

## **Knowing the Unknown!**

### **Three Days Orientation Program for the Students of Jain Heritage School, Bangalore**



**Organized by  
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### Three Days Orientation Program for School Students of Jain Heritage School

#### Introduction

Jain Heritage School aims to create a stimulating, caring and rewarding school environment, where every child is a valued member, encouraged and supported to ensure that they achieve their potential to the fullest.

A orientation was organised for Students 11<sup>th</sup> and 12<sup>th</sup> standard of Jain Heritage School had three day out on 16<sup>th</sup>, 17<sup>th</sup> and 18<sup>th</sup> August 2017, at The TransDisciplinary University, Bangalore (TDU). The objective of the orientation was to apprise them on the basics of biodiversity, conservation, biotechnology, environmental issues, ecosystems and primary health care.

#### Day: 1

#### Session Details

Dr. M. Abdul Kareem, Associate Professor and Course Coordinator gave an overview on the three days program, Ms. Usha Ravi, Joint Registrar (Academics) welcomed and briefed participants on different Academic program of TDU.

#### Session: 1: Biological Classification

Dr. Harish R. Bhatt, Scientist, Energy Wetland and Research Group, CES, IISc, Bangalore, explained in detail the objective, types (Artificial, Natural and Phylogenetic) and History of biological classification with examples



#### Session: 2: Preservation of Manuscripts

Mr. Ananth, Senior Research Fellow, TDU, explained Students about how manuscripts are preserved and are converted into digital format. He also showed few Ayurvedic works which are



transformed from manuscripts to printed books along with translation of the texts from Sanskrit to English. They had a chance to see the software which has repository of 5000 digitized medical manuscripts.

### **Session: 3: Photosynthesis and Respiration in Higher Plants**

Dr. S. P. Balasubramaniam, Assistant Professor, TDU and Mr. Deepak, Research Fellow, TDU emphasized on Photosynthesis in Higher Plants by conducting simple experiment to demonstrate the release of oxygen during the process. Mr. Deepak also gave a general account of laboratory equipment routinely used, explained students about the Polymerase Chain Reaction(PCR), steps involved and it's general applications. Respiration in flowering plants was demonstrated by the release of carbon dioxide during the process, and also the use of invertebrate models in research with emphasis on Drosophila, it's life cycle, and students were allowed to observe the external morphology of male and female flies under a stereo microscope.



### **Session: 4: Uses of Medicinal plants for Primary Health Care**

Dr. Shilpa Naveen, Senior Research Officer explained students on, how to overcome with common adolescence issues like pimple, acne, hair care with the help of home remedies. She also explained about preparation of simple herbal for common ailments like cold, cough and simple wounds, which can be prepared at home easily. She also explained the concept of Prakurthi (Kapha, Vata and Pittha).



## **Day – 2:**

### **Session: 5: GIS – Tool for Conservation**

Ms. M. SathyaSangeetha, Researcher at TDU, working on medicinal plant distribution and GIS, explained students how GIS application is useful as a tool in conservation of medicinal plants.



How important it is to understanding the species distribution and its preferences to specific altitude, rainfall and other ecological factors for species conservation. The process involves identifying the right species and collecting GPS records as the basic information for mapping. Students were given an overview on open source tools like Google Earth & QGIS which is freely available for them to explore and map for any science projects.

### **Session: 6: Anatomy and Herbarium techniques**

In the next session Dr. Noorunnissa Begum gave hands on training on plant anatomy. She demonstrated the preparation of anatomy slides by taking sections of a dicot and a monocot stem and staining technique. Students were invited to the stage to observe the specimen through the microscope and examine the xylem, phloem, epidermis, & cortex. She also played the video on Herbarium techniques and explained the importance of preparation of herbarium by showing few herbarium sheets.



### **Session: 7: Biodiversity, Threat, IUCN, Red Data Book and Conservation**

Dr. M. Abdul Kareem, Associate Professor, TDU, emphasized on the types, importance of biodiversity and threats it faces today. He also explained the different types of ecosystems and conservation methods. Ms. Anu explained the IUCN Red List category and criteria for assigning the status for the conservation concern species



### **Session: 8: Concept of Anthropocene**

Dr. Hita Unnikrishnan, Assistant Professor, TDU introduced students to the concept of Anthropocene, a new geological epoch that is characterized by massive human induced change and impact. She also introduced them to the concept of



planetary boundaries in the context of global climate change. Students were introduced to the concept of linking ecological and social boundaries for inclusive sustainable development through the doughnut model.

### **Session: 9: Ecological Successions**

Dr. Chetan, Assistant Professor, TDU conducted an activity based session to make students to understand the concept of ecological succession.



