



ANNUAL REPORT 2017-2018



**MANTHAN EDUCATIONAL
PROGRAMME SOCIETY (INDIA)**





**ANNUAL
REPORT**
2016-2017



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From the Director's Desk:

We proudly present to you the Annual Report of year 2017-18, which would certainly give you a glimpse of activities Manthan has taken up in this year.

Manthan has been able to take up and implement initiatives, which are strongly rooted in the objectives and vision of the organization. We bring innovation in designing and content to make science a popular subject among the school children all across India.

We have now taken this expertise and experience to make affordable and eco-friendly science activity kits for children in collaboration with EUCU.net and KinderBeuro and Hands-on Educational Resource Private Limited. This would certainly make a breakthrough and make science acceptable and approachable to thousands of children in India.

This has been an extremely encouraging year for Manthan, as we have established the one of its kinds Museum "KHOJ" in Ahmedabad, which has opened a new world for children to explore science. KHOJ has been set up with a unique concept, where the visitors can touch, feel and experiment with the displays.

For the first time in India, Manthan has developed an activity kit on Plasma for Institute of Plasma Research to be disseminated to school students, which comprises of easy to do 20 activities, which would give an understanding about plasma. More than 2000 activity kits have been distributed among the school children all across India.

We have been focussing on I-STED and our core area are textiles and leather work in the Kutch region. Through timely intervention and with the help of technology and design the Sustainable Craft Sector Programme for artisans in Kutch will uplift the lives of artisans. Our focus is on Craft Entrepreneurship and in creating small village brands. Ultimately helping the craft artisans in becoming Craft Entrepreneurs.

Establishing the unique Maker Labs in Gundiyali has been one of the significant achievements of Manthan. The Maker Labs would assist craftsmen in making designs and to make protocols of the same to check its viability and suitability.

Collaborations with regional, national and international agencies engaged in various aspects of science have been one of the significant achievements of Manthan. And we strive to only excel in what we do to make science accessible and engaging.

Abhay Kothari
Director, Manthan





Contents

Entrepreneurship and Design Projects

- Design with Science and Technology Application for Rural Development
- Technology & Design for Sustainable Craft Sector of Kutch and Saurashtra regions of Gujarat State
 - I-STED Project
 - Village Maker Lab
- Capacity building and design training for Women of Waze

Science Popularization Projects

- KHOJ - Science + Art + Innovation
- AHA Boxes Project
- Manthan Narmada Lok-Vigyan Kendra, Rajpipla and Dediapada
- Vigyan Ganga (An innovation based Science Outreach Van)
- Activity kit on Plasma



About Manthan

- Manthan Educational Programme Society, India is a not for profit organisation focused on transforming the lives of various rural and tribal communities. Established in 2001, Manthan believes in taking up new challenges and experimenting with science and technology along with design and innovation. For the benefit of craft artisans and revival of dying crafts the organisation has been working relentlessly for the past 10 years.
- Manthan is focused to ameliorate and instil fresh methods in science communication and entrepreneurship development amongst students and craft artisans at large. Manthan strives to apply innovatively planned and designed strategies in its projects with professional trainings and hands on outreach material.
- Manthan has been running Two Community Science Centres in the Tribal District of Narmada, Gujarat. Creating science awareness and increasing understanding of science, exploring hands-on approach towards science learning amongst children, youth and community.
- Manthan developed hands-on Activity kits on subjects like Solar Eclipse, Earthquake, Modern Physics, Bio diversity, Understanding Miracles, Adolescence, Health, Astronomy, Energy, Space, etc. that reached the doorsteps of several millions of members across the country with the support of Governmental and Non-Governmental agencies.
- Taking a step ahead, Manthan has collaborated academically with EUCU.net (European Union Children's Universities) for the benefit of the future citizens of the globe. Manthan believes in spreading its wings through global collaborations and touching the lives of the children globally.

