زانکۆی پۆلیتەکنیکی هەولێر
ERBIL POLYTECHNIC UNIVERSITY

Kurdistan Region Government
Ministry of Higher Education
and Scientific Research
Erbil Polytechnic University

وەزارەتی خوێندنی باڵا و توێژینەوەی زانستی

Mapping

Prepared by: Dr.Ashna Zada and mamosta Hawkar

Department: Information Systems Engineering

Mapping

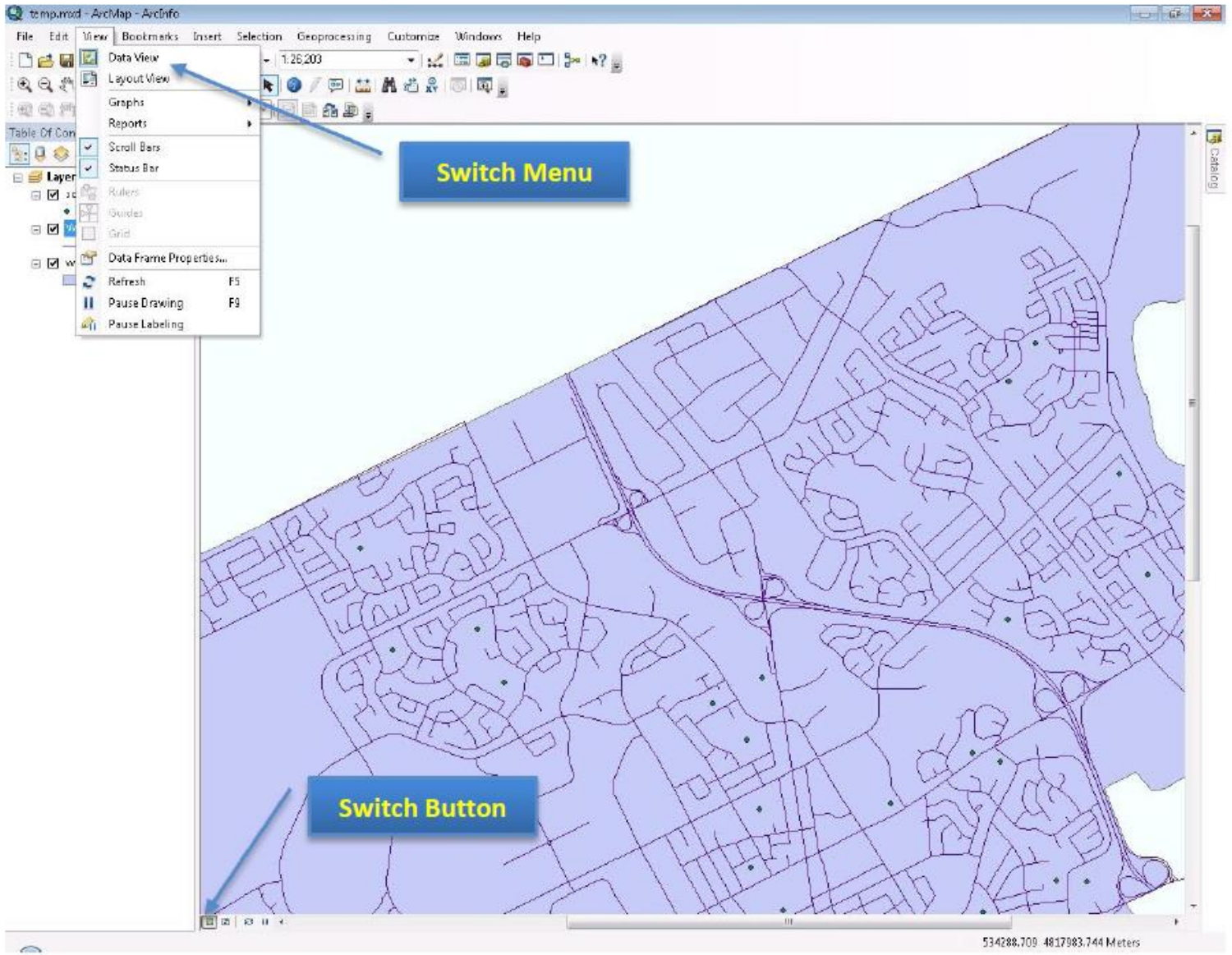
Distinction between Geospatial Data and Map Components

