The Joy of Science

Annual Report
2013 - 2014

Question
Explore
Discover
The Joy of Science

Annual Report
2013 - 2014
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Chairman’s Message

Vikram A Sarabhai Community Science Centre’s (VASCSC) role of popularizing science amongst masses and building scientific temper, is being well-fulfilled through its innovative activities targeted at different age groups. The Centre has managed to provide a better understanding of scientific concepts to students and teachers through a number of interventions during the year 2013-14.

I am happy that the Centre has been instrumental in successful completion of the sixth phase of Science Express, which is being run as ‘Science Express - Biodiversity Special (SEBS)’, a unique collaboration of Dept. of Science & Technology and MoEF. SEBS has successfully reached out to even small towns of India. Science Express has demonstrated phenomenal outreach capacity with overall 11 million visitors to the exhibition till date. This decade being declared as the ‘Decade of Innovation’, the next phase of Science Express could be showcased as Innovation Special. The exhibition therein could then showcase the innovations made in Science & Technology. India has a long tradition of innovation and a significant pool of qualified people presently engaged in innovative activities. This talent pool has to be leveraged to create a cadre of trained Science Communicators. More avenues should be created whereby young people can pursue careers in science education. The Science Express and Advanced B.Sc. Programme in Physics have managed to accomplish this.

I appreciate the exciting manner in which the VASCSC’s team conducts the activities, which has resulted in increased popularity and participation of children in its programmes. The methodology involving conducting experiments and activities has made it easier for children to understand science and mathematics concepts from school curriculum. The large scale fun-filled event ‘Science is fun’ has aimed at bringing a shift in students’ perception of science from being dull and difficult to an appealing and interesting subject. The teacher assumes a significant role in the teaching-learning process. A student needs to not only study and understand concepts, but also learn to analyze and apply them to practical situations. In this context, it is imperative that the teacher adopts new approaches in teaching science and mathematics. The teachers’ training workshops conducted by VASCSC across the country have contributed to building the capacities of teachers and made them familiar with the hands-on approaches.

I compliment the VASCSC team for the successful execution of turnkey projects including establishing Science Activity Centres and Science Playgrounds at various locations in India. However, the Centre needs to cultivate a progressive mindset and should take the necessary steps for further scaling up its operations, resulting in increasing its reach and capacity. There is a need to scale up its programmes and activities by implementing new ideas. VASCSC needs to take necessary steps to enhance its web presence. Although it is already active on social networking sites such as Facebook, other sites like Twitter and YouTube should be explored. Work should be done towards translating its publications in different languages. VASCSC’s programmes, publications and kits should be available on Web, thereby increasing reach and benefiting more teachers and students. Creation of a Mathematics Portal can ensure the reaching of information about the Mathematics kits to remote areas. Collaboration with institution like NCERT, having a nationwide network, can help in increasing the reach of VASCSC’s Teaching Learning Material. The Centre should put in more time, effort and resources into making fundraising a systematic and full-time activity. This should include approaching companies with education as a CSR agenda for fundraising. The funds raised consequently, would help the Centre to undertake more innovative projects.

I appreciate the VASCSC team for the efforts and hard work, which has resulted in the Centre reaching success in terms of variety and quality of programmes and financial stability. I would like to thank the board members, the management of the Centre, project partners, well-wishers, teachers and most of all the students for their participation in the Centre’s activities and their consistent support.

Sam Pitroda
Chairman, Board of Governors, VASCSC
From the Director's Desk

We are happy to present VASCSC’s Annual Report for year 2013-14. This report highlights the efforts made by the Centre’s team towards making science popular, interesting and accessible. The activities have given us opportunities to learn more, as well.

Over a period of time, the Centre has become popular as a destination for school educational visits. The Centre’s team caters to these visits with a specially designed programme. Schools and student groups from Gujarat and also other states visited the Centre and returned back with an enriching experience. The increasing demand for Summer Programme 2013 was catered to by launching new modules and batches. The popularity of the programme rose, as participants were received from various cities of India. Pre-summer batches were launched as a pilot initiative, at the onset of summer of 2014. These were well received and may now be a regular feature at the Centre. New batch of School Science Forum was launched. In addition, sustained interventions were continued in Bopal Primary School, supported by Manorama Sheth Education Fund.

VASCSC celebrated the annual event ‘Science is fun’ on a grand scale at Ankleshwar and Surat, with support from Gujarat Gas. The events aimed to create children’s interest in science by exposing them to its ‘fun’ aspects. This was accomplished by engaging them in a plethora of activities. Over 36000 students from different schools and other visitors were brought together as they participated in Science competitions, workshops, exhibition and creative activities. Events like celebration of World Environment Day, National Science Day and Holi strived to make children connect science to their everyday experiences.

The sixth phase of the Science Express as Biodiversity Special, concluded successfully and the seventh phase journey across India is scheduled to start soon. In addition to content updation, a new space ‘Kids Zone’ was created to cater to younger kids. Here, kids enjoyed learning about simple concepts of science through model making and activities. Science Express is one of the largest outreach activity of the Centre; this endeavour being enhanced by conducting activities in schools, celebration of significant days and Astronight in different areas of the country. Till date, Science Express has been experienced by over 1.09 crore visitors. It still remains the largest, longest and the most visited science exhibition. We are thankful to NCSTC, Dept. of Science & Technology (DST), Govt. of India for entrusting us with the responsibility of managing the prestigious project since 2007.

Capacity Building of various groups was a highlight of 2013-14. Over 2000 primary school teachers from Gujarat were oriented towards hands-on approaches in Science and Mathematics teaching. Informative resource material was given away for the schools, to compliment the orientation. We received support from NCSTC, DST, Govt. of India; Dept. of Education, Govt. of Gujarat and Juniper Network Foundation Fund for the teachers’ orientation. Advanced B. Sc. Programme in Physics, targeted at capacity building of college students, was a successful effort. We have been receiving requests for conducting the Mathematics workshops from outside of India, which will increase our outreach internationally. With support from SBMA/Plan, VASCSC set up 14 Science Activity Centres in schools of remote areas of Uttarakhand. This effort was enhanced by training of teachers on how to make the maximum use of this resource, as well as their exposure visit to Ahmedabad. Developing content in local language, clubbed with a medium such as radio helps in reaching out to a wider audience. This was realized by developing radio programmes on themes of grassroots innovations and great mathematicians, in collaboration with Vigyan Prasar and AIR.

I would like to thank the Chairman and all board members for their invaluable inputs for improving Centre’s existing activities, developing new ones and for their guidance and encouragement. I would also like to thank our well-wishers, project partners, teachers and students who have contributed to Centre’s efforts in popularizing science.

Dilip Surkar
Executive Director, VASCSC
Introduction

Vikram A Sarabhai Community Science Centre (VASCSC) is a pioneering Community Science Centre, which aims to nurture young minds and direct them towards scientific thinking with methods and techniques which make the process of enquiry and learning a fun-filled, enjoyable and lasting experience.

Its mandate of spreading the joy of science by reaching out to different segments of the community is best illustrated by the Centre’s logo itself. The five arrowheads in the logo represent groups comprising teachers, students, scientists, educationists and the community, while VASCSC is represented by ‘Delta’—the mathematical symbol for change. VASCSC aims to bring about change by providing a common platform for all these groups to come together and interact.

With its origin as ‘Group for Improvement of Science Education (GiSE)’ in 1963 from Physical Research Laboratory (PRL), Ahmedabad; the Community Science Centre has evolved a long way to the present times. It was founded by India’s renowned scientist, Dr. Vikram A. Sarabhai on 1 June 1966 to encourage scientific thinking and innovative science teaching. After his untimely death in 1971, the Centre was renamed as ‘Vikram A Sarabhai Community Science Centre’, to associate its name with that of its founder.

The core of the Centre’s philosophy is to take school and college students out of the rigid framework of textbooks and encourage them to think, explore and create. Over the years, the Centre has combined formal and non-formal techniques of education to formulate many innovative methods in order to give students a better understanding of Science and Mathematics. This not only makes the process of learning enjoyable but also sustainable and ever-lasting.

Core activities of the Centre

The core activities of the Centre are developed to inculcate scientific temper in the community through innovative programmes and teaching methods. These activities aim at demystifying science and exploring its intellectual and practical dimensions. The core activities comprise the following:

- School Science Programme
- Capacity Building of Science Educators
- Outreach Programme
- Special Programmes
- Science Activity Centres and Science Playgrounds
- Mobile Science Programme
- Publications and Learning Aids
- Networking

“We often hear talk of science budget ……, what is needed however is to establish the priorities for broad national goals and dependent on these, to determine what efforts in science and technology are called for to achieve these goals.”

