7th Annual Science Fair

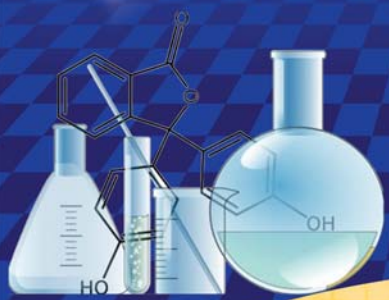
SPARK

Innovation Awards

2017-18

Inter-State Science Fair

(Telangana, Andhra Pradesh, Karnataka, Tamilnadu & Kerala)



KVRSS

TAMASOMA JYOTHIRGAMAYA

FRIENDSHIP WITH SCIENCE

Dr. K.V. RAO SCIENTIFIC SOCIETY

I. Philosophy behind the SPARK Innovation Awards:

KVRSS aims at promoting the pursuit of science among school children. With a view of fostering spirit of scientific enquiry and promoting innovation among school children, KVRSS holds an annual science fair wherein the **SPARK Innovation Awards** are given for entries displaying use of scientific concepts for solutions to an existing problem through some novel concept / method / process / device.

The latest developments in science and technology are in the process of making 'disruptive' changes in virtually every sphere of life. Path-breaking advances are being made in different fields like Semi Conductor chip design and manufacturing, Computers design and programming, Robotics, Medicine, Bio-technology, Bio-engineering, Telecommunications, Material sciences etc. The major disruptions that are now happening come from the cross-disciplinary convergence of these technologies which, when combined with the astounding advances in Artificial Intelligence has the potential of making enormous changes in practically every sphere of human activity. Virtually every repetitive or 'formula based' activity, no matter how complicated, will get mechanized in the very near future and as time goes by, machines with 'deep learning' capabilities will increasingly take over and perform complex activities currently performed by humans.

The future work force will perhaps be largely science-based knowledge-workers. More certainly, the future belongs to innovators and scientific-minded individuals capable of understanding the on-going, continuous advances in science and harnessing various technologies in creating new products / processes / business models etc.

KVRSS is concerned that the current school curriculum - which is oriented largely towards getting children into engineering and medical colleges - is becoming regimented and syllabus-bound - with emphasis on preparing and reproducing answers to a set of expected questions! There is little or no lab-work, project work or any activity that requires the student to think about the concepts he has studied, its practical applications, work with his hands in a lab carrying out experiments, making some simple devices etc.

The SPARK Innovation Award is KVRSS's small contribution towards fostering the culture of scientific enquiry by creating a multi-state competition which will make children think out of the box, do some individual research, understand the harnessing of the scientific principles they have learnt, think of practical applications and work with their own hands to create a new product. How-so-ever imperfect the end-product may be, what matters is the understanding of the scientific principles, the creativity involved and the novelty of the product /idea/concept.

There are numerous competitions around the world aimed at precisely this-recognizing and fostering the qualities of **innovation among school children**-which we believe is the correct stage at which original scientific thinking and spirit of enquiry must be encouraged and talented children recognized and nurtured.

The SPARK contest aims to achieve this through an inter-school competition wherein the **SPARK Innovation Awards** would be given to the children who come up with the most original exhibits/concepts in the fields of Biology, Food Sciences, Physics, Chemistry, Computer Science and Mathematics including Earth and Environment Sciences, Electricity and Electronics, Robotics, Energy etc. The competition is open for students from the states of Telangana, Andhra Pradesh, Karnataka, Tamil Nadu and Kerala.

II. What we are looking for:

It may be noted that the proposals should focus on Innovative Ideas of students and not mere compilation of information downloaded from the internet. We have been conducting the SPARK programme for the past six years. However, perhaps due to poor communications from our side, we have been unable to get worthy contributions for our competitions.

III. SPARK - 2017-18

The competition is open to school students in the age group of 13 to 18 as on 31st December 2017 from the states of Telangana, Andhra Pradesh, Karnataka, Tamilnadu & Kerala only. All the students must have permission from the school or parent or legal guardian to enter the Competition. The decision regarding the students' eligibility to participate wrests with KVRSS.

