

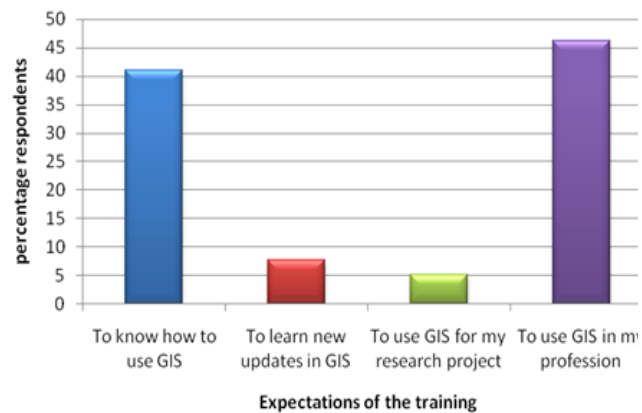


**PHASE 1_2nd SESSION REPORT ARCGIS TRAINING AT KU GIS LABS:
INTRODUCTION TO GIS: EXPLORING ARCCATALOG AND ARCGIS TOOLS
2nd SESSION REPORT: 18th - 20th JUNE 2014
SCHOOL OF ENVIRONMENTAL STUDIES COMPUTER LAB (EF3)**

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Introduction: Exploring ArcGIS Tools (ArcCatalog and ArcMap)

The 2nd Session of introduction to ArcGIS attracted 68 student participants which far exceeded the capacity of the training lab of 30 computers. This necessitated the admission of the students on first come first served basis according to the date of submission of application. The training started on the 18th to 20th of June 2014 and on time as scheduled. Registered student had superceded the number that could be handled in one session. This necessitated the confiners to use the application list to accommodate 30 students out of the 68 listed on the first come first served basis. Student who had come but could not be accommodated were requested to join the immediate next class in the following week on 30th to 2nd July 2014 at Geography Lab on. This was to avoid the second part of the week as 4th July was a graduation day.



A section of student participants during the second training session *Expectations of the training by the participants*

Day 1

The 30 students were introduced to the objective of the training. The participants consisted of 93% Kenyatta University students and 7% staff members from CERNVEC-ICIPE who are partnering in supporting the training. The KU ArcGIS Interns training were seconded from the



CERNVEC project. Pre-evaluation forms were given to the participant to fill with an aim to assess:

1. How they came to know about the training. 15% of the participant responded through networking, 60% through website and 8% through emails
2. Which Esri product they have used. Majority of the respondents (89%) reported having not used any of the GIS software.
3. What they would like to learn most from a list of choices and what is their expectations at the end of the training. The majority of participants (46%) came to the training so that they could use the knowledge gained implement their research projects. 41% wanted to know how to use ArcGIS. There is therefore need to train and equip the students with geospatial tools to enable them implement their projects.

In terms of representation, the majority of the participants (64%) were from the Environment Planning and Management Department. However several other departments participated (Figure 1). Majority of the participants (71%) were male students with female making up 29%.