“One way to advance our understanding of the growth of institutions is through a wider sharing of knowledge gained from meaningful experience.”

- Dr. Vikram Sarabhai
School Science Programme

The Centre’s mission is to stimulate interest, encourage and expose the principles of science and scientific method to primary and secondary school students. School Science Programme is one such programme, which targets the schools - school children and teachers. Fundamentals in Science and Mathematics are made clear to the students using activity, exploration and investigation. The burden of the present mode of teaching at the schools is made light or interesting and fun-filled through the hands-on activities and explanation to the students. Feedback received from this group is critical to gauge the impact of the Centre’s activities and also to improvise and evolve them further, conceptually and technically.

I. Open House

The Centre and its facilities are open for all. Open House programme has given an opportunity to children, teachers and even laypeople interested in science and mathematics, to explore its various facets independently or with guidance from the educators at the Centre. Visitors take maximum benefit of the Centre’s facilities through the Open House programme. The Centre’s Quadrangle space; different laboratories viz. Biology, Physics, Chemistry, Computers, Electronics, Model Rocketry, Mathematics; and the Science Playground are freely accessible to people of all age groups, especially on Sundays as a part of this programme. Students can read in the Centre’s library and use the reference books for an in-depth study or for project activities.

“It was an amazing journey of Universe. I really enjoyed this journey very much.”
- Vishwa Shah, Participant
Summer Programme-Astronomy

A collection of interactive exhibits, models, teaching aids and experiments are showcased in the Quadrangle and laboratories. Besides, children and teachers perform investigatory activities on their own in the labs. These activities include experiments from their school curriculum as well as participants’ own ideas, facilitated by the Centre’s trained educators. 17,000 students, teachers and others participated in the Open House programme of this year.

II. School Visits

This programme has been developed to cultivate scientific temper amongst the school children and is conducted during weekdays for school groups visiting the Centre. Exciting experiments, demonstrations, science shows, lab visits, movie shows and fun activities are integrated in this programme. A team of educators facilitates the school visits. The school children are introduced to the activities of the Centre and encouraged to participate in its regular programmes. Many a times, interesting takeaway material is also provided to the children or their teachers.

7500 students and 400 teachers from 150 schools and institutions visited the Centre during the year, as a part of the School Visit programme. The schools from Ahmedabad and other cities visit to know more about the Science Centre. The details of some such visits are given on the following page.
• 280 students and 10 teachers of Sigma Polytechnic, Vadodara visited the Centre. These included the visit of different students of several departments including the Electronics and Communication dept. on 5 September 2013, Information Technology dept. on 3 October 2013 and Computer dept. on 16, 17 & 29 October 2013.

• 125 meritorious students of Std. 9 and 15 teachers of different schools from Madhya Pradesh visited the Centre on 23 January 2014 under the Vignan Manthan Yatra of Madhya Pradesh Council of Science and Technology, Bhopal. They were oriented about the various activities carried out by the Centre along with demonstration of science models and activities.

• 80 B. Ed. students and 2 teachers of Smt. MNK Dalal Education College for Women, Ahmedabad visited the Centre on 29 January 2014. They were oriented about the laboratory facilities of VASCSC and how to teach students in physics, chemistry, biology and mathematics in a lab set up.

• A batch of 12 educators of Vigyan Samiti-Udaipur, Rajasthan visited the Centre on 6 March 2014. This visit was facilitated by a team of scientists of ISRO.

Several schools from Ahmedabad and nearby areas conducted educational visits for their students at the Centre; sometimes even twice or thrice in a school academic year. The visiting students belonged to different age groups. Students are quite excited to visit the Centre and always go back with scientific inputs from the Centre. It is observed that the students who visit the Centre as part of their school activities, visit once again on their own and eventually start participating in the activities and events. This draws them towards the field of science and this is how their interaction with science starts. The following mentions schools which made educational visit to the Centre:

• Anand Niketan, Shilaj, Ahmedabad
• Shanti Asiatic School, Bopal, Ahmedabad
• Jamal English Medium School, Ahmedabad
• P. V. Mody School, Jamnagar
• Anand Niketan (International Section), Satellite, Ahmedabad
• Samir K. Manekhai School, Drive-In Road, Ahmedabad
• Vidyagan Girls High School, Bapunagar, Ahmedabad
• Shiv Ashish School, Bopal, Ahmedabad
• Geeta High School, Lambha, Ahmedabad
• Karnavati School (Pre-primary), Ahmedabad
• Pune International School (Swaminarayan Gurukul), Chandkheda, Ahmedabad

• Gujarat Public School, Vadodara
• The H. B. Kapadia New High School (English and Gujarati Medium), Premnathirth, Ahmedabad
• Shiv Ashish (CBSE) School, Bopal, Ahmedabad
• St. Anne’s School (English Medium), Memnagar, Ahmedabad
• J. G. International School, Ahmedabad
• GLM Education Solution, Ahmedabad
• Nandish School, Vatva, Ahmedabad
• Sri Sri Ravishankar Vidya Mandir School, Ahmedabad
• Gangaba School, Ashram Road, Ahmedabad
• Galla Prathimik Shala, Lalpur, Jamnagar
• Khushboo High School, Nadlad
• School of Achievers, Gandhinagar
• Shri Kadvidbai Virani Kanya Vidyalaya, Rajkot
• Divyapath Campus, Memnagar, Ahmedabad
• Vandana School, Ambawadi, Ahmedabad
• J. B. Upadhyay High School, Sabarkantha
• S. S. Samiti’s Higher Secondary School, Ponda, Goa
• Nandish Madhyamik ane Ucchatar Madhyamik Shala, Vatva, Ahmedabad
• Hira Manek Pre-Primary School, Maninagar, Ahmedabad
• Aekta Vidhyalay, Sarkhej, Ahmedabad
• The H. B. Kapadia High School, Delhi Darwaja, Ahmedabad
• Delhi Public School (Euro Club members), Vijaipur, Guna, Madhya Pradesh
• Delhi Public School, Bopal, Ahmedabad
• Adarsh Prathamik Shala, Mehmadpur, Ramol, Ahmedabad
• F. D. (Rushnaiwala) High School, Dariapur, Ahmedabad
• H. & H. B. Kotak Institute of Science, Rajkot
• Shiv Ashish Mangal Vidyalay, Ahmedabad
• Vadtal Kumar Shala, Vadtal, Kheda
• Olive Green International School, Ranchodpura, Ahmedabad
• Prathamik Kanya Shala, Kheda
• Shiv Ashish Mangal Vidyalay (Science Club Students), Bopal, Ahmedabad

III. Student Visits
The Centre’s laboratories are well-equipped to conduct a number of school and college level experiments. A number of students utilize the lab facilities to perform curricular and also, extracurricular experiments. Necessary guidance is also provided to students for their school projects, science fair projects and for trying out innovative ideas. The number of students approaching the Centre for school projects and science fair projects has only increased over the years. 7500 students from different schools performed curriculum-based experiments and projects at the Centre’s laboratories.

IV. Summer Programme
Summer Programme, an extremely popular programme, is organized during the school summer vacation. The modules therein are developed to initiate the young participants into the world of science, mathematics and computers through hands-on activities. This enables the children to utilize their vacation time constructively and try their hands at activities based on astronomy, biology, chemistry, computers, electronics, mathematics, model rocketry, physics, science hobby, general science, robotics, aeronautics, photography, etc. Modules are launched for age groups starting from five years right up to those for college students. New modules are introduced every year to offer more variety to the participants. The programme schedule is compiled in a brochure and distributed to ensure wide dissemination of information and larger participation.

The Summer Programme 2013 was conducted during 16 April - 8 June 2013 which was well-received by children and parents. 172 batches of 39 different modules were launched which received 2934 participants. Most of the modules were of one to two weeks’ duration and well appreciated. The list of the modules offered under Summer Programme is given in the table on the following page.

In the recent years, the programme modules have been expanded and upgraded to cover more variety of topics. The programme is gaining more and more popularity to the extent that it is being attended by the students from Delhi, Mumbai, Ajmer, Bangalore and from across Gujarat state. These students specially travelled to Ahmedabad to participate in the Programme.