This section is more concept- oriented. To simplify mapping process, ArcGIS divides mapping into two categories: data view, which focuses on data manipulation and representation (symbology), and layout view, which provides functionality of adding legend, scale bar, north arrow, etc.

- **All data representations should be set in data view**. Key operations include the change of layer order, symbology customization, layer transparency, labeling, and annotations. Most of data representations can be saved in a layer file (***.lyr**), because they are more data associated.

- **Layout view shows the virtual map you will get**. Layout view works in a What You See Is What You Got. The output will be the same as what you see in the layout view, where you can add map elements and change the paper and output settings. Map setting will be save in a ***.mxd** file.

Switch between Data View and Layout View



Key Options of Geospatial Data Representations

Main options of changing geospatial data representations are layer order, layer transparency, symbology, label, and annotation. Apart from the first one (layer order) and last one (annotations), all the rest locate in the pop-up window (as shown in the screenshot below) when you right-click the layer you want to modify and select property. They are under either the symbology or labels tab.

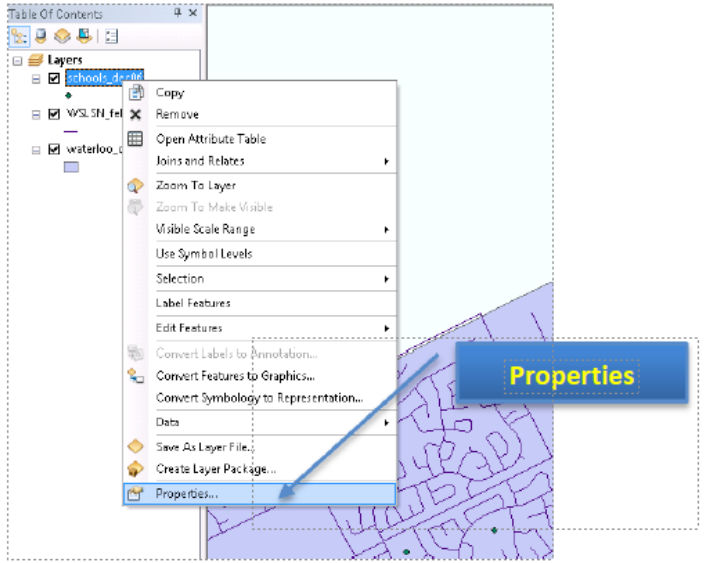
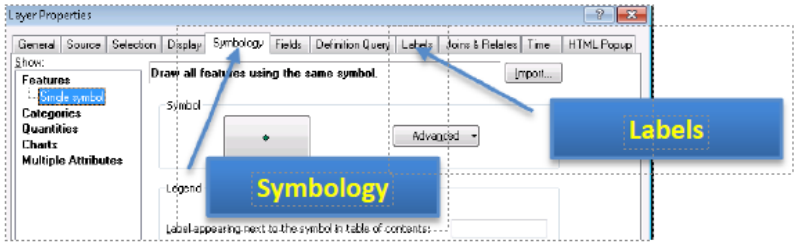