Collaborations of Manthan

- National Council for Science & Technology Communication, DST, Government of India
- National Science & Technology Entrepreneurship Development Board, New Delhi
- GUJCOST, Government of Gujarat
- Indian Institute of Plasma Research, Government of India
- Gujarat CSR Authority
- Gujarat State Financial Services Ltd
- District Administrative Office, Narmada, Government of Gujarat
- EUCU.net (European Union Children's Universities)
- Vedhshala Astronomical Observatory
- ZOOM Kinder Museum, Vienna





**S&T BASED
ENTREPRENEURSHIP
DEVELOPMENT
PROJECTS**





Design with Science and Technology Application for Rural Development – SEED Project

- IManthan has always been working with the rural and under privileged communities in Gujarat. The SEED project aims at skill development through design and entrepreneurship trainings in the remote villages of Surendranagar district. Designing market friendly products with modest investments has been one of the core areas of the project with a focus on economic development. Creating micro independent business units through networking and linkages is one of the main objectives of the project. Manthan has been successfully carrying out the SEED project for the past several years in many remote villages with simple yet modern tools and technologies to create and market products.
- Under the SEED project, trainings were conducted for rural youth, craftsmen, women, Scheduled Caste (SC) and Other Backward Class (OBC) population.
- The main beneficiaries from these trainings have been youth, craftsmen and women.
- In this year, trainings were carried out in the villages of Bajana (Patadi taluka) and Vanod (Dasada taluka) and imparted knowledge of making jewellery from waste materials and textile. This included products from waste paper, such as stationery products. More than 20 different products are launched every year in the market. The products are launched in the category of crafts, fashion, up cycled products and utility products. Till date more than 60 products have been launched in the past three years and more than 10 product systems are developed.
- So far Manthan has been able to train and launch 30 micro enterprises along with linkages. Manthan has carried out five skill and design trainings, four EDP trainings, four mentoring sessions, three linkages sessions and two follow up sessions in the year 2017-18.



- Through these activities, main inputs are provided for skill development, use of upgraded technology and the know-how to work like a designer for making designs inspired from nature and surroundings. The trainings help in identifying and selecting appropriate raw material and proper usage of up cycled raw material. Whereas, jewellery making skills using waste cloth pieces, assembling jewellery, creating embroidered and patch work jewellery were the main core areas in the jewellery making training.
- Trainings were imparted to make products from waste newspaper, such as stationery items and jewellery. Small paper envelopes and pouches, paper lamps, paper jewellery, small trays, book markers, writing pages and pen stands were some of the products developed from waste newspaper. A total of three skill development, three product development and one EDP trainings were conducted in the project villages.
- The women of the project villages are greatly benefitted from the inputs provided for making products from waste material (100% Up cycled). Thirty one women from Bajana village and 38 women from Vanod village were benefitted from the training. This year 12 micro units, nine new units, three units (evolved) have been established. The trainings and subsequent hand holding activities has helped the beneficiaries to earn more income and now the average family income has increased from 25% to 40%.ncreased from 25% to 40%.







Innovation - S & T based Entrepreneurship Programmes: Technology & Design for Sustainable Craft Sector of Kutch and Saurashtra regions of Gujarat State (I-STED)

- India is rich in its history of art and crafts. However, even with knowledge and skill, many artisans are unable to touch the pinnacle of success due to lack of proper guidance and intervention. An estimated 7 million artisans in India are engaged in craft production, which is also their primary livelihood. Out of these, very few transfer the skills and knowledge to the younger generation. There is an urgent need to re-invest in India's artisans to safeguard history, culture and an important source of traditional livelihood.
- Manthan with the support of National Science & Technology Entrepreneurship Development Board (NSTEDB), Department of Science & Technology, Government of India has launched Technology and Design for Sustainable Craft Sector programme for artisans in Kutch and Saurashtra region of Gujarat. This programme is a focused effort to bring about an inclusive socio-economic development by addressing the challenges associated with a specific region/industry/cluster by connecting interventions of Science and Technology and innovative solutions with entrepreneurial opportunities. The main objective of the programme is to transform a Craft artisan in to a Craft entrepreneur. It will lead to generation of employment and thereby generation of income. This in turn bring changes in the quality of lives of the people associated with the craft sector.