“I have enjoyed it thoroughly. I had enrolled in this institute for the third consecutive year. It has helped me a lot in my studies.”
- Saumya S. Dalwani, Participant
Summer Programme-Young Physicist
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<th>Duration</th>
<th>Batches</th>
<th>Age Group</th>
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<td></td>
<td></td>
</tr>
<tr>
<td>Do it Yourself - I</td>
<td>1 Week</td>
<td>4</td>
<td>Std. 1 - 3</td>
</tr>
<tr>
<td><strong>Maths Lab</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Budding Mathematician</td>
<td>1 Week</td>
<td>4</td>
<td>Std. 2 &amp; 3</td>
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<tr>
<td>Maths Around U</td>
<td>1 Week</td>
<td>8</td>
<td>Std. 3 &amp; 4</td>
</tr>
<tr>
<td>N Joy Maths</td>
<td>1 Week</td>
<td>8</td>
<td>Std. 5 &amp; 6</td>
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<tr>
<td>Young Mathematician</td>
<td>1 Week</td>
<td>4</td>
<td>Std. 7 &amp; 8</td>
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<td><strong>Computer Lab</strong></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Fun With Computers</td>
<td>1 Week</td>
<td>8</td>
<td>Std. 1 - 3</td>
</tr>
<tr>
<td>LOGO</td>
<td>1 Week</td>
<td>2</td>
<td>Std. 3 - 5</td>
</tr>
<tr>
<td>Picture Editing</td>
<td>1 Week</td>
<td>4</td>
<td>Std. 5 - 7</td>
</tr>
<tr>
<td>Animation for Kids</td>
<td>1 Week</td>
<td>4</td>
<td>Std. 5 - 7</td>
</tr>
<tr>
<td>Web Designing</td>
<td>2 Weeks</td>
<td>2</td>
<td>Std. 7 - 9</td>
</tr>
<tr>
<td>Internet for Women</td>
<td>2 Weeks</td>
<td>1</td>
<td>Beginners</td>
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<tr>
<td><strong>Biology Lab</strong></td>
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<td></td>
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</tr>
<tr>
<td>Little Scientist</td>
<td>1 Week</td>
<td>8</td>
<td>Std. 1 - 3</td>
</tr>
<tr>
<td>Science Exploration</td>
<td>1 Week</td>
<td>4</td>
<td>Std. 4 - 6</td>
</tr>
<tr>
<td>Microscopic Exploration</td>
<td>1 Week</td>
<td>8</td>
<td>Std. 5 - 7</td>
</tr>
<tr>
<td>Biology Investigation</td>
<td>1 Week</td>
<td>4</td>
<td>Std. 8 &amp; above</td>
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<tr>
<td><strong>Chemistry Lab</strong></td>
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<tr>
<td>Chem 4 Kids</td>
<td>1 Week</td>
<td>8</td>
<td>Std. 1 - 3</td>
</tr>
<tr>
<td>Fun With Chemistry</td>
<td>1 Week</td>
<td>8</td>
<td>Std. 4 - 6</td>
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<tr>
<td>Chemistry Hands-on</td>
<td>1 Week</td>
<td>8</td>
<td>Std. 7 - 10</td>
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<tr>
<td><strong>Physics Lab</strong></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Physics for Kids</td>
<td>1 Week</td>
<td>8</td>
<td>Std. 3 - 4</td>
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<tr>
<td><strong>Model Rocketry Lab</strong></td>
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<td></td>
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<tr>
<td>Young Rocketeers-I (Single Stage)</td>
<td>1 Week</td>
<td>6</td>
<td>Std. 4 - 6</td>
</tr>
<tr>
<td>Young Rocketeers-I (Water Booster)</td>
<td>1 Week</td>
<td>3</td>
<td>Std. 4 - 6</td>
</tr>
<tr>
<td>Young Rocketeers-II (Water Booster)</td>
<td>1 Week</td>
<td>2</td>
<td>Std. 7 - 9</td>
</tr>
<tr>
<td>Young Rocketeers-II (Double Stage)</td>
<td>2 Weeks</td>
<td>2</td>
<td>Std. 7 - 9</td>
</tr>
<tr>
<td>Young Rocketeers-III (Double Stage)</td>
<td>2 Weeks</td>
<td>1</td>
<td>Std. 10 - 12 &amp; College</td>
</tr>
<tr>
<td>Young Rocketeers-II (Cluster Engine)</td>
<td>1 Week</td>
<td>3</td>
<td>Std. 7 - 9</td>
</tr>
<tr>
<td>Young Rocketeers-III (Cluster Engine)</td>
<td>2 Weeks</td>
<td>1</td>
<td>Std. 10 - 12 &amp; College</td>
</tr>
<tr>
<td><strong>Electronics Lab</strong></td>
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</tr>
<tr>
<td>Electronics For You</td>
<td>2 Weeks</td>
<td>4</td>
<td>Std. 5 - 6</td>
</tr>
<tr>
<td>Electronics World</td>
<td>2 Weeks</td>
<td>4</td>
<td>Std. 7 &amp; above</td>
</tr>
<tr>
<td><strong>Robotics</strong></td>
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<tr>
<td>Robotic Module - I</td>
<td>1 Week</td>
<td>5</td>
<td>Std. 6 - 7</td>
</tr>
<tr>
<td>Robotic Module - II</td>
<td>1 Week</td>
<td>4</td>
<td>Std. 8 &amp; above</td>
</tr>
<tr>
<td><strong>Aeronautics</strong></td>
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<tr>
<td>Basic Aeronautics</td>
<td>1 Week</td>
<td>3</td>
<td>Std. 6 - 8</td>
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<tr>
<td><strong>General Science Programme (Special Programme)</strong></td>
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<tr>
<td>Summer School for Juniors</td>
<td>2 Weeks</td>
<td>2</td>
<td>Std. 3 - 4</td>
</tr>
<tr>
<td>Summer School for Seniors</td>
<td>2 Weeks</td>
<td>2</td>
<td>Std. 5 - 6</td>
</tr>
<tr>
<td>Fun with Science - I</td>
<td>2 Weeks</td>
<td>4</td>
<td>Std. 1 - 4</td>
</tr>
<tr>
<td>Fun with Science - II</td>
<td>2 Weeks</td>
<td>4</td>
<td>Std. 5 - 7</td>
</tr>
<tr>
<td>Learn Photography</td>
<td>1 Week</td>
<td>8</td>
<td>Std. 5 &amp; above</td>
</tr>
</tbody>
</table>
V. Annual Programme
The Annual Programme is designed for children of all age groups and comprises various interesting modules spread over an academic year. Modules in physics, chemistry, biology, electronics, model rocketry, astronomy, computers, photography are conducted. These modules span over a longer period of time and hence unfold into better understanding of the concepts.

Students found the programmes to be interesting and encouraging. 18 different modules were launched, the details of which are given as follows:

<table>
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<tr>
<th>Module</th>
<th>Age Group</th>
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<tr>
<td>Annual Biology Practicals</td>
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<td>(CBSE/ICSE/GSEB)</td>
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</tr>
<tr>
<td>Biology Investigatory Projects</td>
<td>Std. 11 - 12</td>
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<tr>
<td>Annual Chemistry Practicals</td>
<td>Std. 11 - 12</td>
</tr>
<tr>
<td>Chemistry Projects</td>
<td>Std. 11 - 12</td>
</tr>
<tr>
<td>Physics Practicals</td>
<td>Std. 11 - 12</td>
</tr>
<tr>
<td>(CBSE/ICSE/GSEB)</td>
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</tr>
<tr>
<td>Physics Projects</td>
<td>Std. 10 - 12</td>
</tr>
<tr>
<td>Single Stage Model Rocketry</td>
<td>Std. 5 - 7</td>
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<tr>
<td>Water Booster Rocketry</td>
<td>Std. 7 - 9</td>
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<tr>
<td>Electronics Projects</td>
<td>Std. 10 - 12</td>
</tr>
<tr>
<td>Astronomy - A Journey through Universe</td>
<td>Std. 7 - 9</td>
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<tr>
<td>Computer Basics</td>
<td>Housewives, Sr. citizens, Professionals</td>
</tr>
<tr>
<td>Internet for Beginners</td>
<td></td>
</tr>
<tr>
<td>Me and My Computer-Junior</td>
<td>Std. 3 - 5</td>
</tr>
<tr>
<td>Std. X GSEB- Computer</td>
<td>Std. 10</td>
</tr>
<tr>
<td>Std. XI GSEB- Computer</td>
<td>Std. 10</td>
</tr>
<tr>
<td>Std. XI GSEB- Computer</td>
<td>Std. 11 Teachers</td>
</tr>
<tr>
<td>Std. XII GSEB- Computer</td>
<td>Std. 12</td>
</tr>
<tr>
<td>Learn Photography</td>
<td>Open for all</td>
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</tbody>
</table>

School Science Forum
The School Science Forum (SSF) programme successfully entered into its third year. This syllabus oriented, year-long programme offered for students of Std. 5 to 9, has received overwhelming response from the students as well as parents. It has become one of the most sought after programmes of VASCSC. The objective of this programme is to facilitate practical learning of science and mathematics by providing students with an opportunity to strengthen the basic concepts of these subjects through experiments and activities, conducted in the Centre’s well-equipped labs. The programme started on 9 July 2013. 30 sessions were conducted for each standard, covering topics that required practical input as well as educational visits. An additional batch was introduced for Std. 5 to 8 this year, on every Sunday.

