hyderabad. Among them the top 4 projects were selected as super finalists. The projects were judged on various parameters which were reviewed not only for innovative ideas but also the knowledge and contribution of the student/s to the project.

The significance of the event this year is that 14 Research awardees, now in senior positions, participated as judges. We sincerely hope the young students were inspired by these scientists and gained knowledge through interacting with them.

The Guest Speaker for the event was Dr Sai Santosh Kumar Raavi, Professor, Department of Physics, Indian Institute of Technology, Hyderabad also an awardee of KVRSS. Prof. Raavi is a highly accomplished researcher in ultrafast spectroscopy and organic photovoltaics. His research group investigates excited state dynamics of organic molecules and nonlinear optical properties of materials for organic photonic applications. He delivered a talk to the young minds on the topic "Embracing Tomorrow: A Technological and Scientific Adventure into the Unknown".

Students and teachers from various schools in Hyderabad including Sreenidhi High School and Vignan Jyothi Public School, also attended the event.

The following is the list of winners in the event:

Ganitam – Math

Winner

Haard Bharatkumar Mori – VIII &
Jwaldeep Tuhitkumar Katariya - VIII

School : Anand Vidya Vihar School, Subhanpura, Vadodra, Gujarat
Guide Teacher : Shivalika Savant
Project Title : CAMATO (CArd MAth TOkens)
The Work : In this two-player game, participants strategically utilize mathematical operations to manipulate the values on the cards. The goal of the players is to strategize not only how they perform mathematical operations on the cards but also when to use their tokens, adding an extra layer of decision-making. It consists of 32 number cards and 8 special cards.

Runner up

Bhaavika Ram Kumar - VIII, **Vikhya Peddala** - VIII & **Subhasmita Mohanty** - VIII

School : Bharatiya Vidya Bhavans Atmakuri Ramarao School, Jubilee Hills, Hyderabad

Guide Teacher : M V S Narasamamba

Project Title : "RIGHT" Time – A Unique Pythagorean Timer

The Work : The Pythagorean Timer is a unique project that is a distinctive blend of the principles of the Pythagorean theorem. This innovative design is inspired by the conventional sand clock, transforming it into a geometric triangle that simultaneously serves as a practical timer and a dynamic representation of a fundamental mathematical principle. The project successfully bridges the gap between abstract mathematical concepts and tangible real-world applications.

Bhoutikam – Physics

Winner

Sai Srinithi K - IX

School : G D Matriculation Higher Secondary School, Coimbatore, Tamil Nadu

Guide Teacher : Juno Kamala Soundra S

Project Title : Multi Strategic Elephant Chaser

The Work : The "Multi Strategic Elephant Chaser" early warning system, is equipped with advanced sensors capable of detecting wild elephant movement. Upon detecting movement, the device triggers an alarm audible up to 1 km away, alerting local residents and farmers. This alarm system effectively deters elephants and other wildlife. The system employs infrared technology to detect nearby elephants. Additionally, strategically positioned bee hives along the enclosure's perimeter discourage elephants from approaching.

Runner up

Prakyat Sinha – XI & **Gangesh Aggarwal** - XI

School : Scottish High International School, Gurugram, Haryana

Guide Teacher : Neeraj Pant

Project Title : Battery Less Electric Vehicles - BLEV

The Work : BLEV uses a concept of electromagnetic induction, specifically Near Field Inductive coupling, to provide sustainable transport. It uses no batteries to operate, but it relies on continuous Wireless Power transfer so that there is no risk of poisonous or irresponsible E-waste dumping. BLEV's detailed implementation plan contains 3 stages, which include its integration with Smart Cities of India. This way, it will be tested for public transportation and shows its viability for the same. As humans progress, BLEV will also incorporate available technology to make BLEV and the transport industry more sustainable.

Consolation

Niruban Chakaravarthy G A - VIII

School : G D Matriculation Higher Secondary School, Coimbatore, Tamil Nadu

Guide Teacher : Juno Kamala Soundra S

Project Title : Thermostable

The Work : A Peltier module is used that works on the "Peltier's Effect" where the body can absorb heat from one side and emit it from another side with the help of electricity. The radiator also removes heat in the outdoor unit when in cool mode or vice versa. This device can keep us cool in the summer and also keep us warm in winter. All of these can be achieved with a single battery (12v 7ah), thus making it portable.

Consolation

Ikat Singh - IX, **Aditya Singh** - VII & **Prisha Ashok** - IX

School : Venkateshwar International School, Dwarka, New Delhi

Guide Teacher : Monika Mangla Singhal

Project Title : Garuda Patronus – SMART VEHICLES

The Work : The Garuda Patronus project uses an AI framework with advanced algorithms that enhance effectiveness across use cases, redefining operational dynamics through autonomous driving and collision avoidance. Vehicle-to-anything communication fosters a connected and secure transport ecosystem. For sustainability, solar power amplifies eco-friendly practices, marking a holistic approach to safety, efficiency, and environmental consciousness in public transportation.

Rasayanam – Chemistry

Winner

Sairaah Bhardwaj - IX

School : Venkateshwar International School, Dwarka, New Delhi

Guide Teacher : Monika Mangla Singhal

Project Title : Blue Harbour – Boost your Wellbeing

The Work : To help people control a feeling of 'emptiness', loss of interest, fatigue and low self-esteem, an app called Blue Harbour was developed. It helps people control these when using the app. The features, and products designed help control the levels of these chemicals, without the user knowing it.