- Several Workshops were conducted by Manthan, including one to one meetings and field visits. Interested artisans were mentored and then selected to enhance their craft knowledge into scaling up of business or brand adding several components like technology, design, innovation, product diversification into their units. Some of the units were self financed, family financed, financed through loans and with subsidy schemes of government. Specific innovative solutions were given to artisans on Textile Craft Sector, Earthen Craft Sector and Wooden

Craft Sector

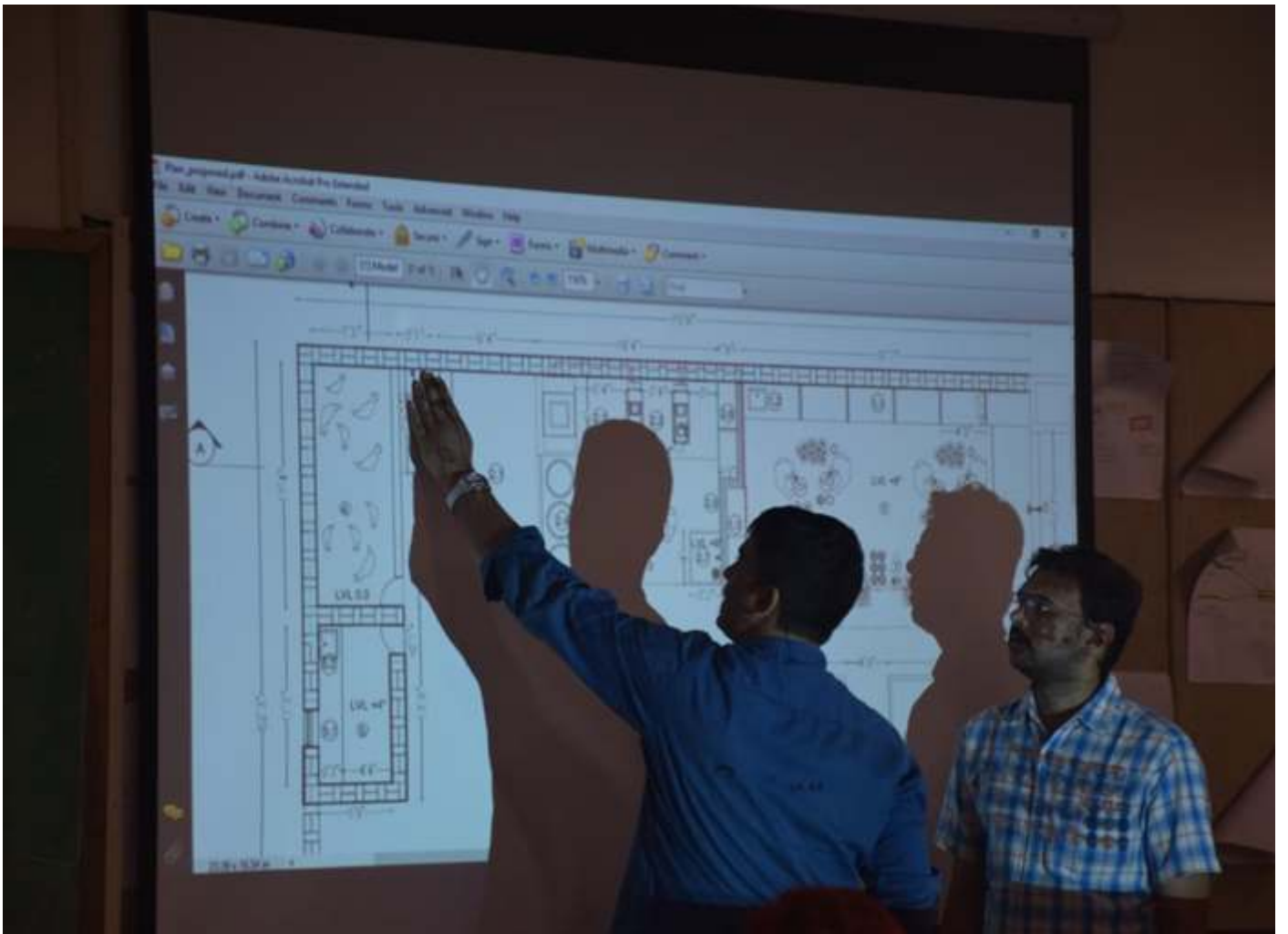
Textile Craft Sector:

- Manthan has been striving to expand the impact of the project by including more villages and various crafts. A new craft sector of Batik was also selected and many changes in the field of Design and Technology were introduced. In this sector Manthan carried out block printing workshops at Dhamadka and Ajrakhpur. Whereas, batik workshops were carried out at Maska, Gundiya and Baagh.