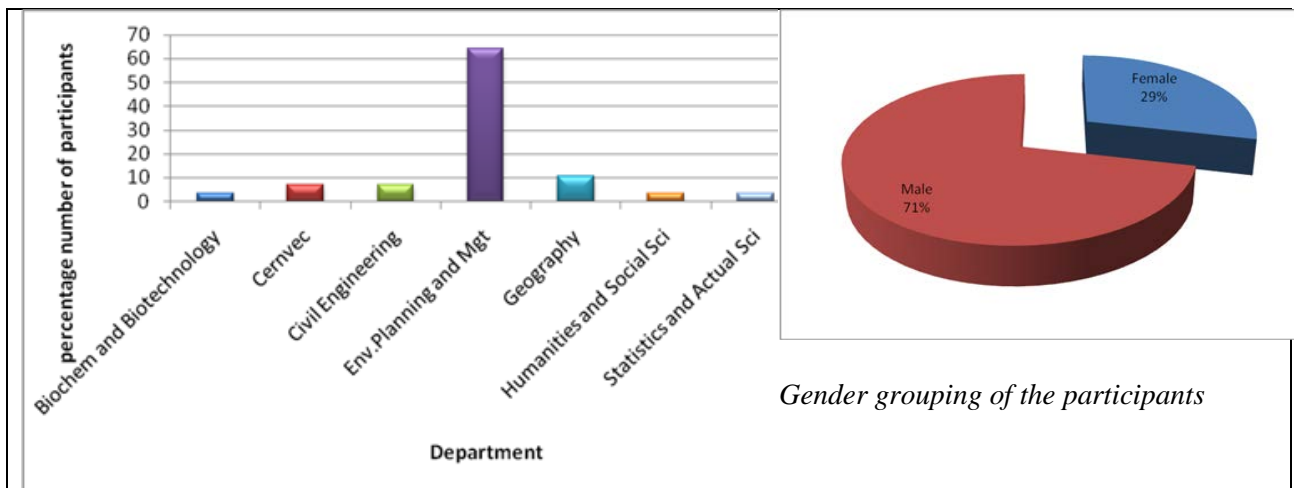


Figure 1: Participating Department and their gender distribution

Objectives

The main objective of the training was to teach the student how to use ArcGIS as a tool for GIS. The other objectives aimed at introducing and explain to the participant:



- i. What GIS is
- ii. What ArcCatalog is and how it is used to explore data
- iii. What ArcGIS is and how the tool functions
- iv. What ArcGIS can do

This was achieved through an overview of the definition of GIS, how it is related with the World Objects and the Environment, that GIS is not for specific type of people but for all professionals. A thorough introduction of what GIS is was made. ArcGIS introduction was aimed at bring out to the students the difference between GIS and ArcGIS. Participant were therefore prepared to what approach will be taken to make them appreciate ArcGIS as a tool for GIS and demystify the belief that ArcGIS is a complicated tool to use.

Low uptake of the use of ArcGIS software has necessitated the confiners of the training to come up with the best approach to teach the participant how to start off with ArcGIS on their own and in a way that can be followed by people who never had any training on ArcGIS software.

After the concept of GIS was introduced to the participant, the teaching approach that was adopted for the ArcGIS software was to train using slides that were prepared with data pre-copied for the use by the participants. The copied Student folder contained two folders as shown in Figure 2. Each folder contained different datasets that are aimed at training the student to handle data of all types.

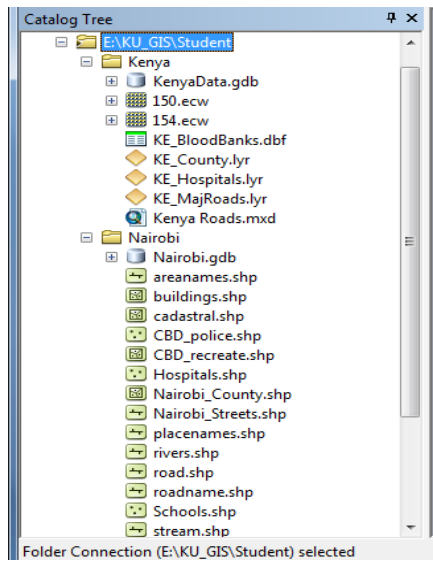


Figure 2: Student Folder Contents

The flow of the training combined the doing and the explanation in a step by step approach. This approach was adopted because in most of the cases when a new technology is introduced to the users, the biggest challenge is usually how to start using the software and how to navigate using the available manuals. Manuals that are general to the end users sometimes do not consider the very basic concern of people who are not exposed to the technology. This can put off those who are not technologically oriented and the challenge being common to all developing countries.

In the first day of training, the basic explanations of Esri Arcline of tools: ArcCatalog, ArcMap, ArcGlobe, ArcScene, ArcTool boxes and ArcReader were explained to the participant. ArcCatalog was taught from START MENU > PROGRAM FILES > ARCGIS path to show the participant where the software is installed in their computers. This basic approach gave the participants exposure of the path to follow suppose there are no shortcuts created or they use computers different from their own. Extensive explanation of the ArcCatalog was given and participant used their computers to open the ArcCatalog and connect to the Student folder containing the pre-copied data. Figure 2 above shows a folder connection session in a Catalog Tree captured during the training. Students were excited to be able to follow the trainer's step by step and the interest could be seen from the keen and high concentration during the training session.



The next step was to introduce ArcMap using the same approach. The participants were shown the similarities and differences between ArcCatalog and ArcMap as the main working environment. This culminated in a training exercise to start ArcMap on the participants' computers, to locate the ArcTool box and close the software. This ascertained that the student can be able to start the ArcMap program on any computer even when no shortcuts are created on the desktops. Figure 3 and 4 show the actions followed in the training sessions.

Geoprocessing tools were demonstrated in a slide. This was a preparation of the exercise that drew a lot of interest to the students. Figure 3 shows the Modelbuilder slide.

