

VACATION TRAINING PROGRAMME ON BIORESOURCES

2010

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Ashoka Trust for Research in
Ecology and the Environment

**ASHOKA TRUST FOR RESEARCH IN ECOLOGY AND THE
ENVIRONMENT**

Bangalore

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1. SUMMARY OF THE COURSE

The Bio-resource course was conducted from April 26th to May 15th 2010 at Ashoka Trust for Research in Ecology and the Environment (ATREE), Bangalore. Twenty one students from different schools attended the program. Except one student all others were from Bangalore. The course was advertised in several local dailies and in the web apart from posting it in several online groups. The course consisted of a total of 29 lectures, 9 Hands on /Field activities, 4 field trips, and 2 institutional visits. Students of previous year's program were invited to share their experiences with the current batch. Resource persons gave assignments which the students took up very enthusiastically and completed in time. They were also assigned group projects that they presented at the end of the course. The students maintained a journal in which they wrote a daily account of the course. As a mark of appreciation and encouragement, deserving students were awarded prizes on the last day during the valedictory function.

2. COURSE CONTENT

The course consisted of lectures by eminent scientists and experts from various fields. Visits to research institute, lecture related activities, screening of films and field trips were the other highlights of the course.

2.1 LECTURES



The students were exposed to various fields of Biology through twenty nine lectures by Scientists and experts. Most lectures were arranged in ATREE auditorium, the venue of the program. All the lectures were made using power-point presentation, screened using a LCD projector. The objective was to make the lectures visual to hold the attention and interests of the students. The lecture sessions dealt with topics related to plants, birds, mammals, reptiles, insects, amphibians, Urban Wildlife, wildlife rehabilitation, waste management, Sustainable agriculture, conservation issues, water quality monitoring, sustainable living and forest products that contributed to livelihood of tribals, etc. Some lectures were supplemented by activities and field visits.

2.2 VISIT TO RESEARCH INSTITUTE

Visiting research institutes like Natural remedies and Central Institute for Medicinal and Aromatic Plants gave the students an opportunity to learn and get acquainted with the kind of research that goes on here.

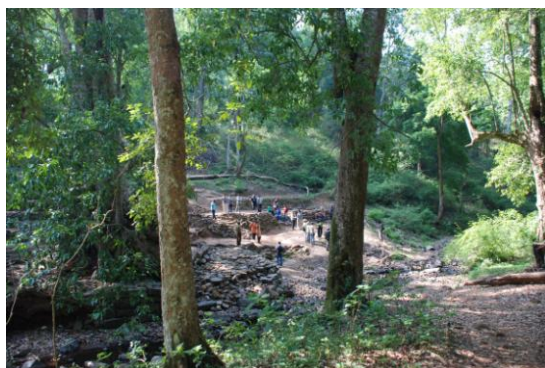
2.3 ACTIVITIES



Some of the class room lectures were supplemented with activities that exposed them to new skills such as tree climbing to appreciate the canopies of forests, Map reading and Navigation to orient themselves in a new landscape, sharpening observation skills by sketching birds for identification, identifying plants and insects, testing the quality of water and taking GPS points. These activities served as practical sessions and helped in breaking the monotony of the class-room atmosphere. These were very well received.

2.4 FIELD TRIPS

While lectures and activities formed the class-room sessions, field trips helped in exposing them to the applications of these concepts. These trips also served as a platform for introducing them to some of the skills required for doing field related work on Bio-resources. This included trips to the Biligiri Rangaswamy Wildlife Sanctuary, Ramanagara Vulture Nesting area, Ranganthittu bird sanctuary, that helped them to see birds at close quarters, Butterfly Park in Bannerghatta National Park, and Navadarshanam - an eco ashram where they were exposed to a different lifestyle than their normal ones. The students in these trips were accompanied by experts from different fields that helped students learn and appreciate the importance of the natural world in a human dominated landscape.



2.5 SCREENING OF MOVIES

Screening of movies on wildlife, conservation and livelihood also formed a very important part of the course. These sessions gave students an opportunity to gain insights into some of the important issues related to environment

2.6 ASSIGNMENTS

Assignments were given so that students learnt to use resources to collect additional information on the lectures that they heard in classrooms. This was a very effective way to make students learn, collect, organise and present the information independently.