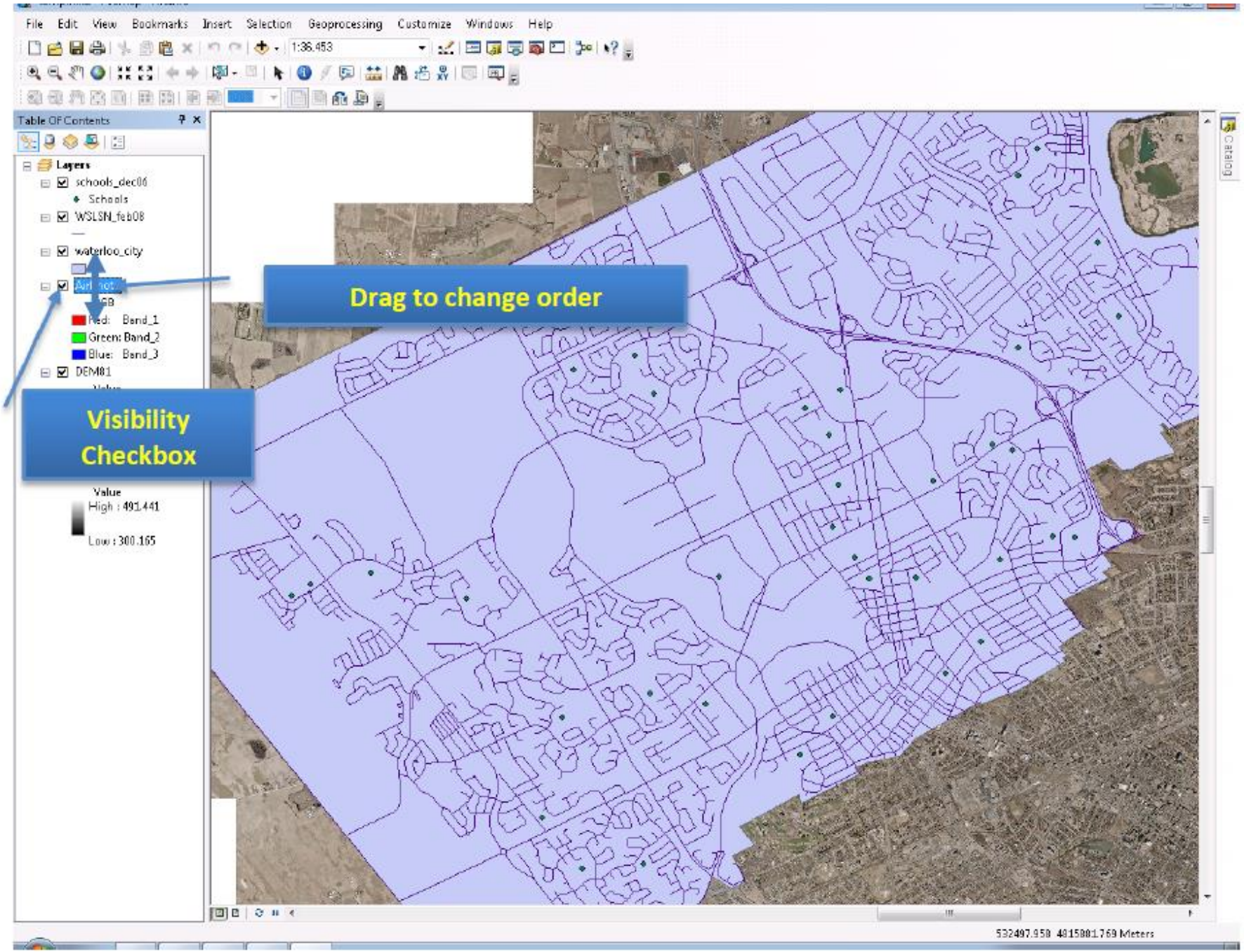
Figure 9. Pop-up Window of a Layer's Property



Layer Order and Transparency

ArcMap displays geospatial data according to the order in the table of contents: the bottom layer will be drawn on the screen first and covered by upper layer. Hence, the layer on the top in the table of content will be displayed as the top layer in the map. By default, ArcMap shows points, lines, polygons, and raster data (images, DEMs, etc) from the top to the bottom respectively so that the visibility is maximized. If two layers belong to the same feature class, i.e., point features, the newly added one will be on top of the older one.

