Presenters: Steve Obenhaus, Tom Baker

Agenda Link

- Sign up for free ArcGIS account at this link

ArcGIS ORGANIZATION Account

- Organization account provided for free from KS Dept of Ed.
  - Email tbaker@ku.edu for access info.
- Can manage 500 users
- Renews yearly
- Credit Counter (2500/yr) - Every time you use a map and/or run/collect data it costs a "credit" so you theoretically could use up your membership in 1 year, but that would take a LOT of activity to actually burn through your credits.

Project Ideas

- Interpretive Talks - Create trail or park maps (continuous data)
- Cell Coverage - Students can record strength of their cell signal and create maps of their coverage (such as within the school?)
- Street Light Inventory - students can record where street lights are most common on a map
- Air Quality Monitor - can use pH, indicators of SO2 indicators, or AirQuality Egg (can create a heat map of levels)
- Sound Mapping - Download a sound app and record the decibels of ambient noise (cell phones won't go > 120 db's) and they could map it around the school, city, town, etc.
- Stream Monitoring - Could use test kits like normal but input data into a cell phone rather than a clipboard.
- Crowd-Sourcing - Send out surveys for students to give or take.
- Image Upload - Include a text field for a URL and use Flikr to give you a image url and paste that into the text field. (Maybe of a sit spot, specific species, etc.)

Basic Mechanism

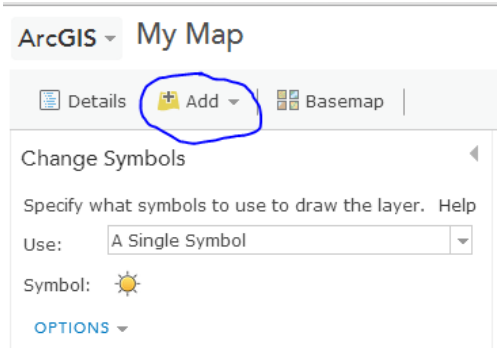
Smartphone → Sends data to webpage → data path (can send it to spreadsheet **OR** map)

Obenhaus Model Lesson

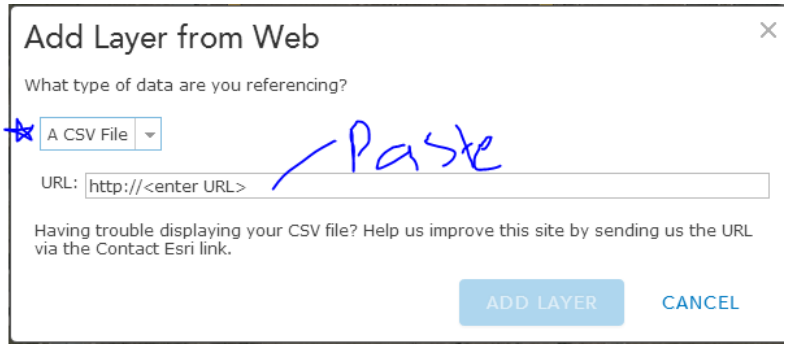
- *Using Student Data Mapper*
  - *After creating this it will create a website for students to use on their device.*
  - ***MAKE SURE THEIR LOCATION SERVICES IS TURNED ON ("[...] Would Like to Use Your Current Location. OK")***
- *Tips*:
  - GPS device accuracy is not perfect.
    - Usually in an urban area the accuracy is within 10 yards
      - So if collecting data, to avoid taking multiple data points of one individual, move 10 yards away each time.

- Student smartphones will always work best because they have a GPS chip inside them. (If it's only WiFi enabled, then it **WON'T WORK *WELL*.**)
    - If Location Services isn't on, have them open a "Map" or "GPS" app in the background to turn it on.
- **Reload the page when you found your spot. (so don't reload and then walk to somewhere different)**
    - There is info on that page that says "Device reported accuracy (ft):" which tells you how accurate the location is (hopefully within 10 feet, if not then reload)
- A student could generate a "hot spot" for others to connect to.