Runner Up

R Jeshitha Rao - IX, **Prabhleen Kaur** - IX & **Kalyana Kartheeka Yanamandra** - IX

School : Sherwood Public School, Jeedimetla Village, Hyderabad, Telangana
Guide Teacher : V Vijayalakshmi
Project Title : Organic Cosmetics
The Work : To demonstrate to the public that natural components can be used to make cosmetics work well. Additionally, to create natural cosmetics using readily available household components, enabling anybody to create their own cosmetics. Chemical composition, pH of few cosmetic products and their effect on the health were studied and explored for safer alternatives made with organic materials.

Consolation

Prajith J – VIII & **John Rithin K** - VIII

School : Mahatma Global Gateway School, Madurai, Tamil Nadu
Guide Teacher : Ramajayanthan N
Project Title : Water Garbage Recycler
The Work : Accruing waste from water surface is always a bit of challenge. This challenge is conquered with the consolidation of automated technology in water surface cleaning equipment. This enabled the opportunity to clean the surface of water remotely. Help of a skilled worker to drive this system is not required in the remote areas. It is a user-friendly device, reduces water pollution and keeps the environment clean.

Consolation

Niyathi Sri Sai Skandana Kaja - IX & **Sahasra Myneni** - IX

School : Bharatiya Vidya Bhavans Atmakuri Ramarao School, Jubilee Hills, Hyderabad
Guide Teacher : Dr Prasanna Lakshmi
Project Title : ECOGUARD: An Ecofriendly Consortium Insecticide
The Work : Mealybug is one of the plant sucking insects that sucks the sap from leaves and stem of the plants. Use of chemical pesticides to control the insect pests in agricultural fields pose many long term threats and risks to living beings due to their harmful side effects. Thus eco-friendly low cost Ecoguard was prepared using Tagetes extract and Azadirachta indica (neem) extract. This preparation was found to be effective in controlling mealybug growth and further reduced mealybug infestation.

Jeevanam – Biology

Winner

M Chegu Veera - VIII & **M Rahul** – VIII

School : Paramita Heritage School, Karim Nagar, Telangana
Guide Teacher : Lalit Mohan Sahu
Project Title : Solar Power Sand and Seed Filter Machine
The Work : Farmers and laborers face problems related to separating the grains and sands while operating today's existing machines in their workplace. To avoid these types of challenges, an innovative machine called "Solar power multi grain separator has been designed thereby eliminating the power usage in the homes and additionally diminish their carbon footprints and additional manufacturing cost.

Runner up

Swarit Acharya - IX & **Aryavir Singh** - IX

School : Lotus Valley International School, Noida, Uttar Pradesh
Guide Teacher : Neha Singh
Project Title : DermaVision
The Work : This project proposes an image processing-based method to detect skin diseases. It uses a pre-trained convolutional neural network for feature extraction and a multiclass support vector machine for classification. The system successfully detects three different types of skin diseases with an accuracy rate of 100%. This system has the potential to revolutionize dermatology by offering a fast, affordable, and accurate solution for early diagnosis and treatment.

Consolation

Suha Zubair - XII

School : S M Ali's Shanthinikethan Junior College, Hyderabad, Telangana
Guide Teacher : Asifa Jabeen
Project Title : Strabi Cure
The Work : Strabismus affects a person's ability to perform routine tasks and causes psychological and psychosocial difficulties. In response to the need for non-surgical strabismus treatment, the innovative jute string device offers an eco-friendly, effective solution when compared to other solutions available in the market. Paired with an upcoming mobile app, this holistic approach not only aids natural recovery but also promotes early detection and engages children in therapy.

Consolation

Divisha Goyal - IX & **Manasvi Kapoor** - IX

School : Maharaja Agarsain Public School, Ashok Vihar, New Delhi

Guide Teacher: Ruchi Sharma

Project Title : Shell - Eco Pottery: Crafting Green Solutions

The Work : The objective is to replace non-biodegradable plastic polythene used in planting with eco-friendly alternative biodegradable peanut shell pots, promoting sustainability, reducing pollution, and enhancing plant growth. They provide necessary nutrients for robust plant growth, enhance water retention, and protect against pests and fungi.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PROCESS AT A GLANCE


SPARK INNOVATION AWARD WINNERS 2022-2023

Research Awards

The Research Awards are presented to young researchers under the age of thirty who are actively engaged in fundamental scientific research, covering physics, chemistry, biology, and mathematics in the universities/research institutions of India. The awards are given in recognition of the outstanding work done by students as part of their doctoral study.

This year 114 scholars from about 50 institutions in India applied this year. After various stages of screening, the participants were shortlisted for the final presentation by a panel of distinguished scientists in each discipline.

Final presentations were conducted at KVRSS office and the candidates got an opportunity to be engaged in fruitful discussions with the judges and other participants, which aids them in gaining added insight into their potential research topics.

After carefully examining the presentations and research papers of the candidates in each category, the students for awards were chosen based on the recommendations of the panel of judges.

