

# CREATING E-CONTENT USING DELTA SOFTWARE FOR THE STUDENTS OF PLANT TAXONOMY.

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## ABSTRACT

The author has made an approach to develop e-content for Palm trees of Anand district of Gujarat as a case study in this paper. The objective is to generate easy identification of Palm trees using DELTA (DEscription Language for TAxonomy) software. The DELTA system is a flexible data-coding format for taxonomic descriptions, and an associated set of programs for producing and typesetting natural-language descriptions and keys, for interactive identification and information retrieval [3]. Using such computational software technology, complex identification process becomes more users friendly.

In this paper author has discussed various steps to generate dataset using DELTA. The following characters have been used for intkey: Family, Palm or other, Height, Branched or un-branched, Thorny/Spiny/Prickly or not, Bark surface, Bark color, Leaf type, Leaf size, Flowers in solitary or in inflorescence, Flower color, Fruit type. Significant output of the work is that the student can identify the Palm trees of Anand district using the intkey without any complex taxonomical loop [6].

**Key words:** DELTA, palm trees, plant identification, Gujarat

## 1. INTRODUCTION

Educational systems around the world are under increasing pressure to use the new information and communication technologies (ICTs) to teach students the knowledge and skills, they need in the 21st century. To develop a knowledge society, integrating ICT at all levels of education is essential. However, even today one of the greatest challenges of integrating ICT in education is lack of quality e-Content[7]. We need to create a digital learning culture and environment. e-Learning serves this purpose in its various forms such as web-based learning, computer-based learning, mobile-based learning, virtual classrooms, and digital collaboration[7].

In the Information Age the model of learning could be thought of as follows: Information + Skills + Purpose = Capability [5] E-learning is not just e-training. E-learning is the overarching umbrella that encompasses education, information, communication, training, knowledge management, and performance management. It is the web-enabled system that makes information and knowledge accessible to those who need it, when they need it anytime, anywhere. [5]

Working with e-content needs more than ICT skills. The development of ICT in education sector has been a series of journeys to the next horizon, only to find that when we get there and look over it, there is still more to do. Current concerns over pupils cutting and pasting information as a substitute for learning are an indicator that we need to do more work on this. For the answer to this particular difficulty we can turn to the rules of research. One rule for the pupils - *identify your sources and do not claim them as your own work*. And one rule for the teacher - *don't mark sources!* Only mark the new knowledge demonstrated by the pupil in making use of the source information. [4]

To address the above issues the author has tried to developed e-content which is step ahead from traditional botanical methodology. It joins hands with the computational software technology to make it user friendly database. Significance of this work is that the process through traditional identification of a species using technical Flora is somewhat more complicated even for any botanist and many times all the characters are not available in specimen

make identification more difficult. On the other hand the software generated database is based on many variables. This makes easy identification process of any unknown tree specimen even having few known and available characters at the time of identification. [6]

## 2. STUDY AREA

The Anand District is situated between 22° 6' to 22° 43' north latitude and 72° 2' to 73° 12' east longitude. Anand District is surrounded by Vadodara District in the east, Kheda District in the north and Ahmedabad District in the west. The Gulf of Cambay is forming its Southern border. Two major rivers of Gujarat namely, Sabarmati and Mahisagar are flowing on West and East border of the District respectively.

## 3. MATERIALS AND METHODS

### 3.1 Downloading Delta Intkey: [3]

As of 2013, the DELTA Intkey program (and others) have been rewritten in Java. For instructions on how to install DELTA Intkey, please visit <http://florabase.dec.wa.gov.au/help/keys/>.

### 3.2 Creating a Dataset for e-content:

Starting a new dataset: To start the DELTA Editor, click the Windows 'Start' button, and in the menus that are displayed, select 'Programs > Delta > Delta Editor'.

The program window is initially empty, except for a menu bar at the top. To start a new dataset, select 'File > New Dataset'. The 'Attribute Edit (Trees)' window is displayed. (Fig-1)



Fig-1. Screen shot: Document1-Attribute Edit (Trees)

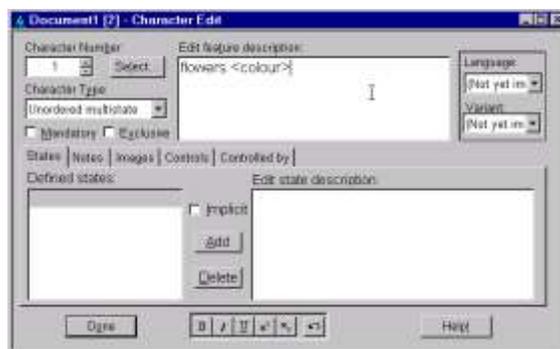
### 3.3 Entering characters:

