

# ENGAGING WITH STEM DURING COVID

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# Megan Carlton

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# 'Save the Lake'

## Community BioBlitz

**Overview:** Planned and executed a survey of biodiversity existing in and around Richardson lake to inform policy change.

**Age Range or Target Audience:** 13 and up

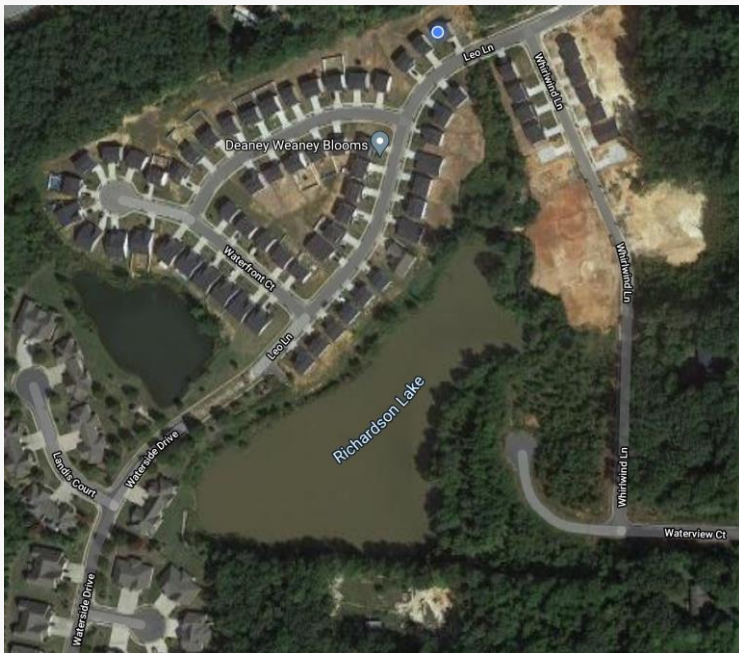
Concerned citizens and community around Richardson Lake in Asheboro, NC





# Background

## Richardson Lake



Feeds into  
protected/impaired  
streams



More education and  
research needed



# Why did we choose this project?

## Stormwater Education

PTRC's overall goal:

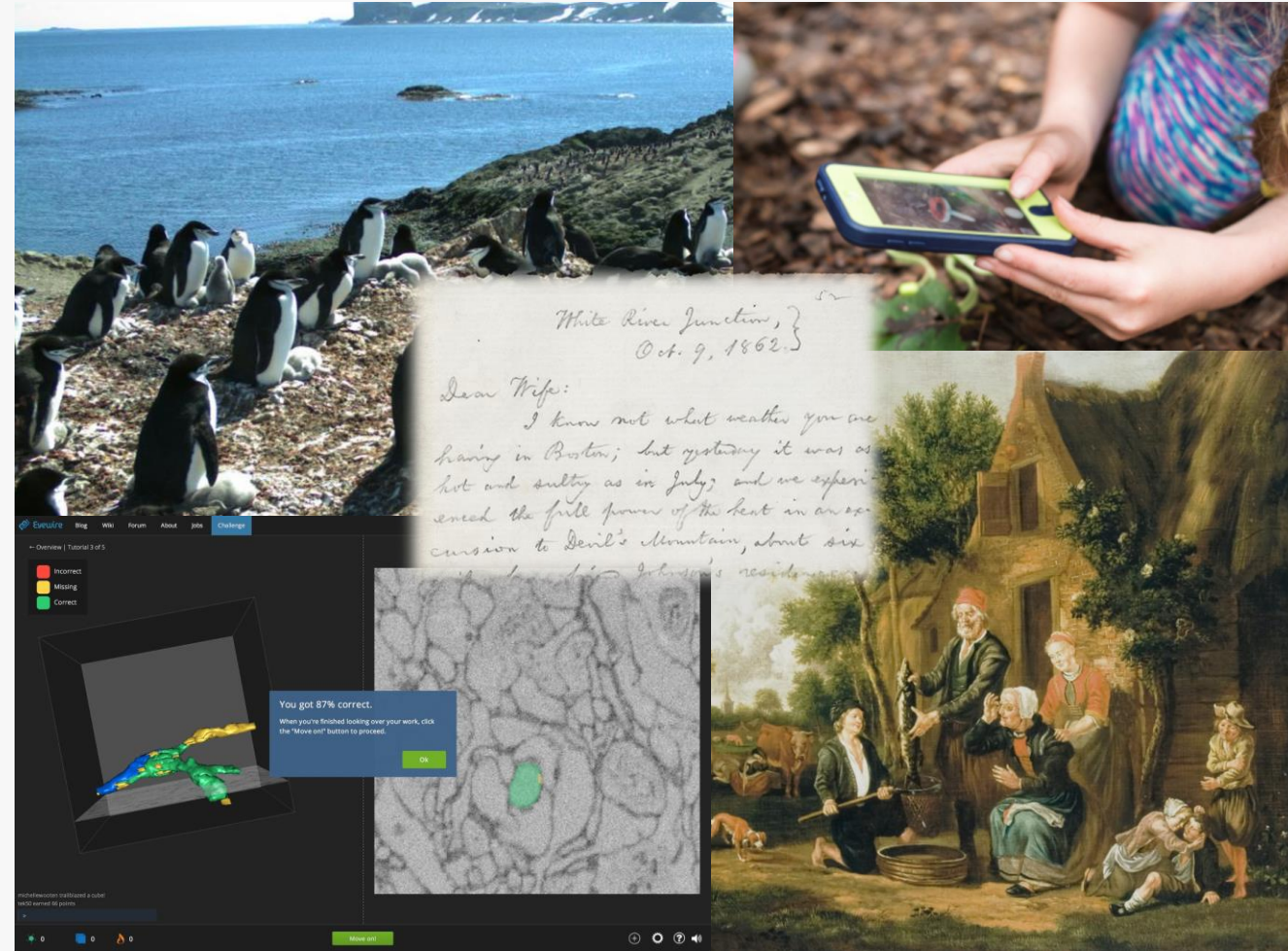
- raise public awareness about water quality issues
- increase local stewardship