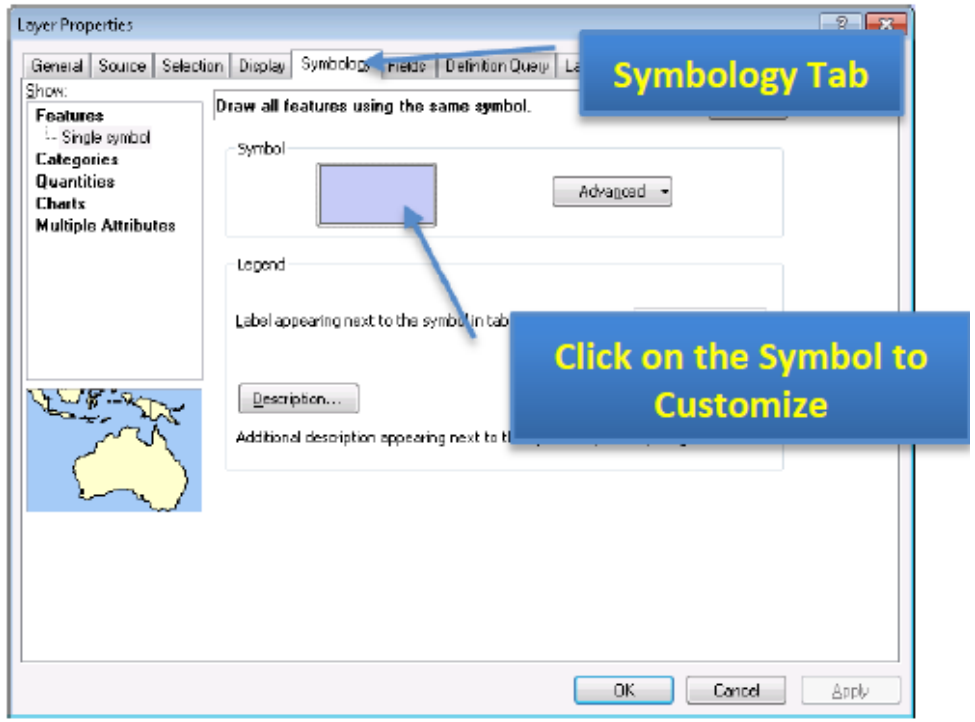
When there are multiple raster files, layer visibility and order are important. You can change layer visibility by switching the checkboxes left to the layer name in table of contents the display order can be changed by simply dragging the layer toward or away from the top.

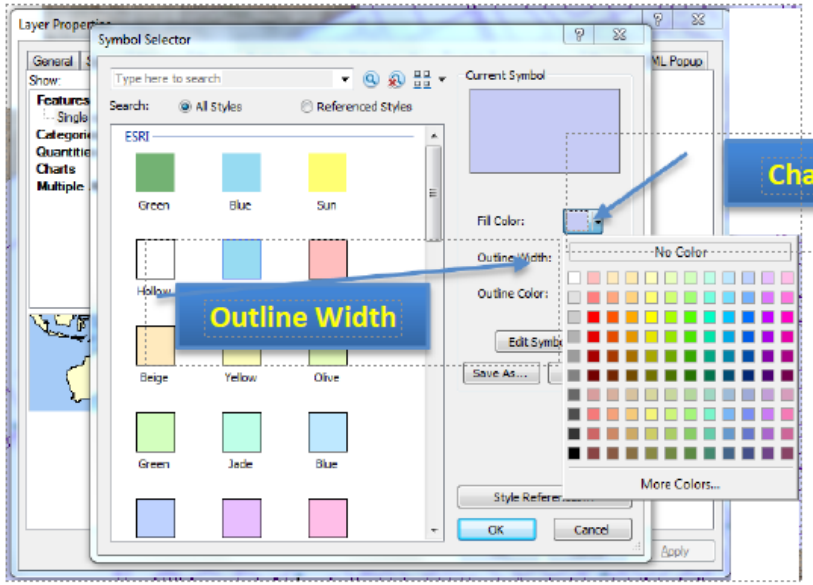

File Edit View Bookmarks Insert Selection Geoprocessing Customize Windows Help
1:36,453
Table Of Contents
Layers
schools_dec06
Schools
WSLSN_feb08
waterloo_city
Red: Band_1
Green: Band_2
Blue: Band_3
DEM81
Value
High : 491.441
Low : 300.165
Drag to change order
Visibility Checkbox
Catalog
532497.950 4815801.769 Meters

Layer Visibility

When a polygon layer, such as your area's interest, is added over an image (Google Earth), the content on the image under the polygon is invisible. But users often like to only show the boundary and keep the image displayed. In this case, layer transparency and hollow symbology can help.