Ganitam - Math

Winner

Renu Joshi

Institute : Indian Institute of Science Education and Research, Bhopal, Madhya Pradesh

Project Title : On the Schur Multiplier of Finite p-groups of Maximal Class

Supervisor : Dr. Siddhartha Sarkar

Runner Up - I

Pinlodi Mohan

Institute : Indian Institute of Technology, Sangareddy, Hyderabad, Telangana

Project Title : Integral Representation of Radial Operators on the Bergman Space over the Unit Disc

Supervisor : Dr Venku Naidu D

Runner Up - II

Joydev Halder

Institute : University of Hyderabad, Hyderabad, Telangana

Project Title : An Implicit Finite Difference Scheme to Approximate the Solution to the McKendrick-Von Foerster Equation with Diffusion with the Robin Boundary Condition

Supervisor : Prof Suman Kumar Tumuluri

Bhoutikam - Physics

Winner
Sudipto Das
Institute : Indian Institute of Technology, Kharagpur, West Bengal
Project Title : Novel Topological Phase of 5/2 Quantum Hall State
Supervisor : Prof Sudhansu S Mandal

Runner Up I
Vinod Panwar
Institute : Indian Insitute of Science, Bengaluru, Karnataka
Project Title : Gate Field Induced Extraordinary Energy Storage in MoS_2-Graphene-Based Ultramicro-Electrochemical Capacitor
Supervisor : Prof. Abha Misra

Runner Up II
Dipak Maity
Institute : Tata Institute of Fundamental Research, Hyderabad, Telangana
Project Title : Strain-Tunable Ultrastable MoS_2/Fluorographene Hybrid Photodetectors of High Responsivity
Supervisor : Dr T N Narayanan

Rasayanam - Chemistry

Winner
Rajashi Haldar
Institute : Indian Institute of Technology, Powai, Mumbai, Maharashtra
Project Title : Energizing Tomorrow: Biocompatible Ferroelectric Cu (II) Complexes for Sustainable Energy Harvesting
Supervisor : Prof. Maheswaran Shanmugam

Runner Up I
Shivani Tripathi
Institute : BITS Pilani Hyderabad Campus, Hyderabad, Telangana
Project Title : Small Fluorescent Probes for Detecting Pesticides in Real-Life Samples: A Preventive Approach for Pesticide Poisoning at the Doorstep
Supervisor : Prof. Manab Chakravarty

Runner Up II

Shweta Sagar

Institute : Indian Institute of Technology, Sangareddy, Hyderabad, Telangana

Project Title : Earth Abundant Metal Complexes as Effective Catalysts in the Ring Opening (Co)Polymerization of Cyclic Monomers for Synthesis of Biodegradable Polymers

Supervisor : Prof. Tarun Kanti Panda

Jeevanam - Biology

Winner

Pradeep Kumar

Institute : Centre for Cellular & Molecular Biology, Hyderabad, Telangana

Project Title : Integration of Chiral Proof reading & Multi-Aldehyde Stress Tolerance Mechanisms in Land Plants

Supervisor : Dr. Rajan Sankaranarayanan

Runner Up I

Vigneshwaran Venkatesan

Institute : Centre for Stem Cell Research, Christian Medical College, Vellore, Tamil Nadu

Project Title : Editing The Core Region in Hpfh Deletions Alters Fetal and Adult Globin Expression for Treatment of β-Hemoglobinopathies

Supervisor : Dr. Saravanabhavan Thangavel

Runner Up II

Abhilash Vijay Nair

Institute : Indian Institute of Science, Bengaluru, Karnataka

Project Title : Salmonella Typhimurium Employ Spermidine to Exert Protection Against Ros-Mediated Cytotoxicity and Rewires Host Polyamine Metabolism to Ameliorate its Survival in Macrophages

Supervisor : Prof. Dipshikha Chakravortty

II. Concept Teaching

Science education is effective when the focus is on teaching scientific concepts, which are the underlying ideas that explain how the world works. This approach offers several advantages over traditional rote learning. Concept learning leads to deeper understanding of the phenomena, helps in critical thinking and problem solving, develops curiosity and exploration skills and is a lifelong learning experience.

KVRSS has embarked on this journey of science concept teaching and has in just a couple of years developed infrastructure and different tools for providing access to concept teaching to schools, students and now teachers also.

KVRSS has inducted faculty to facilitate the process and many volunteers help in the conduct of the classes as well as content development. The content developed is customized and unique such that the concepts are taught not only through demonstrations by our faculty and hands-on experimentation by students but also through different interesting games. Our team is developing various games to make learning fun and easy by using jigsaw puzzles, crosswords, games, etc. This, we have found, reinforces the concepts being taught and at the same time the students enjoy themselves while learning.

Apart from concept teaching, general demonstrations and mentoring students one on one are the added features in our concept teaching. Schools have also been inviting our team to judge and provide support during science fairs.

Scientists from various research institutions in Hyderabad like the University of Hyderabad, IIT's, BITS-Hyderabad, IICT, CCMB, and some colleges visit KVRSS and extend their support for providing both content and demonstrations on a voluntary basis. Many teachers from various schools also visit the facility and some have requested support to develop labs in their schools.

The following are some of the components of the now much sought after concept teaching by KVRSS:

Science Innovation Centre

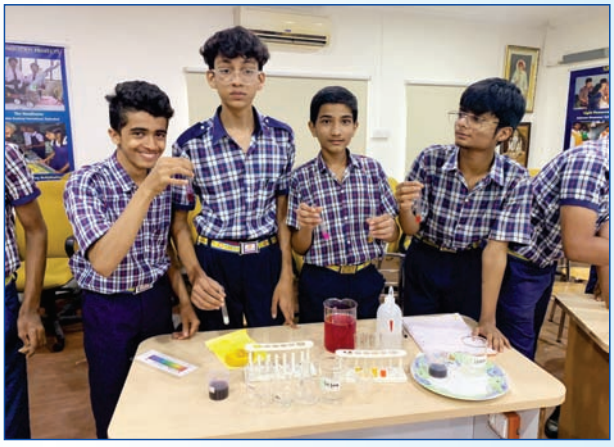
The Innovation Centre, started in 2021, to provide hands-on science concepts learning to school students, is now being utilized very effectively with more than 10 schools utilizing its services regularly and many schools visiting for an understanding of the experiential methodology of learning. The Centre is equipped to teach more than 40 concepts covering Physics, Biology, Chemistry and Math for classes 7 to 10.