2.7 PROJECTS

Students were divided into 3 groups and each group was assigned a project. The following projects were assigned:

- i. Effectiveness of the Wildlife television Channels
- ii. Attitude Towards Parks/ Urban Green Spaces
- iii. Use of Plastics

They interviewed people, collected the data, analyzed and presented it on the final day. The objective of this exercise was to make them understand the complex issues involved in bioresource management. This exercise also helped develop team spirit among them.

3. EVALUATION

This three week course on Bio-resources was an effective way to introduce secondary school students to diverse fields, research areas and issues pertaining to the use and conservation of natural bio-resources. The students filled in an evaluation form for feedback on the course. 85% of the students said they had not much knowledge of bio-resources before attending the course and acknowledged learning new concepts. 77% of the students felt the level of difficulty was about right while 23% felt it was easy. They all found the lectures either essential or inspiring. 54% felt the projects were too intensive, 31% felt it was too easy, while the rest felt it was just right. While all students felt that the faculty assisted projects were helpful, only 1 student felt that it was not adequate. All students except one felt a longer field course would have been more useful. When asked to rate the facilities and the overall program on a scale of 1 – 5 (1 being best, 5 the worst), 46% students gave a rating of 1 and 46% of them 2, just one student gave a rating of 3. This was a clear indication that they enjoyed the course.

A similar form was given to the parents. Parents had a very good impression of the course based on the inputs they received from their children. According to them the course was very informative and resourceful. About 70% of the parents felt a nominal fee could be collected from the students. No one felt that the course prevented their children from enjoying vacations in some other way. One of the parents suggested to add sessions on values in life and public speaking. All parents said they would like to

follow up on what their children learnt from the course and encourage them to pursue their interests. The only complaint was about the course not being publicised. Other than this, the feed back from parents showed that the course was well appreciated.

4. CONSTRAINTS AND RECOMMENDATIONS

1. VTP should be open for **8th and 9th std students** as well, as students of this age are not only willing to learn and accept new information but also have enough time to decide on their career.
2. A nominal fee could be collected from the students who are willing to pay as this will increase the value of the course

5. DAY-WISE SUMMARY OF THE PROGRAM

The students assembled in the ATREE auditorium on 26th April 2010 for registration. Each student was given a kit comprising of stationary required for the course, a folder with the detailed program schedule and ATREE newsletter

26 April	10.00am- 11.00pm	<p>Inaugural Program Ms. Abhisheka, Dr. T. Ganesh, Dr. Gladwin Joseph, Ms. Madhavi The Inaugural Programme was held between 10.00 am to 11.00 am which was attended by the students and parents. Ms.Madhavi welcomed the gathering and Dr. Gladwin Joseph, Director of ATREE gave a brief introduction to ATREE and a talk on the ethics of resource conservation Ms. Abhisheka introduced the students to the course by showing a few slides of the previous year's program. Dr. T. Ganesh welcomed the students and shared his experience of running the course for last several years.</p>
	11.30am- 12.30pm	<p>Introduction to Bio-Resources Dr. Uma Shanker The inaugural session was followed by an Introduction to Bio Resources. This talk aimed at introducing the concept of 'bioresources', their uses and applications. Dr. Umashankar, also talked about how products extracted from different taxa of animals such as leeches, frogs and wasps found applications in various industries. The highlight of the course was that the students were made to taste <i>Gymnema sylvestris</i> or commonly known as madhunashini which kills the perception of sweetness. They were then given chocolates to taste which turned out to be tasteless.</p>
	1.30pm- 4.30pm	<p>Introduction to Navigation Skills Mr. Nagendra and Mr. Umashanker Navigation skills are essential for field biology. Post lunch students were taken to the foot hills of Nandi Hills and exposed to basics of map reading and navigation using a compass and scale drawing of the topology.</p>