## Community Engagement

- address a community concerns
- translate findings into public action that benefits the community

# What is Citizen Science?

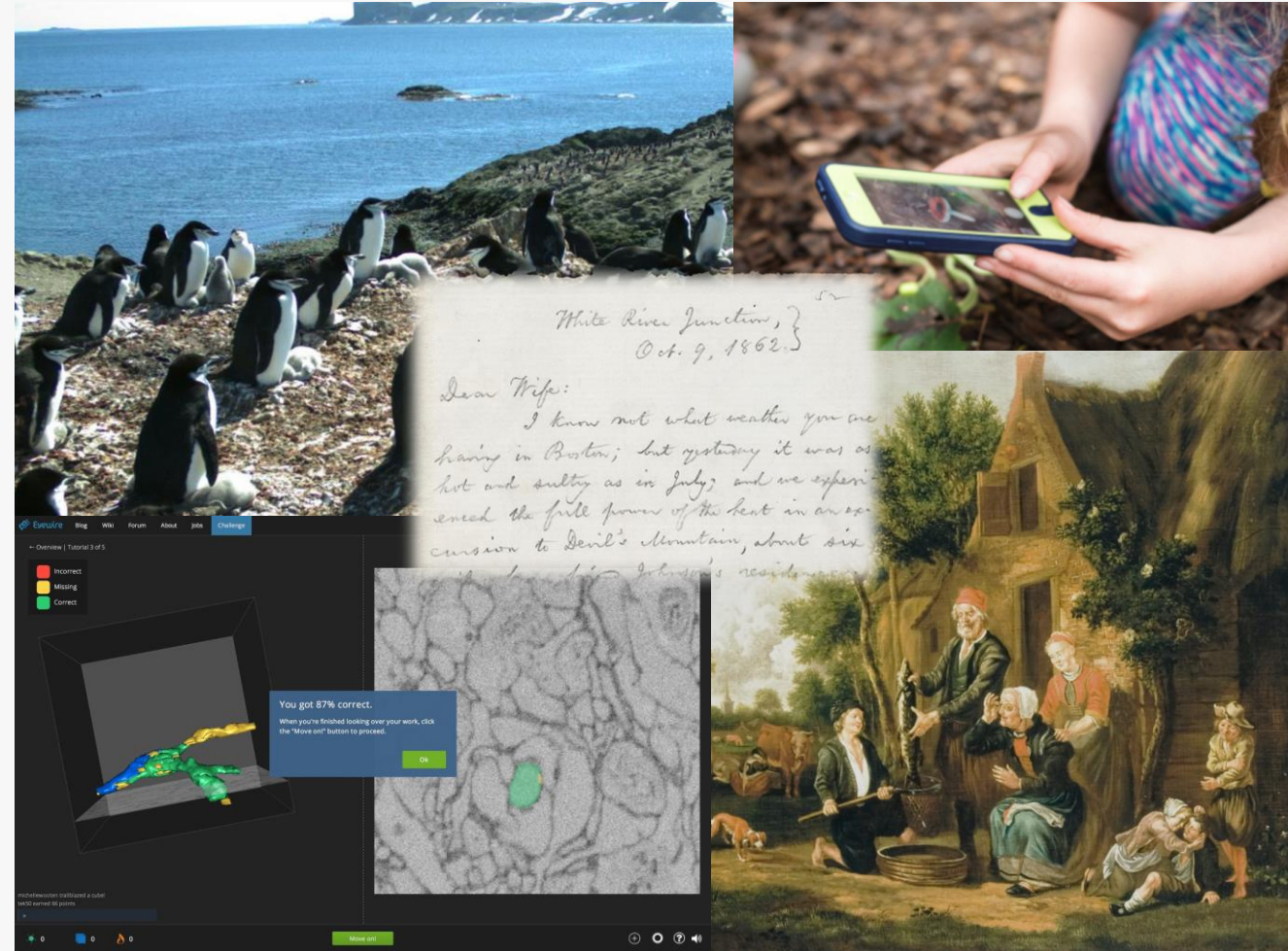
**“Scientific work undertaken by members of the general public, often in collaboration with or under the direction of professional scientists and scientific institutions.”**