The Centre has become a place of attraction, with not only students but also many teachers, scientists and parents visiting to understand the concept. The total footfall has been more than 3500 students in the academic year 2023-24.

KVRSS has been supporting students from government schools as well as small private schools which require lab facilities support in this venture. During weekends students come from various schools for hands-on experience. The students are provided with the material/equipment to conduct the experiments either individually or in groups of two to three.


Dr. K.V. RAO SCIENTIFIC SOCIETY


Dr. K.V. RAO SCIENTIFIC SOCIETY










Mobile Science Lab (MSL)

The Mobile Science Lab started operating in April 2022, and since then has been going to various schools located in different areas of Hyderabad far from KVRSS office, both government as well as some private schools which need lab facilities support. Apart from regular visits to some government schools, MSL has been going for demonstrations to many schools. Particularly, during school events like Science Fairs and Annual Days, schools have been inviting us for demonstrations.

MSL is equipped with content as well as material to teach all the concepts from class 7 to class 10 in all the branches of science. To date more than 6000 students have availed the MSL facility.

















Science Safari – Hands-on Science Concepts Camps

KVRSS has started the initiative "Science Safari" in the year 2023 to generate interest in science among school students. The "SCIENCE SAFARI" – hands-on science concepts camps showcase various concepts in an interesting and fun-filled atmosphere. Two camps were organized this year, one during winter vacation for 2 days from 16th Oct to 17th Oct 2023 and the other during summer vacation for 3 days from 6th May to 8th May 2024.

The Science Safari camps not only give an opportunity to students to learn various concepts but also to learn new behavioral skills and express their creativity, and play in the field of science.

A group of 15 students from classes 6 to 10 from various reputed schools of Hyderabad participated enthusiastically on all days. They not only made memories while having fun, but they were able to try new things, make new friends amidst lots of laughs & also learnt team spirit.

The concepts touched upon during the camp are as follows:

Biology:

1. **The Red Racer Check:** A brief introduction to blood, haemoglobin, iron, and proteins followed by a haemoglobin test which the students volunteered to do by themselves. All the students performed bleeding time and clotting time tests also.
2. **Lifeology:**
   - **Culturing microbes:** Growth, Isolation and observation of microbes under a microscope.
   - **Exploring enzymes :** Catalase experiments was performed by using potato, yeast and hydrogen peroxide
3. Detecting the presence of starch in food materials
4. Potassium Permanganate and Glycerin experiment
5. Fake blood experiment

Physics:

1. **Light:** Basics of light and bending of light with the flow of light.
2. **Surface Tension:** Basics of surface tension and a couple of demonstrations of it.
3. **Air/Atmospheric Pressure:** Basics of Air/Atmospheric Pressure and demonstrations about it.
4. **Everlasting (Perpetual) Motion:** Introduction to perpetual motion and energy, power, and work was illustrated with examples and activities. The students made models with pressure, pivots, and gears to understand the concept of energy transfer. The reality of the non-existence of perpetual motion without spending any energy was also explained.
5. **Fun with Force:** The session mainly focused on an introduction to force and types of force. Contact and non-contact forces were illustrated with the help of activities, making the students play games and involving them all as teams. Centripetal and centrifugal forces were also explained by preparing models and playing with them.
6. **BOOM! (Sound):** Introduction to Sound with activities and explaining about vibrations and how the sound is produced with vibrations. This was a fun-filled session with students making models, playing games, involving in group quizzes and fun-filled activities.

Math:

1. **Math Magic:** A fun session of calculating areas and volume of various 3D figures, e.g, cube, cuboid, cone, sphere, etc. without calculating, by converting into 2D structures made the students fall in love with geometry. Games with match sticks and easy method of calculating no.of squares in a big square.
2. **Probability and Maths tricks:** An interactive session where the BODMAS rule was explained with examples. Activities, games, and quizzes based on chance, Games with coins, playing cards, dice, etc. were used to explain probability.

All the sessions were spiced up with quizzes, puzzles, story sessions and jokes which led to students asking for more. The camp ended on a colorful note with all the students being presented with participation certificates in the presence of their parent**s.**









Dr. K.V. RAO SCIENTIFIC S


Addressing Marginalized Sections

Shishu Vihar Children

Shishu Vihar is under the aegis of the Ministry of Child and Development. It is an orphanage comprising girls from marginalised sections. These students studying in different residential schools return to spend their summer vacation at Shishu Vihar. KVRSS took the initiative to strengthen the fundamental science concepts. This was catered by taking Mobile Science Lab consisting of various activities for children from classes 7th to 10th.

Hands-on experiments, games & activities were taught to students. The response was overwhelming & took the opportunity of learning the concepts and usage of lab facilities.

