Methodologies

A detailed assessment of all tree species in the GSS College campus was undertaken in the beginning of the project by surveying the campus. The trees are distributed across 34 acre area.

Campus was divided into small regions for efficient documentation process.

Following is the list of the areas followed for the documentation process

1. Botanical Garden
2. Campus Avenue
3. Main Entrance Garden
4. Ananth Manohar Garden
5. Sports Ground
6. Hostel Surrounding
7. Office Area
8. Parking Area
9. Front Yard Of Chemistry Staff Room
10. Library -Gymkhana
11. Ranade Hall Gotage building
12. New Building-Parulekar building
13. Surroundings Of BCA Building

IDENTIFICATION OF TREES:

A standard procedure was followed to document important morphological features of all the tree species present in the campus. Following are the important factors considered for documentation process.

LIST OF PARAMETERS:

Scientific classification:
Kingdom:
Division:
Class:
Order:
Family:
Genus:
Species:
scientific Name :
Common Names:

- English :
- Hindi:
- Kannada:
- Marathi:

Description:

1. Habit and Habitat:

Methodologies

2. Morphology:
   - Leaf:
   - Inflorescence:
   - Flower:
   - Androecium:
   - Gynoecium:
   - Fruit:
   - Seeds:
3. Propagation:
4. Importance:
5. Location:

Based on the above information, tree species were classified scientifically using the G.Bentham and J.D.Hooker system of classification.

Species identification was confirmed by referring available regional field guides like … ” TREES OF PUNE” and “AVENUE TREES”,” FLOWERS OF SAHYADRI”.

Discrepancies in the identification of trees was resolved, by following systemic classification process based on the morphological characteristics. (following is an example of the process)

Example in malvaceae family- observation for

1. Monodelphous stamens with monothecous, reniform extrose anthers .
2. Presence of epicalyx.
3. Hairs on the body and mucilage in the tissue.
4. Alternate phyllotaxy and stipule leaves.
5. Multicosatte reticulate venation of the leaves.
6. Spinous pollen.
7. Axile placentation.

Confirmation of Malavaceae family is based on observing first three characters .although in some species all characters are not seen because of modification, but can be identified by considering most of the characters which are matching.

Second step towards identification is to search for similar tree species on internet (Google/reference images) by searching with their family as keyword, if any images of flower, fruit, leaf, bark or whole tree matches with that of our sample tree.

Next step is to go for its morphological characters (of particular species) and cross verify with that of our sample tree.

CLASSIFICATION OF TREES:

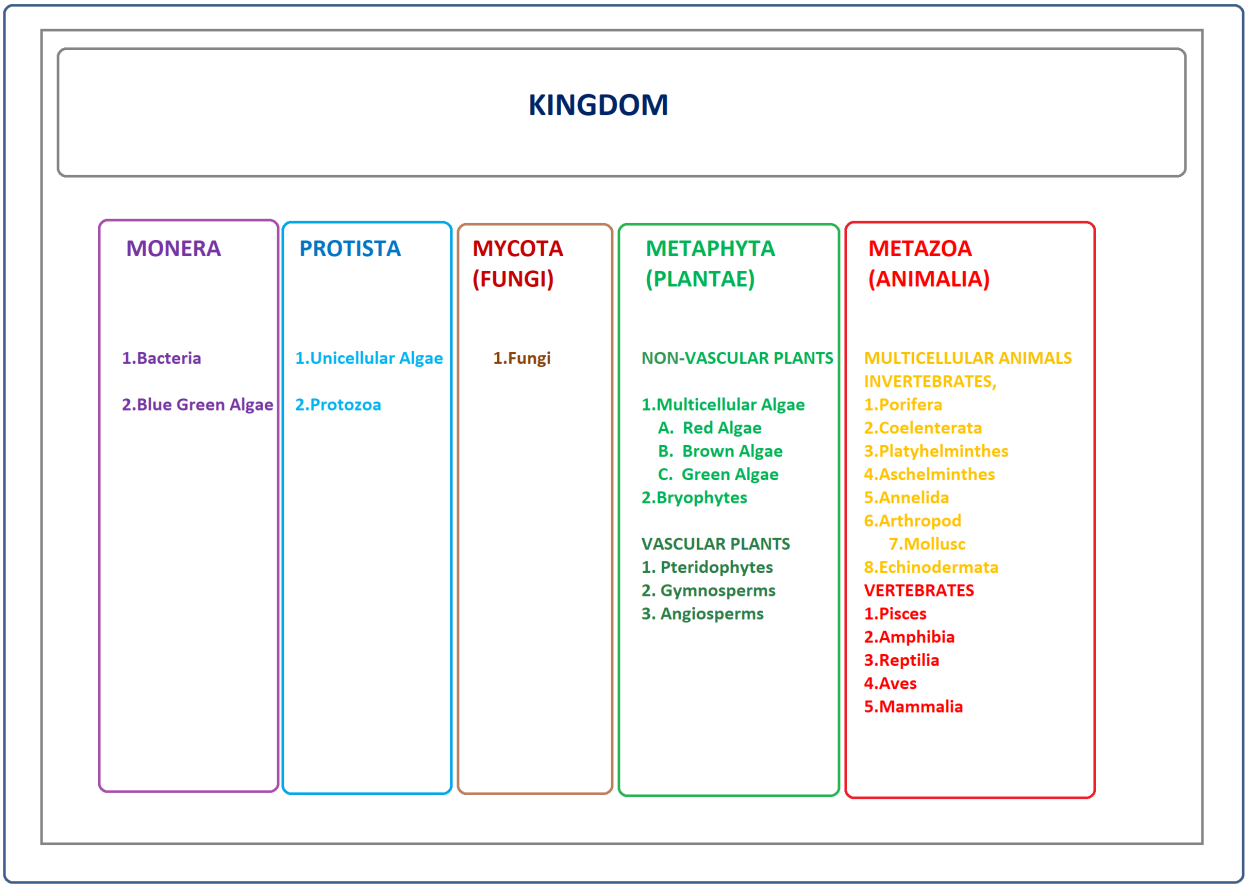
Methodologies

Following systems of classification is followed in the entire project to achieve the objectives.