Below given are some of the innovative inputs provided by Manthan:

- Promoting energy efficient cloth boiling furnace as it saves fuel by almost 50% to 70%. Also it brings evenness in fabric quality while boiling. Introduced the same technology for Batik printing groups.
- Initiated a product development and stitching unit for women in Dhamadka, for in-house production of apparels and products. More than 20 different products are now produced in-house.
- Introduced wax removal and finishing machine for batik group. It helps in creating a clean finish, almost 50% more and reduces hand work in post process.
- Total 19 entrepreneurs (14 Craftsmen nurtured and five new Entrepreneurs) in the Textile sector are created in the year 2017-18.







Earthen Craft Sector:

- Initiatives have been carried out by Manthan in Earthen craft (terracotta) sector in Gundiyali Village, Maska Village, Lodai Village in Kutch and Una Taluka and Rajkot Taluka of Saurashtra region. As planned, Manthan along with the partner organisations and supporting organization has replicated the approach of terracotta craft and adapted it in several villages of Kutch and Saurashtra along with design inputs and technology dissemination. Specific and concentrated trainings have been provided to receive better market exposure.

Following are the innovative inputs provided by Manthan:

- Promotion of 18 more energy efficient kilns for terracotta pot making at 100% subsidy. Saves 90% of burning energy and reduces the damage to only 2%, which means 40% damage reduction. Also worked on modification of the kiln as per the change in clay in different regions. Along with this promotion and dissemination of electric potter wheels and electrical pugmills among 30 craft entrepreneurs at 75% subsidy was carried out.
- Carrying out open innovation challenge along with designers in Gundiyali to develop market friendly products and shared the process and outcome at Maker's fest held in Ahmedabad along with a display of almost 100 different products.
- Design and Development of Community Documentation Hologram System for the first time in the country where community can document, display in form of a hologram and upload their products made by just a click of a button.
- Manthan through its various trainings and initiatives has benefitted 23 Entrepreneurs (16 Craftsmen Nurtured and seven New Entrepreneurs).



Wooden Craft Sector:

- Manthan has carried out activities in this sector in Rajkot District of Saurashtra Region in Gujarat. Through trainings and sessions, many inputs and knowledge has been shared with the artisans.

Following are some of the significant inputs provided by Manthan:

- Basic introduction on colour printing on wood (UV Printing) was provided.
- Introduced mass colouring conveyer belt and unit for colouring and varnishing of the products made. This increases the work speed by more than 50% and enhances quality of the products.
- Along with this inputs were provided on designing of workspaces in clay sector and textile sector. Two model units are under development in Dhamadka and Gundiyaali from the point of view of design, technology, tourism and marketing. Along with this online sales unit was also established along with stock management systems.
- Six Entrepreneurs were benefitted out of which three craftsmen were nurtured and three new Entrepreneurs were created.



WOODEN HANDICRAFT TRAINING

I-STEED PROJECT

JASDAN - Dist:-RAJKOT

2017-2018

by:



NSTEDB
DEPARTMENT OF
SCIENCE & TECHNOLOGY
GOVERNMENT OF INDIA



**MANTHAN EDUCATIONAL
PROGRAM SOCIETY, INDIA**
AHMEDABAD



Village Maker Lab

- Manthan has been working on the I-STED project since last four years. For the first time in Gujarat, Manthan has worked on setting up Village Maker Labs, which is a concept approved by NSTEDB. Village Maker Labs foster entrepreneurial spirit of artisans, by providing the space, equipment and help to rapidly turn ideas into working prototypes. It functions as a platform giving power to artisans to turn ideas and concepts into reality. Two Maker Labs in Gundiyali have been established which would certainly give the artisans the power to make extraordinary art. Unit 1 in Gundiyali has 10 members and the second unit has 12 members, whom a Memorandum of Understanding has also been signed. This facility would boost the rural handicrafts sector and will bring latest technology to the artisans. It would also lay emphasis on innovation and creation of a new product range for the urban market.
- The artisans would be able to access the facilities at no charge. It would help them to innovate and introduce new products in the market. The lab will have training sessions, workshops and computer facilities. A faculty from premier design school would be conducting the training sessions. The main motto behind these labs is to give artisans a dedicated common space which can bring together their creative minds and use these common facilities and create something different.







Capacity Building and Designing Training for Women of Waze - an initiative by TCS

- Specific designing and production trainings were organized for 15 women from Waze village, with the support of Tata Consultancy Services. These trainings focussed on making designer bags from waste textiles. Experts designers were engaged to train the women. The participants of the training would be able to earn additional income for the family from making and selling these bags.