The following topics were covered:

Biology:

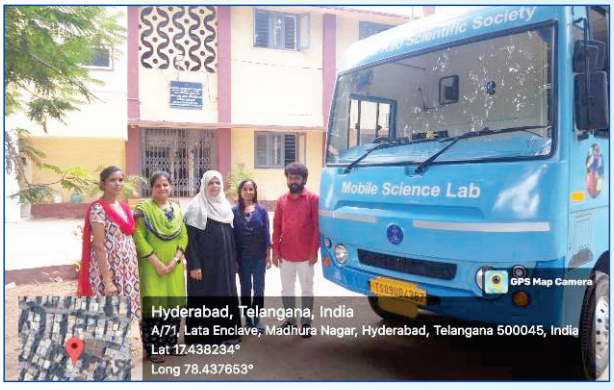
Activities on cell structure and functions, world of microorganisms, observation of lactobacillus in curd, blood grouping,

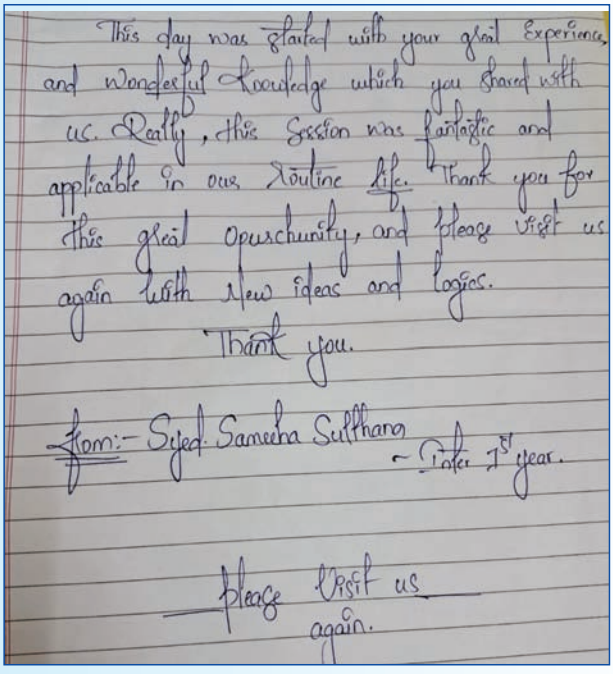
Physics:

Light - Introduction of light, laws of reflection, refraction, Electricity - Basics, series & parallel connections, conductivity, resistance and Motion and Time, Force.

Mathematics:

Activities and games on circles and probability.

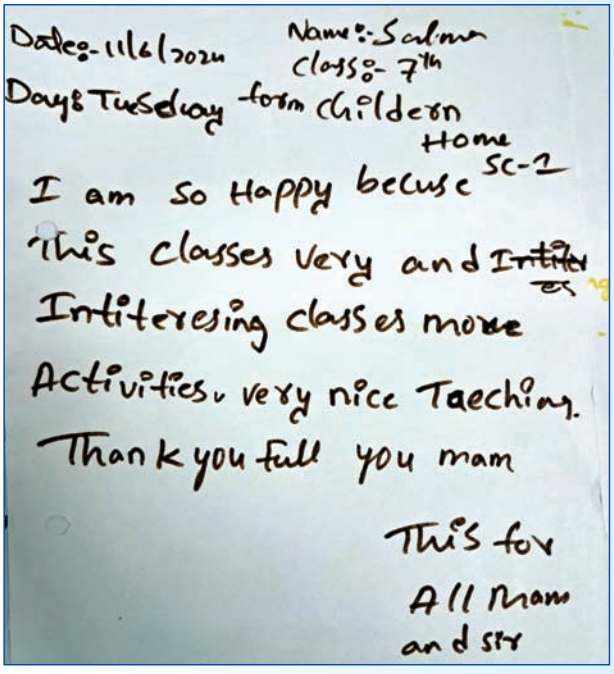



This day was started with your great Experience and Wonderful knowledge which you shared with us. Really, this Session was fantastic and applicable in our Routine life. Thank you for this great Opurchunity, and please visit us again with New ideas and Logics.

Thank you.

from:- Syed Sameeha Sulthana - Inter 1st year.

Please visit us again.


Dates-11/6/2024 Name:-Salma
Days Tuesday form Children Class:- 7th
Home SC-1
I am so Happy becuse
This classes very and Intiteresing classes more Activities, very nice Taeching. Thank you full you mam

This for All Mam and Sir

Reach Beyond

This is an NGO which provides space for children from below the poverty line to study after school hours. These are children of slum dwellers near Secunderabad area. KVRSS took the initiative of giving an opportunity to the children from this NGO to visit the Innovation Centre and learn concepts hands-on every Friday during their summer vacation.

The following topics were covered in

Physics:

Introduction of light, laws of reflection and Motion and Time.







The children were very enthusiastic about the program and KVRSS plans to continue to support them as required.

Teach the Teacher

The primary goal of the "Teach the Teacher" workshop is to empower educators with activity-based teaching. Activity-based teaching offers numerous benefits for both students and educators as it incorporates hands-on activities and experiential learning opportunities into their teaching practices. Educators can enhance student engagement, promote deeper understanding, and prepare students for success in an ever-changing world. This makes learning more interactive and participatory, capturing students' interest and motivating them to actively engage with the material. When students are actively involved in the learning process, they are more likely to retain information and develop a deeper understanding of concepts. Also empowering one teacher increases the outreach manifold.

KVRSS embarked on this journey to empower innovative STEM teaching methodologies in collaboration with the experienced team of Dr. A.S Rao Awards Council (ASRAC) members. The "Teach the Teacher" workshop has featured a blend of presentations, workshops, group discussions, and hands-on activities in various learning styles.

Seasoned educators from ASRAC and experts in various fields, provided valuable insights and the team from KVRSS gave insights in hands-on learning.

Overall, 12 teachers from 4 different schools, Radiant High School (Yellareddyguda), Daksha School (Madhuranagar), Vignana Jyothi Public School (Madhuranagar) and GVK Chinmaya School (Nellore) participated in the 3-day workshop.