- 27 April 10.00am- 11.00am **World of Amphibians**
Dr. K. V. Gururaj, Indian Institute of Science
 Dr. Gururaj introduced the students to the world of amphibians. Students learnt to identify few frogs and toads looking at his presentation. He also explained the importance of amphibians. The students enjoyed listening to the audio clips of frogs croaking
- 11.30am- 12.30pm **Butterflies**
Dr. Aravind Madhyastha, ATREE
 The session on Amphibians was followed by the session on Butterflies. Students learnt to differentiate between moths and Butterflies. They learnt about the ecological importance of Butterflies, their food plants, migration and so on. By the end of the session they were able to identify few common species of butterflies seen in Bangalore.
- 1.30pm- 4.30pm **Water Quality monitoring**
Ms. Shalini Nair, Development Alternatives
 This session began with a presentation by Ms. Shalini. This was followed by a practical session on water testing. She showed the people friendly Jal Tara kit designed by Development Alternatives to test water on the field. The students were made to perform various tests with the help of a kit. This was a very different experience for the students as it was completely hands-on and for the first time they actually tested the water themselves.
- 28 April 10.00am- 11.00am **Birds**
Mr. Prashanth M B, ATREE
 Students were introduced to 'Birds' through a presentation by Mr. Prashanth. He spoke about the ecological importance of birds, feeding habits, diet, nesting, migration and so on. He taught them about the basic rules that they need to follow while watching birds in order to identify them.
- 11.30am- 12.30pm **Causes for Loss of Biodiversity**
Mr. Vivek Ramachandran, ATREE
 While familiarising oneself on various taxa is important, it is also necessary to understand the issues pertaining to environment. This interactive session opened the student's mind to various reasons for the loss of biodiversity. Mr. Vivek spoke about how our consumptive lifestyle is responsible for the loss of biodiversity and students were made to think about how they can change their life style in order to preserve our biodiversity.
 The video on "Story of Stuff" was an eye opener to the students as they became aware as to where the raw materials for our electronic gadgets come from and how they are disposed.
- 1.30pm- 2.30pm **Genetic Diversity**
Dr. Ravikanth, ATREE
 Dr. Ravikanth introduced the students to various levels of Diversity and then spoke in details about Genetic diversity. He spoke about the importance of cell culture to preserve the germ plasms of various threatened species and maintain the genetic diversity.
 Issues of genetic modification of plants and in particular crop species were discussed in an interactive session with Dr. Ravikanth

29 April	10.00am- 4.30pm	<p>Field Activity- Tree Climbing Mr. Vivek Ramachandran, ATREE The key to understanding and studying the vast unexplored realm of the forest canopy is to access it. With this objective, students were introduced to the technique for climbing the tree by a trained Canopy researcher Mr. Vivek. All the students succeeded in climbing the tree using the rope and the ascenders.</p>
30 April	10.00am- 11.00am	<p>Eco Tourism Dr. Seema Purushothaman, ATREE Eco-tourism is gaining momentum in the present day and is being promoted in many places. Dr. Seema spoke about the definitions, the scope for eco-tourism in India and the pros and cons of this concept. She also engaged the students in a discussion on a various related topics</p>
	11.30 am- 12.30 pm	<p>Conservation and Livelihood Ms. Sushmitha Mondol, ATREE Ms. Sushmitha screened a documentary about the tragic story of a the Adivasis in Orissa who are fighting against the Mining Multinational Company 'Vedanta'. The film is a record of their struggle and the movement to stop the project, against overwhelming odds. This way, the students learned much from the documentary about human suffering, dignity and courage, the frightening realities of poverty in the face of overwhelming power and a lot else. They took part in this healthy debate and understood the stakes involved in the conservation of natural resources.</p>
	1.30 pm- 4.30 pm	<p>Web Page Designing Mr. Shiva Subramanya, ATREE Whole of afternoon was spent in understanding the basics of developing a web page. They learnt concepts of webpage designing, introduction to the structure of webpage and a few HTML tags, CSS etc. and collecting information on biodiversity conservation with several techniques using popular search engines. At the end of the day, students were given an assignment to develop their own web pages.</p>
1 M a y	10.00am- 11.00am	<p>Molluscs Dr. Aravind N A, ATREE Molluscs are highly successful animal group in terms of ecology and adaptation and they are found in nearly all habitats Dr. Aravind through his presentation introduced the students to the world of Molluscs and explained their importance. Students got to see the specimens from his collection.</p>
	11.30 am- 12.30 pm	<p>Mammals Mr. Anirbhan, ATREE In his presentation Mr.Anirbhan described main features of mammals, diff types of mammals, locomotion, behaviour and adaptations with interesting pictures.</p>
	01.30pm- 3.30pm	<p>Bio Resource mapping using GIS and Remote sensing Ms. Arundhati, ATREE The information age requires everyone to be well equipped with the knowledge of the applications of different technologies that can be used for conservation. This module on GIS and remote sensing was introduced in the course keeping this objective in mind.</p>

In this presentation, Ms. Arundhati introduced the students to basic concepts of GIS and remote sensing. At the end of the session she showed the working of GPS, an instrument that has practical applications of GIS in different fields. She also spoke about satellite and their applications in bio-resource conservation.