To do so, please right-click on the polygon layer and select Properties first. Then please switch to the tab Symbology and click on the symbol itself. When the pop-up window shows, you can change the Fill Color to No Color and increase the Outline Width (0.4 point is somewhat narrow).





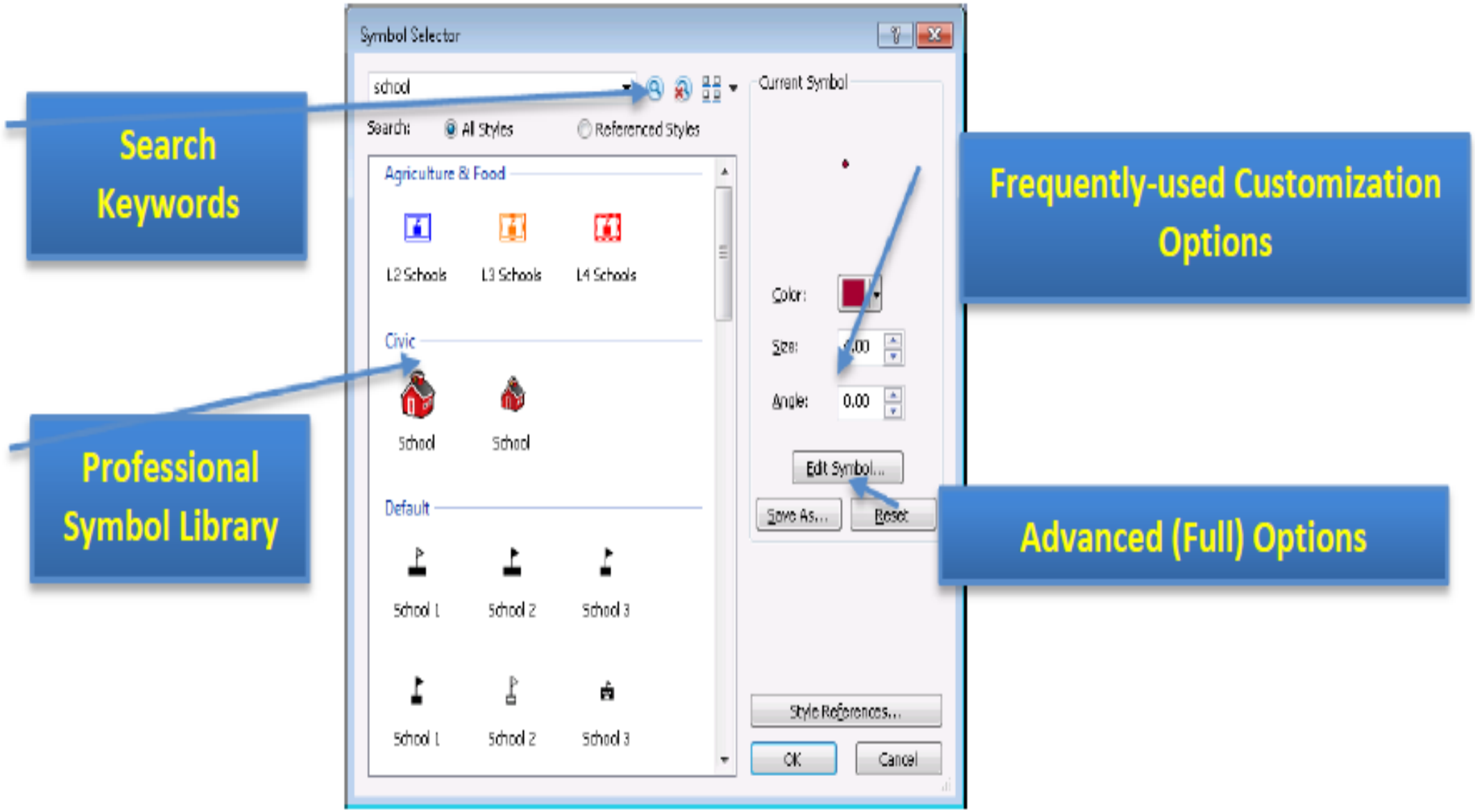
Make Hallow Polygons

Symbology and Label

Symbology

Symbology is critical in making maps, which are classified into four categories in ArcMap. Due to its complexity, these four categories and We will only focus on symbol customization and classification symbols, which are mostly used.