Sessions conducted during the workshop are as follows

Day - 1

- A talk on research-based pedagogy tools by Dr. Y. Aparna (Assistant Professor, Department of Microbiology Bhavans Vivekananda College of Science Humanities and Commerce Sainikpuri)
- Hands-on activities in Light and Electricity by KVRSS Team

Day - 2

- A talk on ICT tools by Dr Bhanuprakash (Retired Chief Scientist, CSIR-IICT)
- Mole concept by Prof C.P Murthy (Retired Dean & Professor of Chemistry, Osmania University)
- IUPAC Nomenclature by Dr. R.B.N Prasad (Former Chief scientist and Head, Centre for Lipid Research, CSIR-IICT)
- A talk on Heredity and Evolution by Dr. Sandhya (Asst. Professor, Department of Genetics, Osmania University)

Day - 3

- Hands-on activities on Respiration in organisms and Cell structure and functions by KVRSS Team
- A talk on 2D 3D relation by Ms. Gayatri (Principal, Haindavi College)
- Activities on 2D Geometry of triangles and quadrilaterals by KVRSS Team

The teachers were felicitated with certificates on completion of the workshop.


and
Educators Together :


Dr. K.V. Rao Scientific Society
and
Dr. A.S. Rao Awards Council
Nurturing Educators Together :
Welcome to our collaborative
Teach the Teacher Workshop
KVRSS


What are our students doing?


Dr. K.V. RAO SCIENTIFIC


Lakshmi Tulasi


KVRSS


Dr. K.V. RAO SCIENTIFIC SOCIETY


Dr. K.V. RAO SCIENTIFIC SOCIETY


Dr. K.V. Rao Scientific Society
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Dr. K.V. Rao Scientific Society
and

III. Other Events:

KVRSS Foundation Day

KVRSS was formed on 9th January 2001. It celebrated its 24th foundation day this year at the Science Innovation Center.

Mr. Anil Kumar Kutty, (President) KVRSS, hoisted the Society flag. Members of the Executive Committee, Mr. Ramamurthy,(Vice President), Dr K Ratna, (Secretary), Mrs. Latha Parekh, (Treasurer) and Dr K Sridhar Rao, (Membe were also present.

Ms. Kavitha, Senior Scientific Resource Officer presented a talk on “KVRSS teaching pedagogy” and explained the impact of concept hands-on learning on the improved understanding of the subject among students. Later there was an interactive discussion between committee members on how to take forward the activities of KVRSS and suggested that upgrading the skills of teachers in new teaching tools is the need of the hour and in effective implementation of NEP. The suggestion resulted in the first “Teach The Teacher” program by KVRSS in June 2024.

National Science Day & Pi Day

To commemorate the National Science Day (February 28) and International Pie Day (March 14) KVRSS conducted Science games competitions for students of classes 7 and 8. About 120 children from 4 schools – Slate, the school, Academic Height Public School, Sreenidhi School, Bhavani School in Hyderabad participated in the competition held on February 26th, 2024, at the Siddhartha Nagar Welfare Association, Hyderabad.

Science games play a crucial role in education by making complex scientific concepts engaging and accessible. These interactive tools provide a dynamic way for learners of all ages to explore and understand various scientific principles, from basic physics and chemistry to advanced biology

The games conducted included Biology BINGO, Memory Game, Reverse Pyramid, Maths puzzle, Magnet game. In the preliminary phase, 5 teams, each team consisting of approx. 20 students competed in these games. Based on their performance, the top 3 from each game were selected to play for the finals. A game was conducted for the 15 finalists from which 3 winners were selected. The winners received a certificate of Award and others received a certificate of appreciation.

The school students were treated to a very stimulating talk by Dr. D. Shailaja, Chief Scientist, Chair, Business Development & Research Management, CSIR- Indian Institute of Chemical Technology, Tarnaka, Hyderabad. She spoke about the importance of science and innovation. She emphasized the attributes necessary to inculcate a process of innovation. Her insightful remarks on the relevance of science in our everyday lives had a positive impact on the students. The scientific concepts with real-world examples made the subject engaging & relatable for everyone present. Dr. Shailaja also gave away prizes to the winning students.

Scientific Talks

Dr Sindhu Kodali, Consultant Gynecologist and Obstetrician

On the occasion of the 104th Birth Anniversary of Dr K V Rao, KVRSS organised a talk by Dr Sindhu Kodali, Obstetrician and Gynecologist, MaxAid Hospitals, Hyderabad, on “Reproductive Health and Hygiene - What Nobody Talks!” on 21st March 2024 at KVRSS Innovation Center.

The event was interactive and kept the students engaged throughout the session with a safe space for girls to ask questions and address any concerns they might have. It was mainly concentrated on raising the awareness and importance of reproductive health and hygiene by providing accurate and reliable information about the female reproductive system, menstruation and sexual health.

The event was organised to promote healthy practices for menstrual hygiene management which empowers girls to make decisions regarding reproductive health.

The following topics were discussed:

1. Anatomy and physiology of the female reproductive system.
2. Menstruation – a normal biological process.
3. Menstrual hygiene management practices – using sanitary napkins, disposal methods, and personal hygiene.
4. Vaccination, UTI and white discharge.
5. Importance of a balanced diet and exercise for reproductive health.
6. Activities like questionnaires were conducted to reinforce learning.

There were about 60 girls students from different schools such as Sreenidhi School, Vignana Jyothi Public School, and Bhavani School.

World Environment Day

KVRSS has been working on developing a learning garden where a number of medicinal plant spices and other plants used in experiments are being grown. On June 5th, on the occasion of World Environment Day, a few saplings including varieties of basil, air purifying plants like the snake plant and other herbs were planted. The teachers, speakers and by the faculty of KVRSS and members of Dr. A S Rao Awards Council, who were attending the "Teach the Teacher" event, participated enthusiastically and more than 30 plants were planted in KVRSS office premises. Our little contribution to planet earth.rogram for school children to be held in August 2024.