"Classification is the placement of plants, animals and objects into groups and categories for a clear understanding, proper study and effective organization "

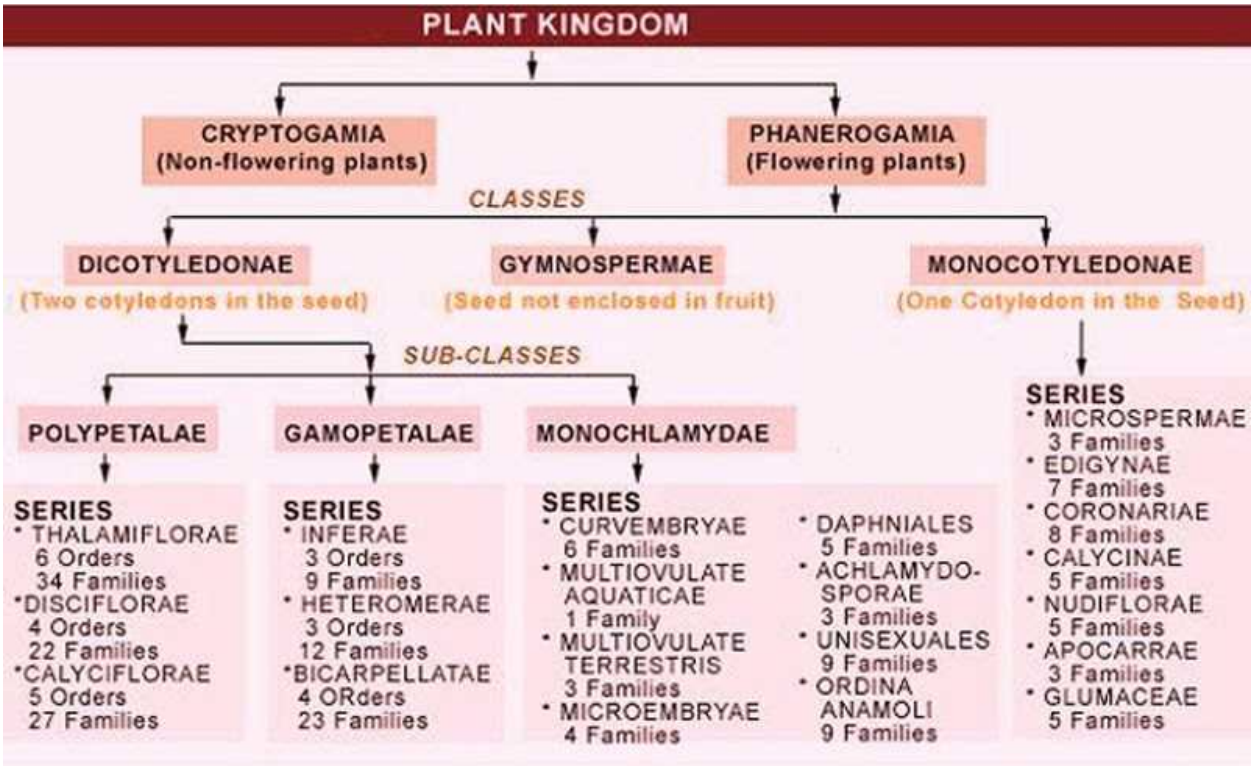
ROBERT HARDING WHITTAKER'S FIVE KINGDOM SYSTEM OF CLASSIFICATION:-

R.H.Whittaker in 1969 proposed a five kingdom system of classification of the 'World biota' *into kingdom monera, kingdom protista, kingdom mycota, kingdom plantae and kingdom animalia*.



GEORGE BENTHAM AND JOSEPH DALTON HOOKER SYSTEM OF CLASSIFICATION:-

G.Bentham and J.D.Hooker proposed a system of classification of *'seed plant'* in three volumes of 'Genera Plantarum', published in Latin during July 1862 and April 1883.



Bentham and hooker system of classification is still used and followed in several herbaria of the world. It is best system for students to identify plants in the laboratory; hence we used this system of classification, to classify the trees.

Collection of data:

The plant description was gathered by referring to various internet sites and reference books.

Images/photos: Photos captured to identify the tree are taken using 13mp and 16mp mobile phone cameras, and the images were resized to 1000x750 pixels to have uniformity.

Certain trees which are in off season for flower and fruit or the one's which are tall trees which are beyond the scope of photography or the trees which had messy background, for such photography we used Google images as source.

Methodologies

WEBSITE DESIGNING:

Entire assessment of Trees of GSS campus is available in the digital format on an open sources website repository www.treesofgss.github.io

A unique website is created for public awareness and information dissemination using an open source HTML code available online – offline with due credits. Standard code format “Geany” , following MARKDOWN language.

WebPages are responsive and user friendly.

QUICK RESPONSE CODES:

For quick access and to have ease of use, a QR code was generated for web link of each tree species present in the college campus.

Following is the example of QR code.

These unique QR codes are attached firmly to the trunk bark of all the important trees present in the campus at breast height (approx. 1.5 meters above ground). These printed QR codes are laminated to have high durability around the year.

A poster is displayed the central location in the campus to achieve maximum outreach in all students utilizing the college campus.

An open session is planned for the management members, faculties, and students of all institution in the campus to make them aware about this open tree identification / popularization technique implemented across campus.

All the code is open source and is available online with open license.