You can enter character descriptions either by choosing 'View > Character editor' from the menu, or by right-clicking the mouse in the upper right pane of the data window and selecting 'Append new character to end of list' from the menu that will appear. The 'Character Edit' dialog is displayed. (Fig-2)



Fig-2. Screen shot: Character Edit

As an example, we will enter two characters - for flower colour and leaf length. In the 'Character Type' box, click on and select 'Unordered multistate'. In the 'Edit feature description' box, enter 'flowers <colour>'. Enter the characters based on field notes and cross matched with the references[1] [2] [8]. The window now looks like this. (Fig-3)



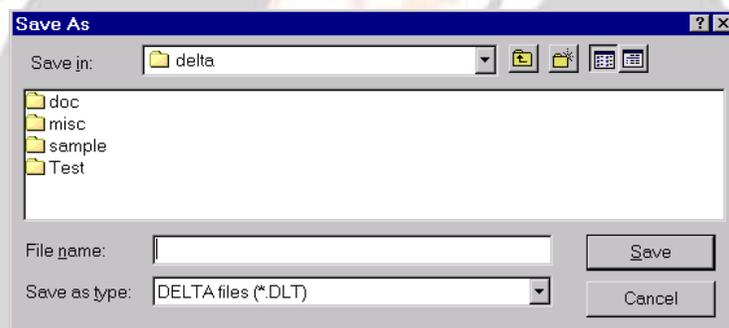
**Fig-3.** Screen shot: Character Edit

### 3.4 Saving the dataset:

Select 'File > Save Dataset'. The following window is displayed. (Fig-4)

To continue the work follows the steps such as

- Entering taxon names
- Recording simple attributes of taxa
- Exporting to DELTA text files
- Producing output via action sets
- Importing DELTA Text Files



**Fig-4.** Screen shot: Save As

### 3.5 Saving or Exporting a Dataset:

A dataset is normally saved in a binary format. Unlike the 'old' DELTA files, all information about items, characters, dependencies, directives, and so on is saved in a single binary file. This file should normally be given the extension '.dlt'. When you make changes during a session, those changes are not made to the 'dlt' file until you explicitly save them. This is done via the 'File > Save' or 'File > Save As' options of the main menu. If you have made changes but not saved them, the program will ask whether you want to save or discard your changes when you close the document (or exit the program).

### 3.6 Views of the Data:

One can run Intkey directly, without using the DELTA Editor. Click the Windows 'Start' button, and in the menus that are displayed, select 'Programs > Delta > Intkey'. A dialog for selecting a dataset is displayed. If you previously added the dataset to the Intkey index, you can now select it in the 'Select by title' box. Otherwise, use the 'Select by name of initialization file' box; click the 'Browse' button and find the file 'intkey.ink' in the 'Test' folder.

## 4. RESULT AND DISCUSSION

The list of tree species which are covered during this study are given in table 1 and its DELTA treatment resulted in to the formation of intkey for these tree species are shown as screen shot of actual intkey output of the work done [6] (Fig. 5). One may get its own query for getting any combinations of the characters using intkey programme after installing to computer. Such as one may wants to know how many trees with thorny structures or simple leaves, or palm like trees, or trees with yellow flower etc.

Scientific Name of Palm	English Name	Vernacular Name
1. <i>Areca catechu</i> L.	Betal Nut Palm	Sopari
2. <i>Borassus flabellifer</i> L.	Lontar Palm	Tad
3. <i>Caryota urens</i> L.	Jaggery Palm	Shiv Jatta
4. <i>Cocos nucifera</i> L.	Coconut Palm	Nariyeli
5. <i>Latania loddigesii</i> Mart.	Blue Latan Palm	---
6. <i>Livistonea chinensis</i> R. Br.	Chinese Fan Palm	---
7. <i>Phoenix sylvestris</i> (L.) Roxb.	Silver Date Palm	Khajuri
8. <i>Pritchardia pacifica</i> Seem. & H.Wendl.	Fiji Fan Palm	---
9. <i>Roystonea regia</i> (H. B. K.) O. F. Cooke	Cuban Royal Palm	Bottle palm

**Table-1.** List of Plam Tree species used for e-content



**Fig-5.** Intkey of the identified plant species

## 5. CONCLUSIONS

The paper discussed about skillful utilization of DELTA, for creating learning resources which is useful for local students. Teachers may incorporate more plants of their surroundings so that efficacy of such data will be expanded. Inserting video clips and photographs of plant parts make presentation more user friendly, interesting and live for the students.

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