IV. Collaborations & Associations

KVRSS has on its journey worked with a number of organisations and institutions for various outreach programmes. There have been collaborative events, invited workshops, talks, and demonstrations with institutions like Indian Institute of Chemical Technology, Centre for Cellular and Molecular Biology, Hyderabad University, Chinmaya Schools, APCOST, etc. We are extremely happy to have collaborated with Dr. A S Rao Awards council for the conduct of "Teach The Teacher" workshop.

Earlier in 2018 KVRSS signed an MOU with IICT for various programs for popularization of science and outreach programs and it has been mutually agreed to extend the duration of the MOU. KVRSS has been invited to present a session "Concepts and Hands-on Teaching, DIY" at the event "Ignite STEM Passion: Empowering Science Teachers" being held by India Development Foundation and IICT. The alumni of Jadavpur University, Hyderabad chapter have visited the KVRSS office and invited us to conduct a demonstration session using our MSL in August 2024.

V. Annual Memorial Oration

To encourage and inspire the students, an eminent Scientist is invited every year to present an Oration during the Annual Awards Function. We are honored to have **Dr. Priya Abraham,** Senior Professor, Christian Medical College, Vellore and Former Director, National Institute of Virology, Pune to present this year's Dr. K. V. Rao Memorial Oration. She will present a popular talk on "The Making of an Indigenous COVID Vaccine and More".

Orator's Profile

Dr. Priya Abraham is an Indian scientist, medical doctor and one of the leading virologists in the country. She is known for her contributions in the field of testing techniques and genome studies of the Covid virus SARS-CoV-2. Dr. Priya has served as the director of the National Institute of Virology, Pune. Her team came across the first sample of COVID-19 virus in India and isolated it.

Dr. Priya hails from the Kottayam district in Kerala. She earned her MD and PhD in biology from Christian Medical College Vellore (CMC) in 1981. She was the head of the Clinical virology section at CMC and was first interested in hepatitis and human papillomaviruses. She has worked on committees for several viral infections at CMC and as a consultant for the World Health Organization on numerous viral infections. She has also served on the Indian Council of Medical Research's Scientific Advisory Committee. She has also participated in national viral infection surveillance research.

Dr. Priya took over the director role at the ICMR-National Institute of Virology, Pune just two months before the outbreak of COVID-19 in India. Dr. Priya and her team made it possible for India to make significant progress in the direction of containing the spread of the virus by managing the logistics of transporting the testing kits to various testing labs and keeping an eye on any new emerging variants. In September 2023, she was elected as a fellow of the Indian National Science Academy.

Recently she was elected as a Fellow of the Indian National Science Academy. She has currently 230 publications to her credit. She features in The Braided River- Universe of Indian women in Science, UNESCO, New Delhi; Spotlight Series- South Asia, Indian women in STEM and Wikipedia.

The talk will focus on the successful isolation of the virus which paved the way for antigen generation as well as the making of the first indigenous antibody detection assay (Kavach ELISA) which was used in the four national serosurveys for COVID-19 and to screen participants for future vaccine trials. Members of the industry collaborated with ICMR and ICMR-NIV in making a candidate vaccine which led to the formulation of India's first indigenous vaccine.

VI. Chief Guest

We are extremely honoured to have an eminent industrialist gracing our Annual awards event, **Mr. Partho Pratim Kar,** Joint Managing Director, Jaykay Enterprises Limited, New Delhi.

Mr. Partho is a Leader for more than 35 years, with substantive P & L experience and well rounded national and international exposure in creating organizations from scratch. Currently Mr. Partho serves as Joint Managing Director on Jaykay Enterprises Ltd and Director on JK Technosoft Ltd. Focused on futuristic technologies. Mr. Partho has held leadership P&L roles with the Aditya Birla Group as CEO of Madura Garments, Arvind Mafatlal Group as CEO of Apparel Business and House of Pearl Fashions as Managing Director. Mr. Partho is one of the pioneers In Indian Retail and has built a national retail chain and brand called Stencil way back in 1986. He Pioneered the concept of 3rd Party Social audit in manufacturing. He successfully got a 3rd social audit done by OXFAM in 1995 and got outstanding ratings for which BBC made a global coverage of the organization as a socially conscious organization. The Indian Parliament Sub-committee recognized this effort in its report on excellent manufacturing in 1998.

Mr. Partho has contributed substantially to national Textile Policy making and has been recognized for it by the Textile Secretary and the Cabinet Secretary of the Government of India. Mr. Partho sits on the boards of several prestigious educational institutions and trusts. He is a trustee of Sarvodaya Ashram Etah, one of the oldest Khadi Institutions of India founded by Vinoba Bhave. As a trustee he helped the Ashram launch its retail brand “Ekmatra” considered as a new initiative in Khadi sector. He conceptualized and executed “Biswa Bangla”, an initiative to establish Brand Bengal and popularize Textile, Craft, literature, Food and culture while, creating jobs at the bottom of the Pyramid. This is one of the most pioneering initiatives globally in Artisanal Retail since 2014. This has helped in revival of many lost traditions and skills in Bengal and currently engages more than 100000 artisans with sustainable livelihood opportunities.

Mr. Partho was a Board Member of The Indian Institute of Management, Lucknow from 1997 to 2018 and made immense contribution to the institution in its formative years. He was on the drafting committee of the IIM Bill 2012 of the MHRD, GOI. During the last 25 years he has been a board member with other national institutions like NIFT & Pearl Academy. He is the Vice Chairman of Sir Padampat Singhania Schools in Kanpur & Kota and have contributed into making them as the No1 Schools in their respective cities. Mr. Partho works extensively in diverse areas of the Social Sector including helping local societies to build primary schools.