SSF received an overwhelming response with 628 participants - a 44.36% rise as compared to the previous year. Parents & school teachers encourage students to participate in this programme. Participants were awarded certificates in a valedictory session held in February 2014.

VIBGYOR-Science of colours
The Centre conducted the programme ‘VIBGYOR-Science of Colours’ in a unique way to celebrate the festival of colours, Holi on 16 March 2014. Students of Std. 3 to 6 participated in the programme. Students discovered the science of colours by involving in fun-filled, science-based activities like making of natural colours from flower petals, exploding of milk with colours, magical ink, making of water squirts, etc. Participants of the programme enjoyed making natural colours on their own and played with water squirts.

Pre-summer vacation batches
VASCSC launched the Pre-summer programme batches for the first time, during 18 - 29 March 2014. This was organized for students who have school vacation after their final results and prior to their promotion to the next class. It was a great success amongst the students. 20 batches of various modules in chemistry, biology, science hobby workshop, astronomy, aeronautics, electronics, maths and computers were offered. 319 students participated enthusiastically.

"The activities were good and informative. It became easy to understand in schools.”
- Khushi H. Patel
Participant, SSF

"Students can understand each and every topic easily through practical knowledge.”
- Prasham A. Shah
Participant, SSF
VI. Annual Events

‘Science is fun’ event
Science and mathematics are complementary to each other. They seem to be tough, but become easy with right approach and logical thinking. Learning in Science and Maths can be a lot of fun and also linked to art, literature and history to name a few, besides equations and theories. Creating science awareness and relating science with everyday activities and phenomena, through fun can be a unique vehicle for science popularization amongst the children and community. To fulfill this objective, VASCSC celebrates an annual event ‘Science is Fun’ (SIF). The event is celebrated over a period of 4-5 days, during which several educational and awareness activities, competitions and fairs are organized for various age groups. The children participate in this event with great enthusiasm. The event consists of competitions, activity corners and exhibitions to stimulate interest, encourage and expose the masses to the principles of science and mathematics.

The SIF event was celebrated in two cities; viz Ankleshwar during 4 - 7 December 2013 and Surat during 17 - 20 December 2013. Gujarat Gas supported the celebration of Science is Fun - 2013.

Science is fun at Ankleshwar
The ‘Science is Fun’ event was inaugurated on 4 December 2013 at Shree Gattu Vidyalaya, Ankleshwar. The function was graced by several renowned persons from the field of science education, communication and industry.
4500 students from 46 schools of Bharuch and Ankleshwar participated in the four day event. 95 schools visited the event, with 10,000 visitors during the event.

The event was marked with competitions for students of Std. 7-12 like Science Fair, Science Poster Presentation, Science Painting, Science Skit, Science Photography, Science Fiction Writing, Science Elocution, Science Quiz and Science Talks. Few competitions such as Question of the Hour and Slogan Writing were open for all students. Teachers participated in the competition - Innovative Ideas in Teaching Science. Students also participated in exciting activities like Model Rocketry, Aeronautics, Science Shows, Snake Show, Kids Zone and Green Games. Astronight was popular among students as they were curious to know about astronomical phenomena.

The students enjoyed and learnt from the various exhibition corners put up during the event: Solar Eclipse, Mars - A Journey to Red Planet, Science Corner, Dr. Vikram Sarabhai, Astronomy, Comet ISON and Great Mathematicians. Various stalls displaying information on solar gadgets, energy conservation, community science centers, etc. were put up. The four day event received extensive media coverage.

**Science is fun at Surat**

The SIF-2013 event was inaugurated on 17 December 2013 at Vanita Vishram School, Surat. Shri Dinesh Patel, District Education Officer, Surat was the Chief Guest at the event. Shri Himanshu Upadhyay, Director, Policy & Corporate Affairs, Gujarat Gas and Shri Nitin Patil, Director, Head, Safety, Security and Environment, Gujarat Gas were the Guests of Honour. Shri Harish Mehta, Honorary Secretary, Vanita Vishram, Surat and Shri Dilip Surkar, Executive Director, VASCSC also graced the occasion. Ms. Rita Bidwai, Manager and Shri Maulik Farmar, Sr. Executive from GGCL were also present during the inauguration. 7,000 students from 140 schools of Surat participated in the event. 226 schools visited the event and a huge turnout with 15,000 visitors was received.

Competitions such as Science Fair, Science Poster Presentation, Science Painting, Science Skit, Science Photography, Science Fiction Writing, Science Elocution, Science Quiz, Science Talks, Question of the Hour, Slogan Writing and Innovative Ideas in Teaching Science promoted a learning environment for the students. Model Rocketry, Aeronautics, Science Shows, Snake Show, Kids Zone, Green Games and Astronight were significant in the success of the event.

Some of the science talks and exhibitions were designed for the lay public, such that they could visit the events as per their convenience without any prior registration. The students had a learning experience through the exhibitions corners. The four day event received extensive media coverage.

Both the events at Surat and Ankleshwar were successful and enjoyed large participation and an overwhelming response from the students and support of the schools and teachers.

“Science is fun provided a bouquet of interesting science based activities for the students to develop their skills.”

- Rohan U. Khalasi, Participant
  Shree Saraswati Vidyalaya, SIF, Surat
World Environment Day
The World Environment Day was celebrated on 5 June 2013 at VASCSC to create awareness on environment. The celebrations included fun-filled activities and aimed to create awareness on environment conservation. The day began with the planting of saplings by budding student environmentalists. Students participated in activities like Green Games, Treasure Hunt, Extempore Speech Competition, Green Science Bingo, Question of the hour and Slogan Writing Competition. They enjoyed the fun-filled, on-the-spot game of Treasure Hunt in which they hunted for environment related clues—including various biodiversity features present in and around the Centre. Treasure Hunt and Green Science Bingo broadened their knowledge on environment. Children put up pledges to save the environment on the ‘Pledge Tree’. Other activities like ‘Save the environment’ painting competition, tattoo making as well as movie, motivated the children to come closer to environment and preserve it.

National Science Day
VASCSC celebrated National Science Day on 28 February 2014 to foster scientific temper among students. The National Science Day is celebrated in India on February 28 each year to mark the discovery of the Raman Effect by Indian Physicist, Sir C. V. Raman.

Science Quiz Competition was organized on this day for the students of Std. 6-8. The preliminary round conducted on 16 February 2014 registered 78 students. 8 teams comprising 2 members each reached the Semi Final. 4 teams contested in the Final round on 28 February 2014. Certificates and gifts were awarded to the winning teams.

National Olympiad Test
VASCSC coordinated the National Standard Examinations in Physics, Chemistry, Biology, Astronomy and Junior Science, conducted by Indian Association of Physics Teachers (IAPT) on 24 November 2013. 135 students appeared for the tests in the various subjects offered.
Capacity Building

Capacity building initiatives are undertaken by the Centre to motivate and empower individuals working in the field of science education. The Centre organizes capacity building workshops and interactive sessions for school science teachers and educators. The workshops promote hands-on approaches and innovative methods in science teaching. Efforts are made to identify difficulties faced by the educators and to develop anticiodotes. The material developed consequently, can be then used as a part of the classroom teaching. This initiative result in dissemination of information, creating interest in science.

Joy of Science
The Centre received support from the Dept. of Education, Govt. of Gujarat for the project titled ‘Joy of Science’. This helped the Centre in continuing its core programmes and also leveraging support from other sources. The project activities comprised development of resource material for schools, outreach activities, school programme and upgradation of VASCSC’s laboratories and library.