### **Session: 10: Visit to Tissue culture Lab**

Dr. B.N. Sathyanarayana, Professor of Horticulture and In charge of plant tissue culture lab at GKVK, explained the inoculation techniques of explant to incubation of culture, sub culturing and transplantation of the regenerated plant. .



### **Day: 3**

### **Session: 11**

#### **Field Visit to Savanadurga**

The nature trail programme was organised at Savanadurga forest to introduce student to dry tropical forest ecosystem and make them understand various forest elements and their ecological importance in the functioning of ecosystem as a whole. It was planned in such a way that all the activities covered during the 2 km nature walk were matched with their curriculum. At first, students were shown the vast forest spread from the vantage point to enable them differentiate thorny scrub jungle and dry deciduous forests. The information regarding different forest types present in India, their unique features and how they are different from each other was shared

with them. Students came to know the different reproduction methods in plants and how plants are protected using various conservation methods including in-situ and ex-situ techniques.

During this trail, students were informed about the plants, how to identify them, how they are named in Latin and how they are used locally for medicinal purpose. Besides, the details of research plots laid in the forest to study the impacts of implementing sustainable harvesting of medicinal plants were explained to students. They could notice the anthropogenic disturbance within the forests and interpret how it has deteriorated the ecosystem by more grazing, logging, lopping, introducing invasive and weed species, etc. There were two local resource persons, who are good in plant identification and plant use knowledge, joined the trail to teach students about the details of Savanadurga forest.

After lunch, students were taken to Medicinal Plants Conservation Area (MPCA), which is about 200 hectares of protected forests and rich in medicinal plants, to learn more about plants and their details. Around 40-50 plant species were covered during the walk along the trail inside the forest. The important plants covered were *Decalepis hamiltoni*, *Euphorbia thirukalli*, *Gymnema sylvestre*, *Limonia acidissima*, *Albizia amara*, *Vitex altissima*, *Cissus quadrangularis*, etc. In addition, students witnessed the nest aggregation of blue-banded bees (*Amegilla* sp.), which is rare to see. Students had noted down all the information provided to them and some even collected the plant specimen to study later, and also to plant them in their household. In the end, students were happy to be part of this trail, and appreciated the team, who made this trip possible for them.



## Feedback

The Workshop organized by TDU for grade XI-XII students of Jain Heritage School, was enriching as theoretical syllabus was merged with practical exposure. The subject knowledge shared by experts during the workshop has indeed broadened the horizon beyond the textbooks.

Sessions of Lab to learn up herbarium techniques, molecular biology techniques, tissue culturing and culturing rooms used for Research and developmental purpose has seeded interest in students to know more about the subject. Field trip organized by TDU to Savanadurga an introduction to folk healers, their way of extraction of medicinal herbs and indeed the aspects of biodiversity and conservational species and methods practically used by them to keep a check on

Endangered species has been wonderful exposure, which has generated scientific bend of interest beyond text book knowledge.

The organizational skill of people (Dr.Kareem, Amritha, Anu) who have conducted the workshop was well organized and was spaced well with ample amount of time left for interactive sessions of student

C.A.SPANDANA SINGH

Jain heritage school

## Follow up:

- They are planning to make more visits with other batch of students
- The students will develop short projects.

## List of Faculty

1. Dr. M. Abdul Kareem, Associate Professor and Course co-ordinator, TDU
2. Dr. Harish Bhatt, Scientist, IISC
3. Dr. B.N.Sathyanarayana, Professor of Horticulture, GKVK
4. Mr. Jagannatha Rao, Associate Professor, TDU
5. Dr. Noorunnissa Begum, Associate Professor, TDU
6. Ms. Sathya Sangeetha, Assistant Professor, TDU

7. Dr. S.P. Balasubramaniam, Assistant Professor, TDU
8. Dr. Hita Unnikrishnan, Assistant Professor, TDU
9. Ms. Nandini D., Consultant, TDU
10. Dr. Arthur Mark, Research Associate, TDU
11. Mr. Deepak, Research Fellow, TDU
12. Mr. Ananath, Research Fellow
13. Ms. Anu V., Senior Research Fellow, TDU
14. Ms. Amrita G., Research Fellow, TDU

#### List of Teachers:

1. Ms. C.S. Spandana Singh
2. Ms. Shwetha

#### List of Participants:

SI. No.	Name of the Student
1.	Nidhi Mariam
2.	Atra Aga
3.	Mohammed Shafiyullah
4.	K. Shashidhar
5.	G. Bhavan Phani
6.	Sambha Patrecha
7.	Eshwari D. Naik
8.	Geethika Paritala
9.	Vaishnavi V.
10.	Ninad