Mr. Partho received The British Chevening Gurukul Scholarship in 1997 and The Distinguished Alumnus Award of the International Management institute, Delhi in 2006, as recognition of his contribution to business and society. He is educated at the London School of Economics & political science, International Management Institute. Delhi, XLRI-Jamshedpur, and the St Xavier’s College Kolkata.

VII. KVRSS Team's Corner

How did we get to this current Pedagogy?

KVRSS started its journey way back in 2001 with awards and recognition of bright students till 2020. Then diversified on to mentoring based on the experience gained during the interactions with the school children. KVRSS realized the need for concept learning and hands-on experience for better understanding of basics in science.

Efforts were made to develop the infrastructure for students of classes 7 to 10 and work started on the Innovation center and the Mobile Science Lab. However, COVID struck, and no classes were being held in schools. But it provided the opportunity to get the infrastructure ready and start development of content for concepts. Using the text book resources of classes 7^{th} to 10^{th} of various curricula, videos by established teachers, a framework was set as how to go about hands on teaching. We started with a couple concepts and developed content with activities not only from text books but added some interesting demonstrations for teaching the concept. Each of the hands-on activities were executed in proper methodology at Innovation Center to showcase to students.

Our team went to a nearby government school to showcase the activities. Students from the neighbouring schools were invited to the lab and made to do the activities to evaluate the content. Feedback from the teachers and students was sought and the content was restructured to make it comprehensive. The content and way of teaching according to the feedback was modified and developed for a fun and easy learning experience.

A demonstration kit for each concept was developed which contained all the material required for explaining concept with activities. From demonstrations we moved to hands-on experiential activities. Students worked in groups with the material provided to them. Acids and Basis was first hands on activity done by the students. Meanwhile, requisite concepts and content was prepared and reviewed periodically.

As of now we are equipped with both content and kits for about 40 concepts in Physics, Chemistry, Maths and Biology.

To make the learning fun and interesting various interactive tools were introduced like, quizzes, puzzles, jigsaw puzzles, word search, crosswords, games etc. and competitions are held regularly. Some of these tools are also used in assessing improvement in the learning process of the students. A substantial progress in grasping and understanding of the concepts was observed using these tools. Going further we plan to develop content for all concepts up to class 10 and include more tools and make science learning an unique experience for school students.

Kavitha Ponnala

రజత స్రజాం
(25 years garland)

Dr. K.V. Rao గారు విజ్ఞాన శాఖల స్నేహితుడు
విద్యార్థులను ప్రోత్సహించడంలో పురోహితుడు
ప్రతిభను గుర్తించడంలో ద్రోణాచార్యుడు
తాను నేర్చుకునేటప్పుడు అర్జునుడు

తమసోమా జ్యోతిర్గమయా అజ్ఞానానికి వెలుగు విజ్ఞానమయ

కథలతో పాఠాలు చెప్తాం
కాన్సెప్టులతో సైన్సు నేర్పుతాం
క్విజ్‌లతో జ్ఞానాన్ని పెంపొందించుతాం
గుర్తింపుతో పిల్లల్ని ప్రోత్సహిస్తాం
ప్రగతికి మార్గదర్శకులవుతాం

ఇన్నోవేషన్ **(Innovation)** కి చక్రాలు ,
MSL లో **models** చాలా రకాలు
రైరై అంటూ **Science on wheels** బండి
గుమ్మానికే **science** తీసుకొచ్చాం అందరూ రండి !
చకా చకా తిరిగే ప్రయోగశాల
ఆడుతూ పాడుతూ నేర్చుకుందాం భళాభళా!

మాధ్యమాల **(Media)** ఔత్సాహిక ప్రోత్సాహం
అభినందనీయం
పూర్వవిద్యార్థుల కృషి , వారి భాగస్వామ్యం హర్షనీయం
పాఠశాల నుంచి విశ్వవిద్యాలయ స్థాయి వరకూ ప్రాచుర్యం
Technology ద్వారా దేశమంతా విస్తీర్ణం (వ్యాప్తం)

కృషి రోజూవారి, తేడా లేకుండా పగలూ రాత్రి
పిల్లలు బాటసారి గురువు దోహదకారి.
ఇష్టం పెంచడానికి ప్రతిసారి
సంకల్పంతో రజతస్రజ గమ్యానికి కట్టాము రహదారి.

Science as Frankenstein is a misconception
Friendship with Science is Our mission
Creation of science Generation is Our vision
An Institution that applauds without hesitation

Dr Ratna's conviction changed latent
receptions into welcoming appreciations.
As a person of highly valued opinion,
rooted new Perceptions.
Developed a strong foundation
For Scientific Popularization !

D. Sai Sowmya

Reverse Pyramid Game

Game Rules:

- Each player gets 15 cups and some papers.
- When the game begins, arrange the cups in a special way:
  a. Place one cup on the table as shown in fig A
  b. Place two cups on top of the first cup.
  c. Keep placing more cups on top, adding one cup to each row to develop into a reverse pyramid as shown in fig B
- To help the cups stay in place, place papers between them.
- You have 5 minutes to place maximum number of rows.
- The player who finishes arranging the reverse pyramid first is the winner.
- If no one finishes, the person who places the most number of rows will be the winner.

Fig. A

Fig. B

Science behind this game:

Centre of Gravity

The centre of gravity is **a point in an object where the distribution of weight is equal in all directions**, and it does depend on the gravitational field.

G. Ajay

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