Interesting teaching learning material in science and mathematics was developed for schools. This material was primarily developed in Gujarati to cater to Gujarati medium students. Science and mathematics teachers’ orientation workshops were conducted across Gujarat. The Centre provided a platform for children and teachers to explore science under the school programme. A structured programme is regularly conducted to make the school visits to the Centre, an enriching learning experience for the students. The Centre’s laboratories and library were upgraded with new equipments and apparatus, so that it could be used to provide quality science education. A set of resource material consisting of VASCSC publications and kits was given to each school participating in the teachers’ orientation workshops, conducted across Gujarat.

Partner agencies which included district level community science centres and prominent schools were identified in each district, for administrative support to the workshops. Local dailies were approached for extending publicity. The workshops included orientation of school teachers and dissemination of Science and Maths based resource material to 1000 schools across Gujarat. The material included a set of carefully selected 14 publications and TLM, which would enrich the school libraries and science clubs.

The workshops were designed keeping in mind the needs of the participants and the methodology involved demonstrations and hands-on activities. The sessions emphasized upon Science and Maths

“Easy way of verifying theorems, algebraic models and solids.”
- Arvinda K., Participant, Mathematics Workshop Govt. High School, Chikmagalur
in our day to day life, formal and non-formal techniques of learning, examples and advantages of using hands-on approaches in teaching of Science & Mathematics and essence of active learning. It also included demonstration of such activities, which the teachers could use in their classroom teaching. Teachers were provided with material and guidance regarding preparing hands-on activities and models in the afternoon session. The feedback of the teachers helped to further improvise the sessions. The workshops received extensive media coverage. Workshop details are as follows:

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>District</th>
<th>Date of Workshop</th>
<th>No. of Teachers</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>Ahmedabad</td>
<td>12 July 2013</td>
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<tr>
<td>2</td>
<td>Sabarkantha</td>
<td>19 July 2013</td>
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<td>Banaskantha</td>
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<td>Kutchh</td>
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<td>6</td>
<td>Bhavnagar</td>
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<tr>
<td>7</td>
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<td>07 Aug 2013</td>
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<td>Junagadh</td>
<td>08 Aug 2013</td>
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<td>9</td>
<td>Panchmahal</td>
<td>12 Aug 2013</td>
<td>72</td>
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<td>10</td>
<td>Dahod</td>
<td>13 Aug 2013</td>
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</tr>
<tr>
<td>11</td>
<td>Surendranagar</td>
<td>16 Aug 2013</td>
<td>54</td>
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<tr>
<td>12</td>
<td>Bharuch</td>
<td>22 Aug 2013</td>
<td>31</td>
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<td>13</td>
<td>Surat</td>
<td>23 Aug 2013</td>
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<td>14</td>
<td>Anand</td>
<td>30 Aug 2013</td>
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<td>15</td>
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<td>02 Sep 2013</td>
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<td>16</td>
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<td>03 Sep 2013</td>
<td>73</td>
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<td>04 Sep 2013</td>
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<td>18</td>
<td>Dang</td>
<td>10 Sep 2013</td>
<td>34</td>
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<td>19</td>
<td>Valsad</td>
<td>11 Sep 2013</td>
<td>52</td>
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<tr>
<td>20</td>
<td>Navsari</td>
<td>12 Sep 2013</td>
<td>54</td>
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Celebrating MPE 2013 & NYM 2012

VASCSC initiated programmes to celebrate the ‘International Year of Mathematics of Planet Earth (MPE 2013)’ and continued with the previous year’s theme, ‘National Year of Mathematics (NYM)- 2012’. These programmes were catalyzed and supported by The National Council for Science and Technology Communication (NCSTC), Dept. of Science & Technology (DST), Govt. of India.

Several thematic programmes and workshops were conducted round the year including ‘Mathemagic’ event celebrated in early 2013. Two national level training workshops for Mathematics teachers and educators were organized at VASCSC, Ahmedabad, viz. Primary Teachers’ Training Workshop during 18-20 July 2013 and Secondary Teachers’ Training Workshop during 1-3 August 2013. The workshops included practical learning approaches & experiments in Mathematics, TLM demonstration, model-making, panel discussion and interactive sessions. Several eminent academicians & professors participated in the panel discussions and interactive sessions.

The primary teachers’ workshop was inaugurated by Shri Kartikeya Sarabhai, who emphasized upon the importance of diagnostic approaches in mathematics. Shri Dilip Surkar, Executive Director, VASCSC briefed about the history of the Centre and hands-on approaches. The workshop comprised talk on ‘Non-formal Mathematics and Hands-on Approaches’, discussions, anecdotes related to mathematicians and interesting historical connections, factors, multiples, rules of divisibility, angles, triangles and quadrilaterals as well as model-making. 35 primary teachers from across the country participated in the workshop.

The Secondary Teachers’ Training Workshop was inaugurated by Ms. Indu Puri, Scientist D, DST, Govt. of India; Dr. M. H. Vasavada, Retd. Dean, S. P. University, Anand; Dr. Minal Sen, Member, Project Advisory Committee and Shri Dilip Surkar, Executive Director, VASCSC. Ms. Indu Puri gave a talk ‘Identification of Problem Areas in Mathematics’. The keynote address was on the theme ‘Opportunities and Challenges in Teaching Mathematics’. Models on algebraic identities,
different number systems, learning aids pertaining to plane geometry, solid shapes of prisms and pyramids, dodecagon & square were discussed. 37 teachers participated in the workshop.

The Centre organized 21 district level Mathematics Orientation Workshops 'Joy of Mathematics' for teachers of std. 6-8 in different parts of Gujarat. A total of 926 teachers were trained in these workshops and awarded certificates.

The objective of the workshops was to orient the teachers in adopting non-formal activity oriented methods in the classroom teaching along with the formal methods, to make mathematics as a subject, interesting and easy to understand. The details of the workshops are as follows:

Models, Model-making, scope to digress from known stuff to make models that appeal, are new. The models have helped me rethink proofs in geometry...”
- Swati Sircar, Participant, Mathematics Workshop Shikshamitra, Kolkata

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>District</th>
<th>Date of Workshop</th>
<th>No. of Teachers</th>
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<td>Mehsana</td>
<td>19 Sep 2013</td>
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<tr>
<td>21</td>
<td>Baroda</td>
<td>12 Dec 2013</td>
<td>46</td>
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School Science Activity Centres

Science Activity Centres were set up by VASCSC in 14 government schools of Chamoli and Uttarkashi districts of Uttarakhand. This intervention was supported by SBMA/Plan. Each Activity Centre is provided with science and mathematics exhibits, models, teaching aids, publications and other resource material along with detailed instructions on how to use it. For better understanding, these were primarily made available in Hindi. These centres in remote areas promote scientific temper among the students there and provide them with an opportunity to know and explore science by themselves.

School Science Activity Centres were set up in 10 govt. schools of Gadh Barsali, Mustiksdh, Sodha, Pujargaon, Uttarkashi, Ida, Bhalsi, Bhatwadi Dharani, Malla and Boga in Uttarkashi district, while 4 Science Activity Centres were set up in govt. schools of Maroda, Mahalchori and Gairsain in Chamoli district. This was enriched by imparting training for teachers and selected students of these schools on how to effectively use the Science Activity Centre. Guidance was provided on how to use the Science Activity Centre as a resource for teaching students concepts of Maths lab, TLM, games and puzzles as well as Physics, Biology, Chemistry and Hands-on Activities. The VASCSC team trained a group of 22 teachers along with 49 students during 12-14 September 2013 at Gairsain. Another group of 21 teachers and 31 students were trained by the Centre’s team during 16-18 September 2013 at Uttarkashi.
A team of govt. school teachers from Uttarkashi and Chamoli districts visited VASCSC to participate in a training programme conducted during 25 - 27 October 2013. They were exposed to the Centre’s lab facilities and hands-on activities. The idea was to make them reflect upon that several maneuvers could be implied to teach the students apart from the regular text books. They participated in model rocketry workshop, where they fabricated their own rockets and launched them. A demonstration of telescope and night sky viewing was also conducted. The team visited CEE and other institutes. The participants shared that it was the first time when they enjoyed the training programme and learnt so much.

VASCSC Library
The Centre’s library houses a collection of science and mathematics reference books. These books include books for children as well as advanced reference material for high school and college students, who have been using this facility regularly. The library is continuously upgraded with new publications and reference material for its young members and science amateurs.
Developing educational material, exhibits and teaching aids in science and mathematics has been one of the key areas in which the Centre has been constantly making efforts. The outreach programmes have been developed to mainstream this material. Workshops and exhibitions are conducted at different places by the Centre including rural areas; which benefit teachers, students and the community. These activities are mentioned as follows:

**Education Programme in School**

High school dropout rate, declining learning outcome, less attendance and attention remain the areas of concern for primary education. The situation tends to be more worrisome in rural schools. Children in rural areas continue to be deprived of quality education due to factors like absence of proper textbooks, teaching-learning material, etc. Such children are often the first generation learners and lack any encouragement from their family to sustain them in the present school system. The school’s curriculum is excellent at information, but the fundamental concepts of science and mathematics are not properly understood by the students.