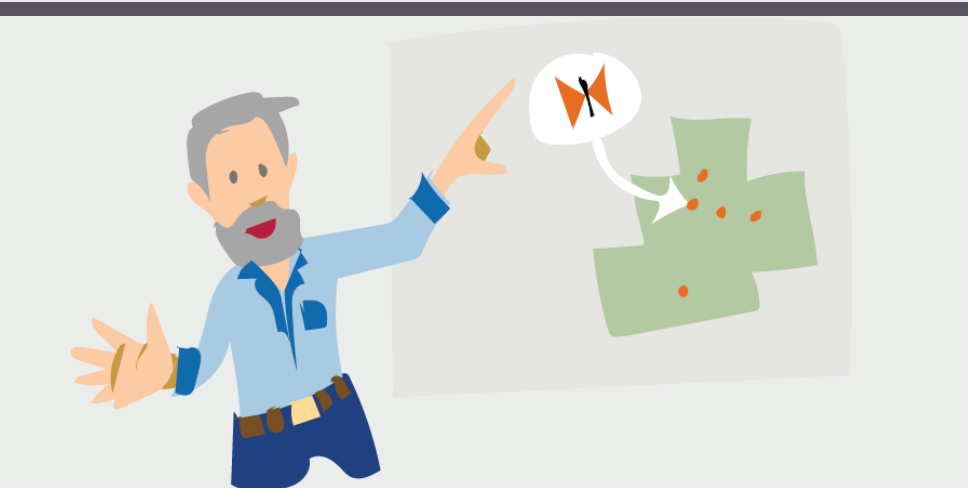
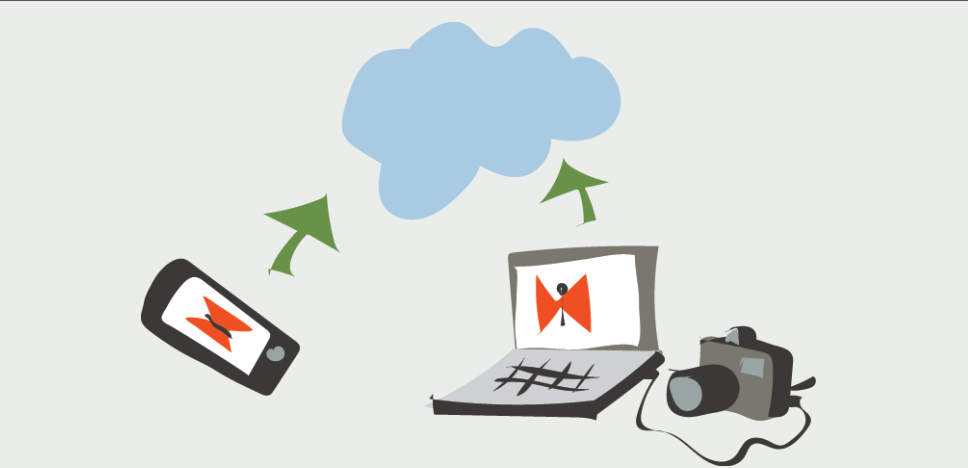




# What is Citizen Science?

Public participation in scientific research.





# What is a BioBlitz?

A citizen science effort to record as many species within a designated location and time period as possible.

- Encourages public participation
- Supports science literacy
- Contributes directly to science



# Resources Needed

## Partnerships

- Not required, but very helpful.
- Local environmental agencies
- Education centers (zoos, science centers, etc.)
- Local interest groups

## Marketing

Get people excited about joining your BioBlitz!

- iNaturalist project page
- Scistarter.org events page
- Facebook events page

## iNaturalist

iNaturalist is one of the most popular nature applications in use today. People can access and upload their photographs from anywhere by using a computer, tablet or smart phone.