A. Project Requirements:

- **A brief write up about the Entry in English (in addition you may send a video of maximum 2 minute duration or a Slide show of maximum 10 slides).**
- Particulars of the Team (to be filled as in the given format)
- **Proposal:**
  A brief description of the problem being investigated, the methodology and the expected result
- **Research or Why:**
  A write up of the research undertaken for choosing the problem.
- **Materials & Method or How:**
  Detailed description of the experiment/s or design.
- **Results or What was found:**
  Experimental data of the experiments or testing, and an analysis of the data.
- **Discussion:**
  Interpretation of results
- **Conclusion/Report & Future Work :**
  Details of the outcome of the result and an explanation of the results obtained.
- **Bibliography, References and Acknowledgments**

Spark Winners

Category – I (Classes 7 to 9)

1. Ms. Beebi Juheena Maliha, Mr. Mathew Vincent & Ms. H. Archana, Christ CMI Public School, Kerala.

Project Title: "Tuginate (Kit for Duckweed inoculum)"

Duckweeds are aquatic plants floating on fresh water surfaces which undergo fast vegetative growth and can be used for Bio-monitoring and as component of human diet and in both cases use of standardized tested clones is a prerequisite. However, developing duckweed inoculum (starting material for culturing duckweed) particularly with a longer shelf life is an issue. The duckweeds cannot bear conditions of desiccation and transportation over longer distances in closed containers. Turions, specialized vegetative structures produced by some duckweeds, can survive in minimal moisture contents and help the duckweeds to survive the unfavourable conditions like the cold winters or warm dry summers. In this project the idea is to embed these turions in alginate beads to help them survive dessication and water loss over a longer period of time and can be a good source as duckweed inoculum.

2. Mr. S. M. Karthik Anand, C S Academy, Coimbatore.

Project Title: "Adsorption of heavy metals from water using turmeric"

The study evaluates the removal of heavy metals like Lead, Cadmium and Mercury with the use of turmeric leaves and stem as adsorbent from synthetic waste water. Synthetic waste water was prepared using lead acetate, cadmium chloride and mercuric chloride at a concentration of 10mg/L [10 ppm] in double distilled

water. Turmeric leaves at a concentration level of 50mg/L of waste water was effective in removing heavy metals like Pb, Cd & Hg by around 40% whereas turmeric stem was efficient in removal by around 37%.as evident from the analysis of treated water by atomic absorption spectrophotometer. The results point out the efficacy of the turmeric leaves and stems as good candidates in treatment of waste water using adsorbents.

3. Mr. Hyder Husain Arastu & Mr. Omer Saleem Ahmed, Glendale Academy International, Hyderabad.

Project Title: "Table IT"

Our aim is to let people who do not have many resources have access to technology, in a cheap and easy to use method to learn to use advanced subjects in easy and intuitive ways. Our technology works by detecting a significant change in the brightness of the screen. The touchscreen is accurate and user-friendly and we have improved it using the principle of reflection of light. We need to further advance this technology of ours and create software that will allow people across ages to learn to use the internet and the latest technology. We wish to mount this in villages and rural areas and help children to educate themselves and learn about the latest inventions and discoveries.

Category – II (Classes 10 to 12)

1. Ms. G. Vaishnavi Sharma, Ms. T. Nikitha & Ms. P. Supraja, BV B Sri Venkateswara Vidyalaya, Tirupati.

Project Title: "Smart Helmet"

Major reasons for the involvement of two wheelers in road accidents include the negligence of drivers, drunken driving and drowsiness. The present project is about road safety and protection and security of all those who travel on roads by use of smart helmets. Innovations like this prevent unnecessary loss of life, promote awareness about road safety and inculcate responsibility among citizens. These smart helmets can be installed in any normal motorbike once developed entirely.