To address the above issues, the Centre continued its interventions at Bopal Primary School and made attempts to enhance the quality of science and mathematics education through hands-on methods and increase students’ interest in science. VASCSC’s resource persons visited the school regularly and conducted activity-based sessions in physics, chemistry, biology, maths and model rocketry for students of Std. 6 - 8. These sessions supplemented what students had already learnt at their school and reinforced their learning. Sessions were conducted once a week during the school academic year. It provided the students a platform to explore the subjects through interactive exhibits, hands-on investigations and experiments.

This programme was supported by Manorama Sheth Education Fund. 75 students and 4 teachers benefited from this programme. 13 sessions were conducted for each of the classes. The sessions for Std. 6 were conducted from July to October and those for Std. 7 during the months of November to February. The sessions focused on topics like the human body, lever, separation of substances, equations, electricity, ecosystem, reflection-refraction, volume, model rocketry, element, compound and mixture, triangle and its properties, perimeter and area, etc.

**Science Shop**

The Centre works extensively on developing innovative Teaching Learning Material and taking it to the masses. This material includes publications, kits and models. The Science Shop is a facility which makes this material easily accessible to all. The Science Shop set up stalls at different locations for wider reach. A new pricelist-cum-brochure was brought out. Publications such as Science Wall Planner, Science Wall Magazine-Vigyan Drishti, Science Express take away material, Summer Programme brochure were added to the existing ones.

It was good. Students get more knowledge of science than from their classroom teaching.”

- Viswajith Kumar Poddar, Visitor, SEBS
  St. Francis Desales School, Sini
The Science Express is an innovative mobile exhibition on a specially designed 16 coach AC train, traveling across India since October 2007. The Phase VI of this iconic train running as 'Science Express - Biodiversity Special (SEBS)', is a unique collaborative initiative of Dept. of Science & Technology and Ministry of Environment & Forests; Govt. of India. SEBS was scheduled to exhibit across India from 9 April to 28 October 2013.

SEBS was flagged off on 9 April 2013 from Delhi Safdarjung by the then Hon'ble Chief Minister of Delhi, Smt. Sheila Dixit; Hon'ble Minister of Environment & Forests (I/C), Gol, Smt. Jayanthi Natarajan and Hon’ble Minister of Railways, Gol, Shri Pawan Kumar Bansal.

Dr. T. Ramasami, Secretary, Dept. of Science & Technology; Shri Vinay Mittal, Chairman, Railway Board; Shri K. Judesan, DG, Forest and other senior officials from the participating ministries were also present on the momentous occasion.

In this phase, the exhibition coaches on the biodiversity theme were retained, with updation of latest information and addition of new models, exhibits, panels and documentaries. Out of the 16 coaches of SEBS, eight are dedicated to showcasing the myriad biodiversity spread across the bio-geographical zones of India. These include Trans-Himalaya & the Himalayas, the Gangetic Plain, North East India, the Desert & Semi-Arid Zone, the Western Ghats, the Deccan Peninsula, and the Coasts & the Islands. These coaches focus on the range of biological diversity, critically endangered species, biodiversity hotspots; domesticated biodiversity; biodiversity and livelihoods; bioculture; threats/challenges; conservation measures; success stories/experiences. The exhibition also covers various facets like marine, coastal, forest, microbial, agrobiodiversity and their linkage with livelihoods besides challenges of conservation.

In rest of the rake, one coach has an exhibition on Climate Change, Biodiversity & Water, supported by HSBC. In another coach, supported by UL India Ltd., more exhibits on Climate Change: Safe, secure and sustainable environment including renewable energy and its advantages, eco friendly home, waste management and safety at home, have been put up. Yet another coach presents an exhibition on Energy Conservation supported by PCRA. It includes information on depletion of petroleum, fossil fuel, and possible means to reduce our dependence on the same. The legacy of Science Express, showcasing some of the popular exhibits from the previous phases is displayed in the same coach.

The popular VASCSC Joy of Science (JOS) lab, supported by Indus Towers, is put up in a dedicated coach. In this hands-on lab, students perform experiments and activities to understand concepts of environment, science and mathematics in an interesting manner. A discussion centre-cum-training facility is also provided for orientation of teachers.

"Science Express is the statement to the people of India and promotes the thought that science is a way of life. Cuddalore, with the history of Science Express has attained a milestone of more than one crore visitors. Science communicators traveling with the train have done a wonderful job... What an Experience! Congratulations."

- Dr. T. Ramasami, Secretary, DST, Gol
To cater to younger kids (below std. 5), a new section named as 'Kids Zone' was introduced in this phase. In this section, kids engaged in fun-filled hands-on activities, prepared models in science, mathematics & environment from simple material and played mentally stimulating games and solved puzzles.

In addition to the exhibition, JOS lab and Kids Zone on-board, several other activities were conducted by SEBS team to widen its reach. The SEBS Platform activities are conducted for the students waiting on the platform to visit the SEBS exhibition. The activities stressed upon Climate Change and Biodiversity theme. The activities were chosen such that they captured the interest of the masses and generated awareness on biodiversity. Takeaway material was developed and distributed among students. A special feature of the SEBS train was the Outreach activity, meant for those students who could not easily visit the SEBS exhibition due to various reasons. Colleges, training institutes, other educational institutions also came under the purview of the outreach activities, besides schools. In addition to the above mentioned, activities and trainings on mathematics and biodiversity were also conducted to celebrate the year MPE 2013 and Decade on Biodiversity. The SEBS along with the local schools celebrated the International Biodiversity Day, World Environment Day, World Nature Conservation Day and One Crore Visitors to Science Express.

The SEBS was visited by over 22 lakh visitors, including 498,348 students and 28,849 teachers from 6005 schools; 1,398,368 general public; 92,056 participants in JOS Lab; 130,908 in platform activity; 22,164 in outreach activity; 1,777 teachers undergoing training and 53,533 in Kids Zone.

This phase concluded on 28 October 2013 and a valediction function was organized to celebrate its successful journey. Smt. Shashi Ahuja, Advisor/Scientist-G, DST, GoI; Shri P. J. Michael, Dy. Secretary, MoEF, GoI; Shri Kartikeya Sarabhai, Chairman, Standing Committee, VASCSC; Shri Kiran Desai, CEE and Shri Dilip Surkar, Executive Director, VASCSC grace the occasion. The dignitaries congratulated the SEBS team on successful completion of the phase and their hard work, dedication and spirit. The team members were felicitated by the dignitaries and the function concluded with the screening of a specially prepared film and presentation on Science Express - Biodiversity Special.

Since its launch in October 2007, the Science Express exhibition train has traveled over 1,00,000 km across India. At the end of six phases, with over 109 lakh visitors at its 335 halts, Science Express remains the largest, longest and most visited mobile science exhibition in India and has created several records. More details on www.scienceexpress.in
Biodiversity Orientation Programmes
An integral aspect of the Science Express - Biodiversity Special, SEBS (Phase VI) journey has been the biodiversity orientation programmes, conducted across India for students and teachers. In addition, these programmes include elements of science, mathematics and environment. The SEBS team visited several schools and institutions and conducted the programme, details of which are as follows:

- Biodiversity orientation was conducted for 101 students at Verka, Punjab on 23 April 2013.

- The SEBS team celebrated World Environment Day on 5 June 2013 with a group of 197 students at New Tinsukia, Assam. The day was marked with several environment based activities; a skit ‘Our Trees Our Friends’, quiz competition on the theme ‘Think, Eat and Save’, story writing completion ‘A talk between insect and Pitcher plant’, ‘Nature on stage’, ‘Make a prom’, thought provoking ‘One minute of my life’ and ‘What can we do’. The young participants imbibed the environment messages and were enthralled by the activities.

- Orientation on Biodiversity of India’s North-east Region was conducted for 160 students of Little Flower School, Alipurduar, West Bengal on 30 May 2013 and 150 students of Netaji Centenary School, Cooch Behar, West Bengal on 15 June 2013. Orientation regarding science & maths TLM and biodiversity was conducted for 113 students of New Farakka High School, West Bengal on 18 June 2013.