**SCIENCE
COMMUNICATION
PROJECTS**





KHOJ - Science + Art + Innovation

Khoj Museum is a joint initiative of Manthan, ZOOM Kinder Museum, Vienna; Vedhshala Astronomical Observatory and Gujarat State Financial Services Ltd. Khoj is the first dynamic children's museum in India that connects science, art and innovation by means of participatory displays. Unlike a regular museum where visitors are not allowed to touch the display, at Khoj children are encouraged to participate and play with the displayed activities.

Established in the city of Ahmedabad in the early 2018, Khoj museum gives the child an opportunity to see, touch, experience and question aspects of life formation and scientific explorations. The museum has three different sections Bulbule or the bubbles, Moving Images and Khagol also known as the astronomy section.

One of the most favourite sections among the children is bubbles. A series of experiments are done with the children, to make them understand the science behind bubbles. Precisely laboratory experiments are made easy to understand by the expert team of Khoj. They patiently listen to the queries of children and resolves doubts. Formation of bubbles, soap films, walls of bubbles, dry ice experiments are some of the key attractions for the children, who walk through the installations and experience it themselves.



In this age of information and communication, children are exposed to many modern techniques involved in message formation, photography, films and animation. These aspects are explained through the exhibition on moving images, which explores the innate creativity of man, from prehistoric times to the present era. Cave drawings to green screen shooting methods are explained and given a free hand to the children to experience it. Flipbook, bioscope and virtual reality are explained and experimented at Khoj.

The mysteries and functioning of universe are exhibited in the third section, which gives answers to the curious minds. Sun, moon and the stars are displayed through various scientific installations, which have used art and designs to make it simpler to the children. Solar eclipse, milky ways, galaxies and constellations are displayed in easy to understand manner. The children have finally found a museum that answers their queries about universe.

Children of Ahmedabad and nearby cities now have a museum to call their own, which has answers to their questions related to science and various aspects. The museum is dynamic in its design and installations. It changes the displays once in every six to nine months, which makes its visitors look forward for the next visit. Khoj has a well experienced team of subject experts, who often meet and discuss about the possibilities to improve the experience for the children as well as to ponder over subjects for upcoming months. Innovation, hands-on experience and creative designs are some of the significant aspects of Khoj museum. Approximately a child spends two and half hours in the museum and so far has been visited by over 17,500 children in this year.







AHA Boxes Project

Manthan has several decades of experience in the field of education and science communication. And during these years, Manthan has developed many low cost science kits, which have helped children to understand and explore the subject. Manthan has till date produced more than 50 types of low cost kits for various national level organisations. With this expertise, Manthan has developed a project, in academic collaboration with EUCU.net and KinderBeuro and Hands-on Educational Resource Private Limited. The name of the project is AHA Boxes project. The main force behind this collaboration is the shared vision among all partners towards generating curiosity among children.

The AHA boxes intends to be the low cost science activity boxes that will introduce concepts to children who are in between six to 15 years of age. The design approach of the Boxes is based on co-creation Design policy – a universal design with eco-friendly materials. Important materials necessary to conduct an experiment would be given and for other parts the child has to go out and look for from the surrounding or the child has to manage from home. Emphasis will be on craft play, sensory, interaction and provocation. The box should also have elements of Exploration, Observation and Reading. Each box will have code QR scanning and the child can check online the different versions of the box.

Subjects to be selected for the box would have a multi-disciplinary approach; subjects will be cross cultural aspects, global warming, issues linking to global awareness, connecting the globes, health care issues and environment issues. The AHA Boxes Project would act as a cultural bridge. The hands-on box would be connected to a virtual platform. A sense of community would be given to the children who have this box. NGOs would be motivated to buy the boxes to distribute to the under privileged section of the society. These boxes would be made through Social Enterprise concept. This means that the project will help those people who are disadvantaged. Encouragement will be given to social business; local product will be produced through a value added chain. Social development is an important aspect of this project and locally available talents would be engaged to develop the kits in India.