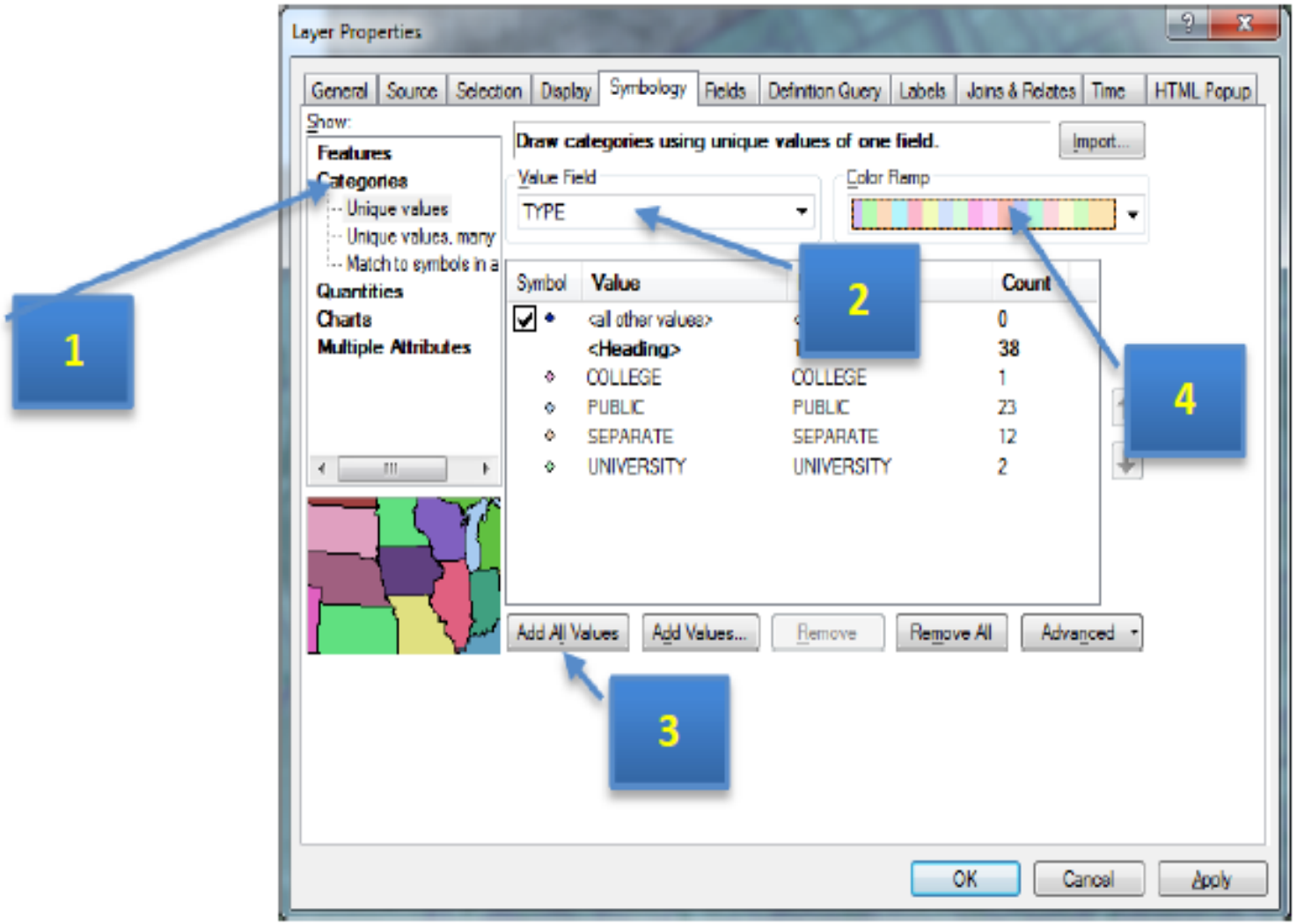
1. Right-click the layer and select Properties. Then switch to the Symboloy tab and click on the Symbol .
2. The pop-up window contains three main parts. In most cases, you will simply choose a symbol from the symbol library (other than making hollow polygons mentioned in slide four.
3. Depending on the type of the feature (point, line, or polygon), the options change accordingly.
4. You can type in school and click the search icon (magnifier) to search all symbols related to school representations.