The students were also given an opportunity to use the instrument.

3.30pm- 4.30pm

Ants

Mr. Sunil Kumar, British Council

Mr. Sunil introduced the students to the world of ant world and explained how the ant society works with wonderful photographs. They also learnt to identify different species of ants found locally. After the session, students went out into the garden and spotted procession ants, fire ants and golden back ants.

3 M a y 10.00am- 11.00am

Microbial Bio Resources

Dr. Joseph Bhagyaraj, Retired Professor, GKVK

In this session students learnt about various microbes and their importance

11.30 am- 12.30 pm

Film Screening: King Cobra

A documentary produced by Agumbe Reptile Research centre about the research conducted on King Cobras using radio transmitters was screened.

1.30 pm onwards

Visit to Navadarshanam

Navadarshanam, meaning new vision is a small organization which investigates and promotes ecological and spiritual alternatives to the modern ways of thinking and living. The students visited this place in order to see directly how the process of eco restoration and sustainable way of living was possible. Mr. Ananthu, one of the founders of Navadarshanam spoke about objectives of Navadarshanam while Mr. Nagaraj took the students around and showed them the practical applications of renewable sources of energy such as biogas, wind and solar energy. The buildings have been constructed using eco-friendly concepts such as compressed bricks, natural ventilation and lighting. Indigenous varieties of rice are used for cooking and the vegetables are grown organically.

This was an awe-inspiring trip that showed the path for a better and healthier way of living

4 M a y

Bird Watching – Navadarshanam

Students went bird watching early morning in the 100 acre forest of Navadarshanam lead by Mr.Prashanth, ATREE. They learnt to identify many species of birds including the Bulbuls, Doves, Sunbirds, Parakeets, Bee-eaters, Egrets and so on. The highlight of the session was watching a Honey Buzzard up close. Post lunch students left to visit Natural Remedies.

1.30pm- 4.30pm

Visit to Natural Remedies

Natural Remedies is a Phyto pharmaceutical laboratory. The students were introduced to the research, industrial processes and requirements that go into the production of drugs through a presentation.

After this, they were taken to the labs and the manufacturing units where students saw the different processes that are involved in the production and manufacture of drugs. This was followed by a round of interaction where students cleared many of their doubts.

- 5 May 10.00am- 11.00am **Lantana shows the way!**
Mr. Ramesh Kannan, ATREE
 A number of marginal communities in India have traditionally depended on bamboo and cane. Commercial exploitation severely depletes the natural stocks of these plants. In the absence of alternate income opportunities, livelihoods of these communities are seriously threatened. The challenge lies in developing approaches that can improve their livelihoods. Mr. Kannan showed how *Lantana*, which is a weed, has been successfully used as an alternative to cane and bamboo. He showed the samples of Channapatna toys made out of lantana. After the talk, the students were asked to design toys that could be made out of Lantana. As an incentive, these students were given prizes
- 11.30am- 12.30pm **Importance of Plant Taxonomy**
Dr. R. Ganesan, ATREE
 Knowledge of taxonomy is one of the essential requirements for a career in Biology. This talk aimed at teaching this science in a very informal way. The talk included a brief introduction on the importance of plant names, historical background of plant names, the art of naming and basics of identifying plants in the field. Dr. Ganesan also spoke about plant names and their role in the modern world, where every plant is looked by its usefulness.
- 1.30pm- 3.00pm **Introduction to Forest types**
Dr. R. Ganesan, ATREE
 Students were introduced to different forests types through this lecture. The presentation with wonderful pictures by Dr. Ganesan helped students to learn not only about the different types of forest but also their distribution and classification
- 3.30pm- 4.30pm **Canopy – The last biotic frontier**
Dr. T. Ganesh, ATREE
 Dr. Ganesh, with some breathtaking pictures took the students on a journey to the canopies of rain forests, which are host to some of the rarest and most interesting life forms. He explained methods of studying and accessing the canopies and the adaptations of the unique life-forms that exist there. He screened a video on Rain forest canopies and the life forms living there.
 At the end of the session students were asked to come up with innovative methods to access canopy.
- 6 May 10.00am- 11.00am **Urban Wild life**
Mr. Karthikeyan, Jungle Lodges and Resorts
 It is a general tendency to associate wildlife only to large wild mammals in forests. Mr. Karthikeyan showed pictures of birds, reptiles, insects and small animals that one encounters in everyday life and explained how all these form the 'urban wildlife'. He also explained the ecology and importance of each animal.
- 11.30am- 12.30pm **Insects**
Dr. Priyadarshanan, ATREE
 This session was dedicated to the study of insects, which in spite of being abundant are poorly understood and largely neglected. Dr. Priyandarshan spoke about the classification of insects, their ecological and economic value, threats and conservation issues.