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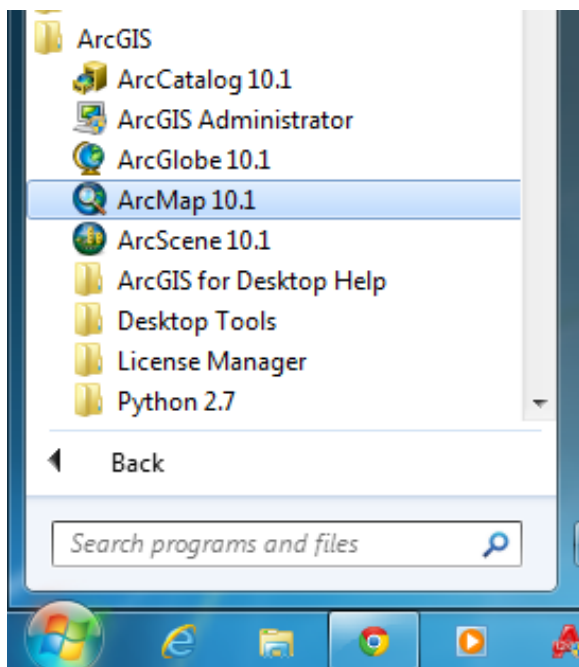


Figure 3: Starting ArcMap 10.1 from the Start.

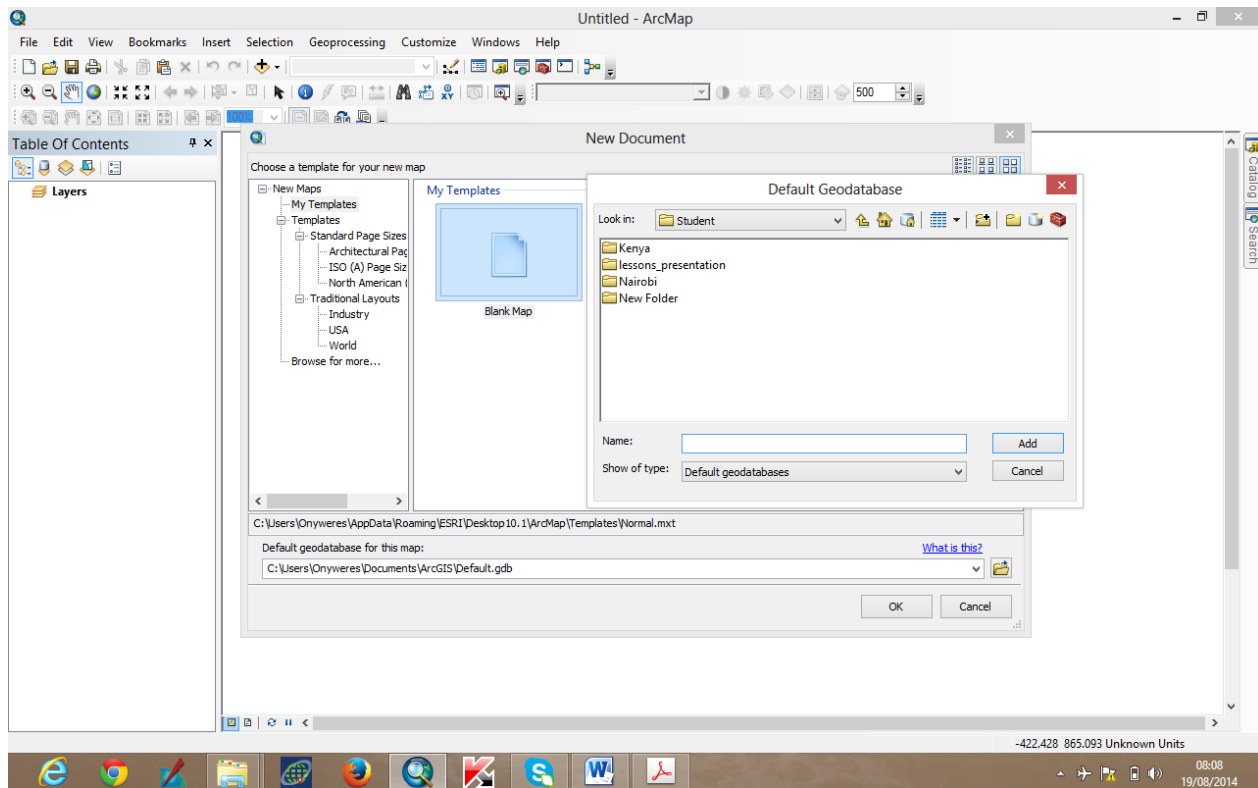


Figure 4: Connecting and navigating to the working STUDENT folder

Day 2

Day two was a link up of the first day but geared to have more exercise that opened a lot of explanations to the type of data, the ArcTool box, the data conversion and data projection.