- World Nature Conservation Day was celebrated at Chennai Central Railway Station on 28 July 2013 by organizing different activities like logo making, essay, debate, quiz, Identify your biogeography zone and Five habits to change nature. 380 students participated in the activities. The celebrations continued the next day with the team conducting similar activities at PVM School, Chennai. 83 students participated in the activities on 29 July 2013.

- Orientation programme on Biodiversity was conducted for students of ARLM Matriculation Hr. Sec. School, Cuddalore in which 290 students participated on 1 August 2013 and 525 students participated on 3 August 2013. Similar programme was conducted for 1777 students of Vincent Matriculation School, Equitas Gurukul Matriculation School and St. James Matriculation Higher Secondary School, Tiruchirapalli, Tamil Nadu during 5 - 7 August 2013.

- Orientation on Biodiversity was conducted for 734 students of GTR Primary School, Anaikatti; TPUP School, Pooluvapatty & Navbharat National School, Coimbatore as well as 631 students of Global Pathways School, Chettipalayam and Govt. Girls Hr. Sec. School on 22 August 2013 and 196 students of BVM Global School, Coimbatore, Tamil Nadu on 23 August 2013.

- Biodiversity Orientation was conducted for students of St. Antony’s Girls High School, Alappuzha, Kerala in which 924 students
participated on 17 August 2013 whereas 780 students participated on 19 August 2013. Orientation on Biodiversity conservation & Climate Change was conducted for 324 students of RK Mission HR. Sec. School at Kozhikode, Kerala and 130 students at Kannur, Kerala on 31 August 2013. Biodiversity Awareness Activity was conducted for 127 students of Don Bosco International School, Baroda on 27 September and 240 students of New Era Senior Secondary School, Vadodara on 28 September 2013. 1969 students of Eklavya Public School, Junagadh and Sri Madhav Shaiikshanik Sankul School, Junagadh participated in this activity during 21-22 October 2013 and 1015 students participated at Bhavnagar on 25 October 2013.

- Biodiversity awareness activity was conducted with 240 students of Rosary College of Commerce and Arts at Madgaon, Goa on 3 September 2013.

- Activities on science and biodiversity were conducted for 110 students of Navchaitanya Anathaalay, Ichalkaranji, Maharashtra on 9 September 2013 as well as for 615 students on 13 September 2013 and 368 students from Zilla Parishad Prathamik & Madhyamik Shala, Vasmat, Maltekdi, Maharashtra on 14 September 2013.

- In Gujarat, the biodiversity awareness programme was conducted for 151 students in Valsad and for 95 students of Vidya Bharati School, Navsari on 23 September 2013. The activity was also conducted for 127 students of Don Bosco International School, Baroda on 27 September and 240 students of New Era Senior Secondary School, Vadodara on 28 September 2013. 1969 students of Eklavya Public School, Junagadh and Sri Madhav Shaiikshanik Sankul School, Junagadh participated in this activity during 21-22 October 2013 and 1015 students participated at Bhavnagar on 25 October 2013.

- Biodiversity Awareness Activity was conducted for 600 students from Modi Public School, Aklang Sr. Sec. School and Kendriya Vidyalaya No. 2 at Kota, Rajasthan on 4 October 2013. Similar activity was conducted at ND Saint Convent School, Marwar, Rajasthan on 11 October 2013, in which 298 students participated.

Astronight Programmes
A series of Astronight programmes were organized by the SEBS team to satisfy the curiosity of young students about astronomical events. Some of them are mentioned below:

- Astronight was organized for 200 students of Govt. Senior Secondary School, Patara, Jalandhar City, Punjab on 18 April 2013. The students observed the sky through telescope and were enthralled by the experience.

- Astronight was very well received in Bhagalpur Bihar, hence it was organized for three consecutive days. This included programme for 110 students on 21 May 2013, 210 students of Kasturba Gandhi Vidyalaya at Ganguly Park, Katwa on 22 May 2013 and for 50 students of various schools at Children's Park, Bhagaipur on 23 May 2013. The last session was also attended by the Hon'ble Minister of Health, Govt. of Bihar.

- 2281 students of different schools of Kakinada, Andhra Pradesh including Municipal Corporation Boys High School and Saranya Concept School, Kakinada participated in star gazing activity through telescope on 20 July 2013.

- Sky Watch Programme was organized for 504 students of Tsunami Orphanage School at Cuddalore Port, Tamil Nadu on 31 July 2013.

- Star gazing activity was conducted for 90 students of Govt. School of Excellence at Ujjain, Madhya Pradesh on 30 September 2013.

“The Teacher’s Orientation workshop was a very good informative programme... I will use these strategies to create a Wow! Factor in children.”
- P. B. Kirthika Devi, Workshop Participant, SEBS JVSMSHS School, Kadalnagar
Several projects and programmes were conducted by the Centre, in addition to the Core Programmes, the details of which are as follows:

**Eyes on ISON Workshop**
Comet ISON was coming closest to the Sun on 28 November 2013. This historic event was celebrated by conducting a state level astronomy workshop ‘Eyes on ISON’ by VASCSC team during 19 - 20 October 2013. This interesting workshop provided information about the Comet ISON through presentations, day time astronomy activity and night sky observation.

**Great Mathematicians - Radio Programme**
A 26-episode radio series in Gujarati titled Ganit nu Gaurav based on mathematics was developed with the support of NCSTC, DST, Govt. of India; AIR and Vigyan Prasar. This programme was developed as a part of the MPE 2013 celebrations. The content was trans-adapted in Gujarati by the Centre’s team.

The series was aimed at generating interest in mathematics amongst people of all age groups, especially students. In this series, life sketch and contribution of 25 great mathematicians was presented. In the current year, 15 episodes were broadcast from Akashvarni’s Ahmedabad, Vadodara, Rajkot and Bhuj stations every Monday during 9:30 - 10:00 pm and from Godhra station on every Wednesday during 6:30 - 7:00 pm.

**Grassroot Innovations - Radio Programme**
A 13-episode radio series in Gujarati titled Chatur Karo Vichari!, based on grassroot innovations was developed with the support of All India Radio (AIR); Vigyan Prasar, New Delhi and National Innovation Foundation (NIF), Ahmedabad. Each episode was woven around two innovations and the story behind them. Seven episodes were broadcast this year. Question, answer, feedback formed an intricate part of the episode. At the end of each episode, a question was posed to the listeners. The five best answers received were awarded free subscription of ‘Vigyan Drishti’.

**Advanced B.Sc. (Physics) Programme**
This is an enhanced Physics programme jointly conducted by VASCSC, Gujarat Science Academy and Gujarat Science City to motivate B.Sc. Physics students to pursue careers in research. This residential programme aims to provide a firm background in Physics. The methodology involved assignments and problem solving, presentations, tests, career guidance in Physics, visit to research institutes and talks by eminent scientists. The participants were selected from science colleges all over Gujarat. The programme was conducted from 18 May to 7 June 2013 at St. Xavier’s College, Ahmedabad. 30 students participated in the programme. This programme has been beneficial in shaping the future of the students. The ex-participants of this programme are pursuing higher studies in some of the best science and technology institutes of India, while a few are working as scientists in research institutes.

**Remembering Dr. Vikram Sarabhai**
VASCSC team paid homage to the institute’s founder and noted space scientist, Dr. Vikram Sarabhai on the occasion of his birth anniversary-12 August 2013. The team aboard the Science Express-Biodiversity Special train also gathered on the occasion and remembered the great scientist.

**Remembering Prof. A. R. Rao**
VASCSC team, family, friends, students and Prof. A. R. Rao Foundation team gathered at VASCSC to remember him, on his birth anniversary on 23 September 2013. All those present, remembered the mathematical wizard and shared their experiences with him, as a tribute.

“information and way of presentation were excellent. It was different from the conventional methods of workshop. Great.”
- Seema Nair, Participant, Mathematics Workshop
Zydus School for Excellence, Ahmedabad
Publications and Learning Aids

The Centre believes in educating the masses on science; what the Centre believes in, it preaches the same. With this vision, VASCSC has brought out its own collection of publications and learning aids, that makes science and maths learning an interesting expedition. This material is student friendly and popular among students and teachers alike. Teachers have been using this material in schools as reference material and as resource while setting up Science Activity Centres.