- 1.30pm- 4.30pm **Lab /Field activity - Insects**
Ms. Seena, ATREE
 Ms. Seena started the session asking the students to fill a crossword puzzle and the winners were given prizes. Then they were taken to the museum to see various kinds of insects. They were also made to see insects through microscope. After visiting the lab they were taken outdoors and explained various techniques of insect collection. The students spent time outdoors catching insects and identifying them
- 7 May 10.00am- 11.00am **Restoring habitats**
Dr. T. Ganesh and Mr. Chetan, ATREE
 Dr. Ganesh started the session introducing the students to habitat loss. Chetan then spoke about few case studies. Students discussed with the speakers about how abandoned plantations can be restored. They were provided with reading material on Restoration ecology. At the end of the session students were asked to write their opinion on the reintroduction of cheetah in India.
- 11.30am- 12.30pm **Waste Management**
Ms. Padma Shastry, SAAHAS
 It is important to educate children about the generation of waste and its management. In this session the students learnt about the rationale behind setting up local units to deal with the garbage-generated daily by households.

 Students learnt about the nature of garbage and classification of the material into biodegradable, recyclable and toxic categories. They appreciated the importance of segregating waste into appropriate categories for further downstream processing. Ms. Padma also spoke about how paper and plastic can be recycled and biodegradable wastes are composted.
- 1.30pm- 4.30pm **Field activity – Plant Taxonomy**
Dr. R. Ganesan, ATREE
 A field activity was held in the GKVK campus where the students were taught to assign some common plants to their families. Each student was made to pick one tree and write down the features and then identify which family it belonged to.
- 8 May 10.00am- 11.00am **Reptiles**
Mr. Gerry Martin
 Reptiles have always been misunderstood and abhorred. This awe-inspiring talk not only provided an insight into the lives of these less known creatures, but also helped students overcome revulsion for reptiles. The students had a lot of queries on snakes, especially the venomous varieties.
- 11.30am- 12.30pm **Habitat loss due to Invasives**
Dr. R. Ganesan, ATREE
 The lecture was about how distribution of plants is perceived as beneficiary and problematic at global scale. He started the session by giving the history of invasion and spoke about how plants or animals become invasive and the consequences of invasion. He ended the session by talking about how to manage the invasive from the bio-resource management point of view.

1.30pm- 3.00pm

Urban Wildlife Rehabilitation

Ms. Abhisheka, ATREE

The students were introduced to rehabilitation of wildlife through a presentation by Ms. Abhisheka. She spoke about the importance of urban wildlife, the problems they face due to development, and included few case studies. Students discussed on various issues including whether euthanasia is justified. They also discussed about how rehabilitating snake charmers is a better option than confiscating de-fanged/de-venomed snakes from them

10 May

Field Trip – Ramanagara and Ranganathittu

A trip to Ramanagara and Ranganathittu Bird Sanctuary was arranged. Students left to Ramanagara to watch vultures after breakfast. After climbing a small hillock they were able to spot two species of Vultures, the Egyptian Vulture and the endangered Long-billed Vulture. Then they left to Ranganathittu Bird Sanctuary

This sanctuary is known for the diverse bird life and is visited by tourists, amateur bird watchers and experts. With a guaranteed sighting of a variety of birds, this is an ideal place to learn the basics of bird watching. The students were engaged in an hour long exercise where they sketched and noted down features of different species of birds that they came across. After this, they were taken on a boat ride where they could see the birds and crocodiles from a very close range. Students spotted a large numbers of birds including White Ibis, Cormorants, painted storks, Open – Bill storks, Darter, Egrets, Pond herons, Night herons, Pied Wag tails, Kingfisher, etc.