2. Mr. Perla Chandan, N S M Public School, Vijayawada.

Project Title: "Energy generating shirt and neuro pulse transmitter"

The project aims to impression the heat of body to use it for other purposes. It actually generates electricity from a body by converting our body temperature into electricity and shows the electric impulses from our brain which would also show our emotion and also the intensity of our thoughts. It also aids the process of diagnosing the malfunctions of different body organs. It can be also used as a lie detector. Aluminium foil is taken and wrapped around a person's chest or the frame of the spectacles near the temple region(head). A pair of wires are connected to the foil and then to the voltmeter which creates an electrical flux. The shirt, as it is in contact with aluminium foil traps the heat. The heat is converted to electrical energy by the aluminium foil which is then transferred to voltmeter.

3. Mr. S. Gowtham, Mr. Aparajith Srinivasan & Mr. R. Dhinesh, DAV Public School, Chennai.

Project Title: "Wireless Health Monitoring System"

The study carried out by our team helped us to integrate computer applications to resolve difficulties faced by the medical personnel in emergencies. The device remotely monitors vital signs of critical patients 24/7 who are hospitalized and also not hospitalized. It will also save time and alert the medical team on the medical help to be rendered to the patients. In this project, we have adopted the wireless technology to ensure 24/7 monitoring of all patients and has been demonstrated in a prototype consisting of 2 modules, the 'SENDER' and the 'RECEIVER'. The 'Sender' has various sensors and it is programmed with logic device to transfer the data to the 'Receiver'. With the help of Visual Basic, the software is designed that gives the doctor the option to monitor any patient 24/7. The technology is portable and accessible from even remote areas.

B. Awards:

a. Grand Prize - Rs. 10,000/-
b. Best Project - Social Impact - Rs. 7,500/-
c. Best Project - Application Oriented - Rs. 5000/-
d. Best Project - Scientific Concepts used - Rs.5000/-
e. Sponsored Awards - will be announced later

The prizes would be given in two following categories:

i. Category A: Class 7th to 9th
ii. Category B: Class 10th to 12th

C. Judging Criteria:

1. **How inspiring is the idea?**
2. **Capacity to make impact in some way.**
3. **Interest & Creativity.**
4. **Knowledge and use of scientific concepts.**
5. **Interpretation of results.**
6. **Presentation and communication skills.**

Projects that are just informational, models, kit building or downloads from internet will not be considered for final presentations. A project may be a part of a larger study performed by professional scientists, but the project presented by the student must be only their own portion of the complete study.

Projects with scientific fraud and misconduct which includes plagiarism, forgery, use or presentation of others work as one's own and fabrication of data, will fail to qualify for competition.

D. Eligibility:

1. Each School may send multiple projects, however, a student can be part of only one project.
2. A student must be:
   a. be in class 7th-12th or equivalent.
   b. in the age group of 13 to 18 years.
3. Abstracts and additional material must be in English.
4. A team may have a maximum of three members and from the same school. The team leader should be properly mentioned.

E. Registration

All students, individuals and teams, must register as per the format given before the project submission deadline of 15th December, 2017.

EachTeam must have a Team Leader identified.

Registering of a project does not guarantee an entry into the Competition.

Complete project and all additional materials must be submitted on or before 31st December, 2017.

A confirmation mail will be sent on receiving the complete project.

Students have to send the information as per the following format to register.

Passport Colour Photo

Name of the student : _____

Class & Date of birth: _____

Address : _____

Mobile number : _____

email address : _____

Official school name: _____

Address: _____

Telephone number: _____

Mobile number : _____

Principal's name: _____

Mentor's name: _____

Address: _____

Mobile number: _____

email address: _____

Number of Students in the Team: _____

Title of the Project : _____

* All students in a team must submit the above details.

Tips to choose the right projects:

a. Talk to the faculty at a nearby college, university or research institute.
b. Search online, ask teachers, study science books, etc.
c. Contact judges from earlier science competitions.
D. Contact people who write science articles.

Students may also refer to the following websites for ideas:

Google Science Fair
Intel International Science and Engineering Fair
Siemen's Foundation
Regeneron Science Talent Search

Date of Final Presentation: 20th January 2018

Venue:

Siddhartha Nagar Welfare Association, Indoor Stadium and Cultural Centre,
8-3-169/163, Siddhartha Nagar, Near Kalyan Nagar Junction,
Vengalarao Nagar, Ameerpet, Hyderabad.

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