The work on development of new publications/learning aids including Mathematical Models and Teaching Aids (Gujarati version), Maths lab packages (Hindi version), Joy of Science Notebook, etc. were taken up during the year. The following publications and learning aids were brought out during 2013-14:

**Vigyan Drishti**

Vigyan Drishti is a bimonthly science wall magazine brought out in Gujarati, targeted at students of Std. 5 and above. The year 2013 being declared as MPE 2013, information related to mathematics was included. Several informative & interesting articles and a puzzle corner enriched the six issues published during the year. The Vigyan Drishti was prepared in an attractive and child-friendly format and printed in four colour scheme. An additional poster printed on the reverse side of each issue was appreciated by its readers. The best response to the puzzle corner section was sent prizes by the Centre.

**ISON Posters**

A set of nineteen posters on comet ISON was brought out in Gujarati. The posters carried detailed description of the Comet with illustrative photographs and diagrams for better understanding of the theme.

**Science Wall Planner**

A Science Wall Planner based on the UN’s theme ‘International Year of Crystallography’ was developed by the Centre. It carried interesting features along with photographs on crystallography, scientists associated with crystallography, besides information about the international days of scientific relevance, astronomical events, birth anniversary of scientists. An English publication brought out in four colour, it was appreciated by scientists, researchers, teachers, students, etc. who have been using it regularly.

**Joy of Science Notebook**

This notebook was developed for use by students and teachers participating in the Centre’s programmes. Its utility was enhanced by incorporation of mathematical puzzle and other interesting information.
Networking and Partnerships

We are thankful to the following agencies who have been our major collaboration and project partners for the year 2013-14:

- Department of Science & Technology (DST), National Council on Science & Technology Communication (NCSTC), New Delhi
- Ministry of Environment and Forests, New Delhi
- Department of Education, Government of Gujarat
- Vigyan Prasar, New Delhi
- HSBC, Mumbai
- Juniper Networks Foundation Fund, Silicon Valley Community Foundation, USA
- Shri Bhuvaneshvari Mahila Ashram SBMA/Plan, Uttarakhund
- Indus Towers, Gurgaon
- Cairn India, Gurgaon
- U L India Ltd., Bengaluru
- Gujarat Gas, Ahmedabad
- Dahod Anaj Mahajan Sarvajanik Education Society, Dahod
- District Science Centre, Dharampur, Valsad
- DIETs, Gujarat
- Dr. Homi Bhabha District Community Science Centre, Surendranagar
- Girdharbhai Sangralay District Community Science Centre, Amreli
- Gujarat Council on Science and Technology (GUJCOST), Gandhinagar
- Gujarat Science Academy (GSA), Ahmedabad
- Indian Association of Physics Teachers (IAPT), Pune
- Institute for Plasma Research (IPR), Gandhinagar
- Indian Railways
- Jay Bharati District Community Science Centre, Surat
- Kalyan Regional Community Science Centre, Bhavnagar
- Kutchmitra District Community Science Centre, Bhuj
- Manorama Sheth Education Fund, Ahmedabad
- M. D. Mehta District Community Science Centre, Dhrol, Jamnagar
- Nehru Foundation for Development
- Paryavaran Edutech, Ahmedabad
- Param Community Science Centre, Bharuch
- Pramukhswami Lokvignan Kendra, Badoli
- Prayosha Community Science Centre, Ahwa, Dang
- Physical Research Laboratory (PRL), Ahmedabad
- PKS High School, Kalol
- RNG Vidyalay, At. Ganesh Sisodra, Dist.: Navsari
- Shree Brahmmandji District Community Science Centre, Junagadh
- Shree Sahjanand Swami District Community Science Centre, Porbandar
- Shree Gattu Vidyalaya, Ankleshwar
- Shri O. V. Sheth Regional Community Science Centre, Rajkot
- VIKSAT, Ahmedabad
- Vanita Vishram School, Surat

Our Bankers
- Bank of India
- HDFC Bank
- State Bank of India

VASCSC has been networking with several institutions and organizations. The following is a list of some of the collaborating institutions:

- All India Radio (AIR), Ahmedabad
- Ahmedabad Education Society
- Banas Gram Vikas Samiti Jilla Lok Vignan Kendra, Palanpur
- C. C. Patel Community Science Centre, Vallabh Vidyanagar, Anand
- Centre for Environment Education (CEE)
- Physical Research Laboratory (PRL), Ahmedabad
- PKS High School, Kalol
- RNG Vidyalay, At. Ganesh Sisodra, Dist.: Navsari
- Shree Brahmmandji District Community Science Centre, Junagadh
- Shree Sahjanand Swami District Community Science Centre, Porbandar
- Shree Gattu Vidyalaya, Ankleshwar
- Shri O. V. Sheth Regional Community Science Centre, Rajkot
- VIKSAT, Ahmedabad
- Vanita Vishram School, Surat

Our Bankers
- Bank of India
- HDFC Bank
- State Bank of India

Contribute
The popularity of VASCSC programmes is rising. To meet the growing demand, there is a need to upgrade the Centre’s infrastructure.

VASCSC seeks grants/donations for building extension, upgradation of the laboratories, library and other infrastructure. This will help us in reaching out to more students.

Donations to Vikram A Sarabhai Community Science Centre are exempted U/S 80 G (5) of the Income Tax Act 1956.
## Financial Highlights

### Abridged Balance Sheet

<table>
<thead>
<tr>
<th>Funds and Liabilities</th>
<th>31.03.2013</th>
<th>31.03.2014</th>
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</thead>
<tbody>
<tr>
<td>Reserves and Surplus</td>
<td>119</td>
<td>177</td>
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<tr>
<td>Project Grant Balances</td>
<td>62</td>
<td>62</td>
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<tr>
<td>Suppliers and Sundry Creditors</td>
<td>23</td>
<td>40</td>
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<tr>
<td>Total</td>
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<td>299</td>
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<table>
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<tr>
<th>Assets</th>
<th>31.03.2013</th>
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<tbody>
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<td>Immovable &amp; Movable Properties</td>
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<td>Investment</td>
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<td>Cash and Bank account</td>
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<tr>
<td>Income Receivable</td>
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<tr>
<td>Advances and others</td>
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<tr>
<td>Stock of Edu. &amp; Training Material</td>
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<tr>
<td>Total</td>
<td>204</td>
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### Abridged Income and Expenditure Account

#### Income

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<th></th>
<th>31.03.2013</th>
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<tbody>
<tr>
<td>Project Grants (Revenue Recognition)</td>
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<tr>
<td>Transfer from Earmarked Funds</td>
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<td>Revenue from Publication and other Educational Materials</td>
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<td>34</td>
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<tr>
<td>Fees for Educational Programmes</td>
<td>44</td>
<td>60</td>
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<tr>
<td>Recoveries and Interest</td>
<td>159</td>
<td>183</td>
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<tr>
<td>Total</td>
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<td>650</td>
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#### Expenditure

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<tr>
<td>Staff Salaries</td>
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<td>Projects and Programmes</td>
<td>348</td>
<td>417</td>
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<td>Establishment and Administration</td>
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<td>24</td>
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<td>Against Earmarked Funds Expenses</td>
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<td>Sub Total Recurring Expenditure</td>
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<tr>
<td>Reserves and Surplus</td>
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<tr>
<td>Sub Total Non-Recurring Expenditure</td>
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<tr>
<td>Total Expenditure (Recurring + Non Recurring)</td>
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<td>600</td>
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</table>

### Funding Sources for Expenses

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<th>Details</th>
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<td>International Sources</td>
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<td>National Sources</td>
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<tr>
<td>Interest &amp; Donation</td>
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<td>Education Programmes</td>
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<tr>
<td>Self Generated Sources</td>
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<td>173</td>
</tr>
<tr>
<td>Total</td>
<td>553</td>
<td>650</td>
</tr>
</tbody>
</table>

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**Note:**
- Recoveries and interest include user charges, overheads, other miscellaneous income and interest.
- Project Grant income shows revenue recognition.
- Income from earmarked funds have been transferred from the specific fund created for the said purpose.
- The figures are taken from the audited statement of accounts of the respective years.

VASCSC is registered under the Societies Registration Act 1860, Reg. No. GJJ/2425 (Ahmedabad) and registered under the Foreign Contribution (Regulations) Act 1976 with the Ministry of Home Affairs, Govt. of India, New Delhi. (Registration No. 041910288, 29 Nov 2002).
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Ministry of Human Resource Development  
Government of India  
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Shri T. K. Balappan  
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**Member Secretary**
Shri Dilip Surkar  
Executive Director  
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Navrangpura, Ahmedabad 380 009
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Physics Mathematics

Chemistry Biology

Computers Electronics

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Science Hobby Workshop