After that exhilarating experience they left for BRT wildlife sanctuary. As they entered and moved through the sanctuary they spotted many birds and mammals including Gaurs and Barking Deer.

11 May

Field Trip – BRT Wildlife Sanctuary

BR Hills is a mixture of moist deciduous, dry deciduous and evergreen forests.. The morning hours were spent trekking through the forests, during which the students were introduced to the flora and fauna that were encountered. The resource people helped the students identify various species of naturally occurring plants and also explained about their role in the forest ecosystem. Though, there was no direct sighting of any large mammal, they came across signs such as elephant dung and leopard and wild dog scat.

During the walk students had an opportunity to directly observe the interdependence of various species. They saw living examples of concepts such as symbiosis, predation, camouflage, invasive species, parasitic species and nutrient cycling. They spent a lot of time at the river flowing inside the forest observing various aquatic organisms.

They also visited the Soliga tribal settlement “Podu” inside the forest. They had an opportunity to reflect on the consequences of human over exploitation of forests and could observe for themselves the damage inflicted by human activities upon the forest. They were in a position to appreciate the frugal lifestyles of the forest dwellers that had managed to have a sustainable relationship with their environment until recently. The consequences of a rapid rise in human population were also evident.

12 May	11.30 am- 12.30 pm	<p>Urban Ecology Dr. Harini Nagendra It is very necessary for students to learn about what is happening to the environment around them and what role can they play in order to protect the local biodiversity. This session opened them to the issues in Bangalore city. Dr. Harini spoke about disappearing lakes and trees in Bangalore and need for citizens to take actions to protect them.</p>
	1.30 pm- 4.30 pm	<p>Field Trip – Bannerghatta Butterfly Park Students were taken to visit the butterfly park where they got an opportunity to see several species of butterflies. They saw the complete life cycle of various species of butterflies and learnt to identify which caterpillar or pupa belonged to which particular species and also learnt about their food plants. They later visited the museum which had informative displays. A documentary on about butterflies was also shown to the students.</p>
13 May	10.00 am- 12.30 pm	<p>Field Visit – Central Institute of Medicinal and Aromatic Plants Dr. Raveendra, CIMAP CIMAP is a laboratory which carries out extensive research and development activities in aromatic and medicinal plants. Students were shown a number of medicinal plants and herbs and learnt about the identification and uses of plants like citronella, basil, patchouli, rosemary and lemongrass. Dr. Ravindra explained to the students about the origin of several plants and their uses. Students were also shown the oil distillation unit, which is used to extract essential oils from various aromatic plants.</p>
	1.30 pm- 4.30 pm	<p>Environmental Art Ms. Abhisheka, ATREE Art is one of the best ways to appreciate the beauty of nature. Presently lot of artists are involved in environmental protection through environmental art. Students learnt about the various types of environmental art and how it can be both advantageous and harmful to the environment if artists are not sensitive to the environment.</p>
14 May	10.00am- 11.00am	<p>Sustainable Agriculture Dr. Vanaja Ramprasad, Founder, Green foundation Dr. Vanaja in this session spoke about the need to conserve crop diversity and also improve food security. She spoke about how this could be done by following sustainable farming practices</p>
	11.30 am- 12.30 pm	<p>Sustainability in Architecture and Sustainable water/Sanitation Practices Mr. Sharath and Mr. Nate Stell, Biome Environmental Solutions In this session students learnt about eco friendly buildings which used natural lighting and ventilation and hence reduce the use of energy. The speakers also spoke about conserving water by adapting methods of rainwater harvesting.</p>
15 May	10.00am- 12.30pm	<p>Valedictory The valedictory function was presided over by well known Wildlife expert and the Director of WCS India Dr. Ravi Chellam. The parents of students were also present for the occasion. Mr. Prashanth welcomed the Chief Guest, Parents and Students. Dr. Chellam gave a talk on Lions.</p>



This was followed by project presentation by the students. Dr. Ganesh T, Dr. Aravind, Dr. Ravi Chellam and Mr. Prashanth judged the projects. This was followed by certificate and prize distribution.



The program concluded with a vote of thanks by Ms. Abhisheka