Search Keywords
Professional Symbol Library
Frequently-used Customization Options
Advanced (Full) Options
Symbol Selector
school
Search:
All Styles
Referenced Styles
Agriculture & Food
L2 Schools
L3 Schools
L4 Schools
Civic
School
School
Default
School 1
School 2
School 3
School 1
School 2
School 3
Current Symbol
Color:
Size:
Angle:
0.00
Edit Symbol...
Save As...
Reset
Style References...
OK
Cancel

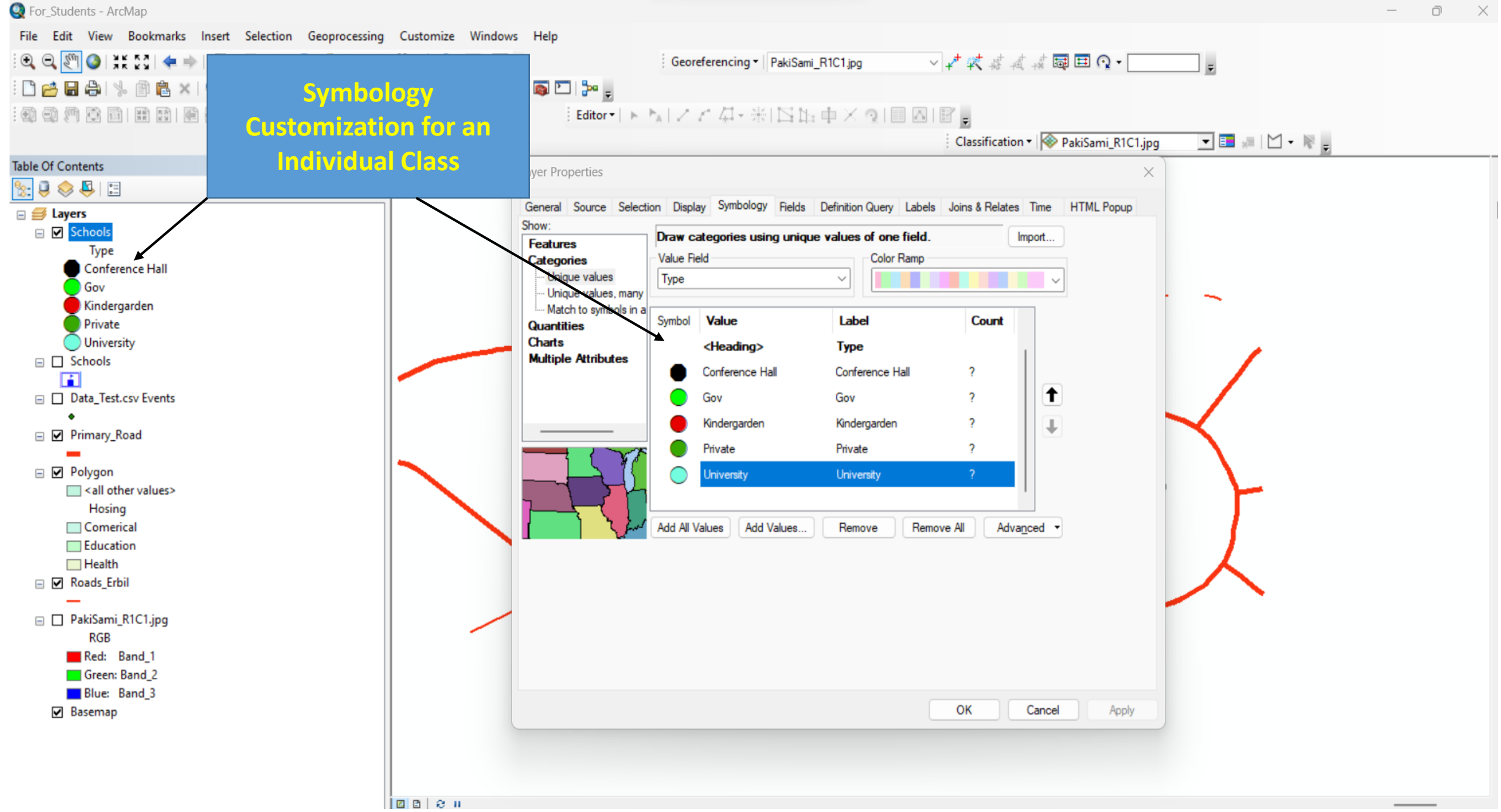
Note: There are cases when you want to differentiate features in a layer based on some attribute. For instance, I want to know which schools are public, separate, or for higher education in the schools layer, which is Different types will be marked in colors.