Activity kit on Plasma

An activity kit on Plasma was designed and developed by Manthan for Indian Institute of Plasma Research, Government of India. The kits were developed in two languages and 2000 kits have been distributed all over India among school children of 12 to 16 years of age. Each kit has 20 activities, which explains the basics of Plasma, as a concept, as an advanced state of energy and its applications. Activities include explanation of plasma through few beads in a box, creating a dummy Tokamak that confines fusion plasmas above 100 million degrees inside it through magnetic coils. The plasma kit is one of its kinds and is the first one to be made in India. Even in the world there are only few kits have been developed on plasma. The project was supported by Indian Institute of Plasma Research and catalysed by National Council for Science & Technology Communication, New Delhi.





Manthan Narmada Lok-Vigyan Kendra, Manthan Science Centre (Rajpipla and Dediapada)

Over populated countries like India face hurdles when it comes to educating its younger generation. Many teenagers are unable to complete their primary education and drop out of schools due to lack of interest in studies. Several children prefer to work for their family than attending schools. And this certainly makes the young population unqualified for skilled jobs. Manthan has been working in the field of science communication and education since last three decades and through its various initiatives have tried to encourage rural and tribal children pursue higher studies, so that they too contribute to the growing economy of India.

A need was felt to create a facility for the rural and tribal children where they could get access to scientific equipment's, books and other resource materials. This led to the birth of Manthan Narmada Lok-Vigyan Kendra, at Rajpipla and Dediapada in Narmada district of Gujarat. Supported by GUJCOST, Government of Gujarat; these centres act as an additional support to the tribal children who cannot travel to cities to access reference books or for extra practical demonstrations.

Through different methods, Manthan has pushed for an updated curriculum where needed, offering hands-on workshops, providing kits and guidebooks free of charge, training teachers and students alike. All of this is to ensure that a sound base is created in science. Thus Science Education aims not only to generate a more science-oriented youth, but it places particular emphasis on the education of girls. It also strives to have a positive impact on economic and social development by influencing teachers and curriculum planners.

Manthan has conducted 1170 activities this year and these activities have emphasized hands on approach for various activities such as astronomy, sky observation, science posters, and science workshops, featuring interactive



exhibits in the science exhibitions that encourage children to learn and explore more. There are a number of programmes like 'Vigyan safar', Sunday schools, tuitions, demonstrations, learning science while playing through which learning science is not only made easy but also interesting in a way to encourage more and more children. As of 2017-18, 45,083 children are benefited through this initiative and their work has been recognized at state as well as national level. This year several women oriented programmes related to health, gender and sanitation issues were also included. It had a positive impact on the lives of the community as well as the women residing in the areas.

Training programmes were conducted by the centre for Science programme planning, Bio Acorn Activities, Science Drama Related training, GUJCOST Club kit and National Children Science Congress. School teachers and Principals have also benefitted from this programme.

These areas do not have facilities for children to keep themselves occupied during summer vacations, which usually makes the children inactive and bored. In order to get them engaged and help in learning something which remains useful and knowledgeable, summer programmes are designed and conducted. Such as low cost science toys are made and children are also taught to make these science toys. A special programme was also conducted to introduce photography, photo film and Photoshop. A special exhibition was also organized as a part of Summer programme in which Science models were demonstrated, posters were made and science toys made by children were displayed. Special Community sessions were organized for Women to update them on Technology and its use. Training sessions were also conducted for women on Solar Energy and solar equipments.





Vigyan Ganga (An innovation based Science Outreach Van)

Vigyan Ganga was born when it was observed that the students staying in the interior areas of the tribal belt of Narmada were academically lagging behind. A mobile science van was conceived and developed by Manthan with the support of District Administration Office, Government of Gujarat, Narmada. The van carried low-cost hands-on science activities for children from one school to another. It also has a science Communicator and demonstrated models. The Science Communicator explains the concepts of science and clarifies the doubts related to curriculum of Standard 5th, 6th, 7th and 8th State board.

Activities like science shows, building science models with students, performing experiments, dissemination of science kits and science innovations are the key attractions. The science Communicator guides the students to develop a vision towards science as a catalyst of change.

The van helps in cultivating an academic interest among the children in tribal areas. As the topics are curriculum based it has helped in improving the learning ability of the children. It is chapter based learning transformed into activity based learning.

The total number of beneficiaries in the year 2017-18 was

The van covers two schools every day and the main target audience for the van are the students of Std 5 to Std 8. The van travels to more than 25 schools of Dediapada on a regular basis.





**MANTHAN EDUCATIONAL
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