Geoprocessing exercise where creation of a new feature class was done started off the exercise. Due to the demand of more practical from the first Staff training, several Geoprocessing tools like Modelbuilder (Figure 3), Extract feature were explored further using data to actualize the exercise.

A map preparation and presentation closed the afternoon. Participants were taken through the process as they do it on their computers to come up with a map. A map of Kenya from the Students folder was used for this exercise. Students were shown how to add data from the connected folder into a blank data view in ArcMap. Projection of the County Layer was used to



project the data from WGS84 Geographic coordinates to UTM Arc 1960 projected system. Attribute table was explained in details and used to produce a report.

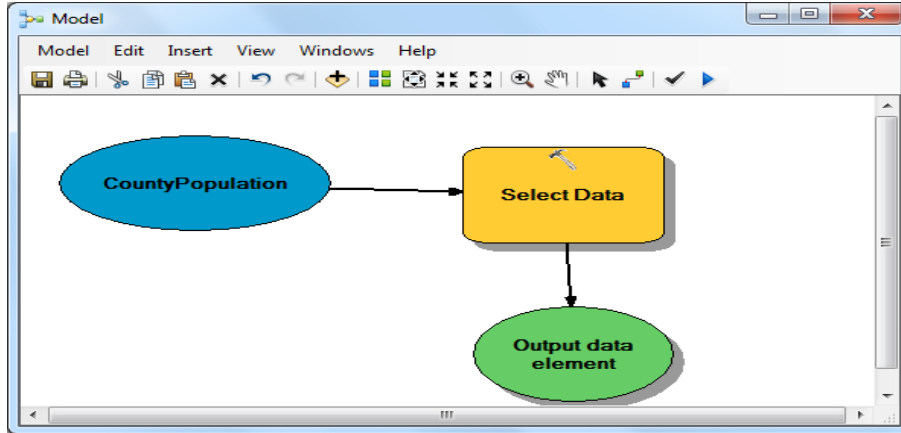


Figure 1: Modelbuilder window.

Day 3

Day three started off with a summary of what was done in day two to bring the participant up to speed with what they were taught. Data Layout view was explained as participant prepared their map and the insertion of map objects (North arrow, Scale bar, Scale, legend, etc) made the whole training enjoyable. Each participant prepared his/her map of Kenya and inserted ownership text and exported the map to a pdf format. This proved to the participants that indeed they can use the software to produce their own map which can communicate to the intended map user.



Training Sessions



Using the County population layer stored in the Kenyadata Geodatabase, students were challenged to do a map on their own adding different layers e.g. road, lakes, protected areas and changing the colors and symbologies. Different from the previous staff training session, it was noticed that students had a lot of interest in going it all the way from start to finish on their own and redo the parts they didn't get correct.

Data management tool box was explored further and feature analysis tool box using extract tool was used to extract a county of their choice from the counties data set. A map was prepared for the respective county by each student.

This exercise was used to give the student a hand on training in the actual extraction of a feature from feature data set.

This allowed the training demonstrate the power of ArcMap in data analysis and presentation. Participants were shown how to insert pictures into their maps to communicate more using one set of a map.

The afternoon session closed the three day training with introduction to Remote Sensed data. Satellite imageries pre-copied to the Student folder in the computers were used to explain how different bands record different set of data according to reflecting wavelength. The students were taken through the exercise of adding each band and explained what is contained in it. This was done by asking them what they could see reflected more. Knowledge of the data by professor Onywere guided the class for three solid hours to understand different band reflectance capability. Features reflected in the bands were identified e.g. the Aberdare forest, the Limuru tea zone, the Kitengela-Athi plains, the Ndakaini dam etc. A combination of all the bands in a stack layer (Figure 5) was used to change the bands color to mimic the natural colors as identified by the class.

This was aimed at exposing the student to Remote Sensing as a set of data source for GIS. Students appreciated the power in data acquired by satellite as they could see on their screens areas they are familiar with. An exploration of a 0.5 m high resolution image from Quick Bird,



2013 closed the training. Participants appreciated the differences between high and medium resolution images and also the difference coverage in term of Area.