To do so, we should right-click on the school layer, select properties, and go to the symbology tab, which is the same as shown in Slide nine. But, instead of by-default Features option, we should click and select the categories option (Slide nine). The steps to follow are also shown in slide eleven:

1. Click on the Categories first and make sure the “Unique Value” is chosen;
2. Draw down the dropbox of Value Field, and select TYPE as the classification attribute;
3. Click on the Add All Values button to add all distinct values under the TYPE attribute into consideration;
4. (Optional) Click on the Color Ramp dropbox and select your favourite color schema.



The result is shown in Figure tewleve. Please note that you can still customize individual symbol for each category (size, shape, etc) by double clicking corresponding class on either the left pane or the line in symbology window. The pop-up window is very similar to the window slide seven. Please choose a **School or Hospital** for each class as an example. Don't worry about the color, ArcMap can manage it.


Symbology Customization for an Individual Class
For_Students - ArcMap
File Edit View Bookmarks Insert Selection Geoprocessing Customize Windows Help
Georeferencing PakiSami_R1C1.jpg
Editor
Classification PakiSami_R1C1.jpg
Table Of Contents
Layers
Schools
Type
Conference Hall
Gov
Kindergarden
Private
University
Schools
Data_Test.csv Events
Primary_Road
Polygon
<all other values>
Hosing
Comerical
Education
Health
Roads_Erbil
PakiSami_R1C1.jpg
RGB
Red: Band_1
Green: Band_2
Blue: Band_3
Basemap
yer Properties
General Source Selection Display Symbology Fields Definition Query Labels Joins & Relates Time HTML Popup
Show:
Features
Categories
Unique values
Unique values, many
Match to symbols in a
Quantities
Charts
Multiple Attributes
Draw categories using unique values of one field.
Import...
Value Field
Type
Color Ramp
Symbol Value Label Count
<Heading> Type
Conference Hall Conference Hall ?
Gov Gov ?
Kindergarden Kindergarden ?
Private Private ?
University University ?
Add All Values
Add Values...
Remove
Remove All
Advanced
OK
Cancel
Apply