- Model Lesson: Dandelion Survey (data link)
    - Questions
        - How many blooms can you count from where you stand? (whole integer)
        - How many fluffy spheres do you count? (whole integer)
        - Has the area been mowed recently? (Multiple choice)
    - Then when you publish it, it gives you a URL to give to students
    - After collecting data then go back to the webpage and scroll to bottom and grab the CSV (excel) file **link address**



    - Take the file and go to ArcGIS MyMap which allows you to input your data by going to "Add" button and selecting "Add Layer from Web" and pasting in the CSV file address.

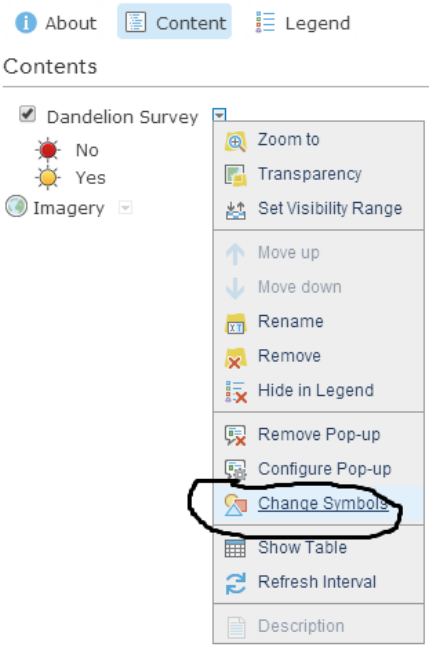


- Then you data points will be upload onto your map and you can change your "Basemap" to change it to "Imagery" which makes it look like a satellite image.

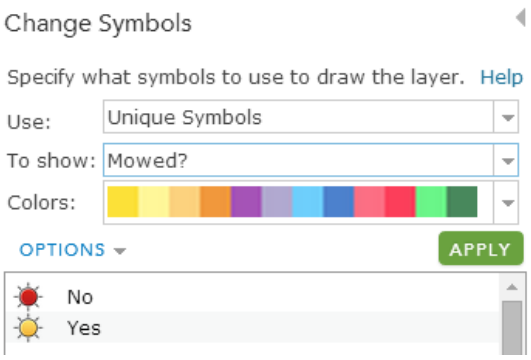
- After completing the map you can “Save” and then “Share” by clicking “everyone” which will give them the URL and they can then explore the map and data that way.

Enhancing the Map

- You could add a Text Field with “Name” or “ID #” and “Hour #” where students could input their clicker number and hour # which gives them a unique identification number for data purposes later
    - Maybe you could track which students went furthest or had weird data in weird spots, etc.
- You can select “change symbols” in the drop down menu to make unique symbols for the data.



- Drop Down Options:
    - ← “Rename” = change name of content
    - ← “Show Table” = show data beneath the map and you can sort the data by the field options. You can also select a data point there and it will highlight that on the map.
    - ← “Refresh Interval” = By clicking this box to activate this option you can change how often the data refreshes (lowest is 1/min)
        - This only works if the CSV file is live-linked, not if it is from a file on the computer.
    - Then you can use “Unique Symbols” which lets you change the symbols for individual data points (such as one color for “mowed” data vs “not mowed” data)



- You can also go back to “Add” and “search layers” and you can add other data:
    - Population Density
    - Median Age

        - Median Income
            - All of these have color codes associated with them so you can view the “Legend” to see what each color means.

Extensions/Websites/Apps/Add-Ons

- EdCommunity ESRI has Web Mapping capabilities which allows you to view already made maps.
- If you want to **collect continuous data** (such as for running or mapping a trail or path) Tom recommends MotionX GPS ($2).
- KS GIS Data - Free to sign up
    - Has lots of Data to input into graphs.
        - All files will download as ZIP files which the ArcGIS online map will read directly (aka DON’T unzip)
        - Water maps
        - KS Geographical data
        - Environmental data