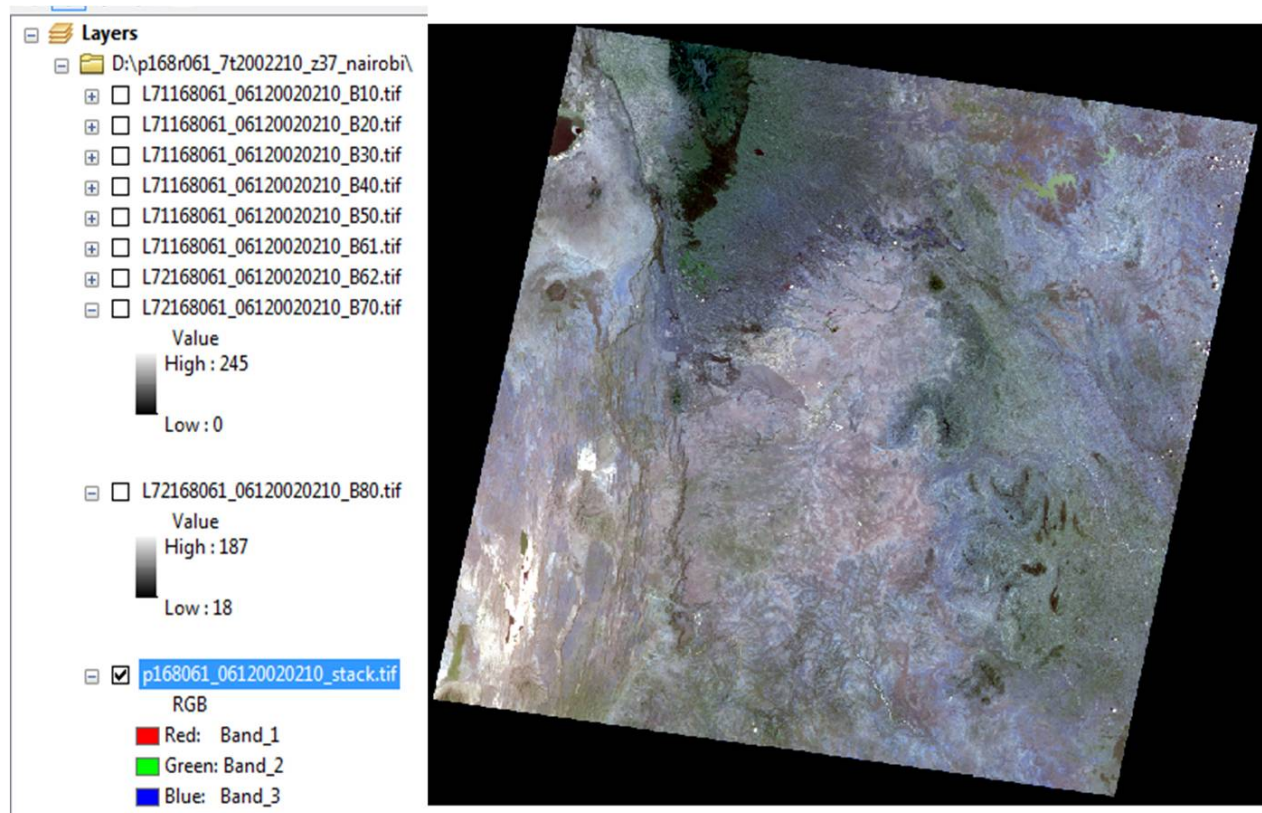


Figure 5: Remote Sensed Data

Video clips of all the sensing training sessions were captured and are available on the website together with the photos taken on the other training sessions.

Attendance of students from day one was consistent, with the 27 student attending all the sessions. Five students however could not make for the afternoon session due to personal commitments.

Post-evaluation forms were filled and participants encouraged to continuing using the Lab to practice what they were taught until they come back for the advance training in September. The aim of the Post evaluation was to gauge the overall rating of the training:



1. How the student can be able to apply what they were taught. Over 48% of the respondent indicated they could apply all what was trained.
2. Would you recommend this training to others? 100% yes
 - Did the course meet your expectations? 100% yes
 - The course material was 100% clearly presented
 - Will you attend phase II of the training? 100% yes
3. Item liked most during the training. Practical based scored 67 %.



Figure 6: Item liked most about the training

There was an interactive session at the close of the training where student requested GIS to be integrated in their normal curriculum and more labs to be set up in their respective schools.