- [iNaturalist.org](https://www.inaturalist.org)

# Time Commitment

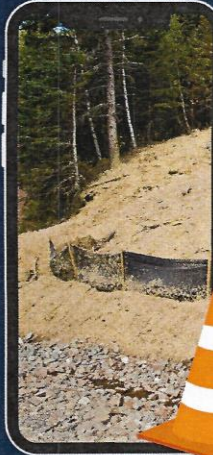
## Before the event:

- Planning meetings with partners:  
2 hours
- Creating marketing material:  
1 hour
- Creating educational material:  
2 hours

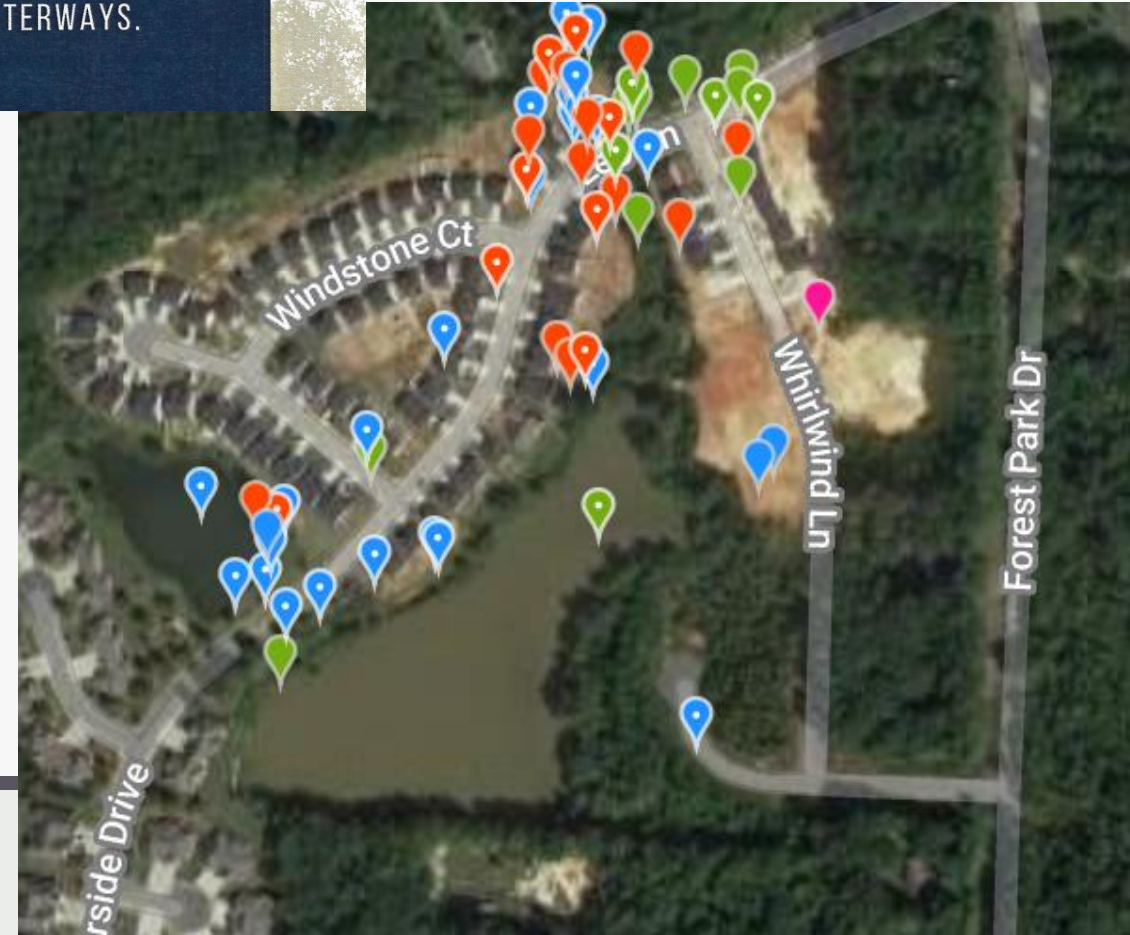
## The day of:

- Set-up: 1 hour
- THE event: 4 hours
- Distribution of prizes and  
educational material: 1 hour

# The Event



SOIL AND SEDIMENT  
FROM DISTURBED  
LAND ARE THE #1  
SOURCES OF  
POLLUTION IN NC  
WATERWAYS.





# Lessons Learned

- Small turnout increased engagement
- Educate community about what a BioBlitz entails
- Include activities outside of 'getting dirty'

## Next Steps:

- 2<sup>nd</sup> BioBlitz set for September during 'creek week'
- Will have representatives from:
  - NC Zoo
  - Wildlife commission





# Rudy Yisak

- To-Go Kits
- Partnership with ecoEXPLORE
- Equipment checkout



# To-Go Kits at Central Library

- Weekly to-go craft kits for ages 2-5 and ages 6-11 in the Children's Department.
- Each week, all 10 of the to-go crafts are picked up for the older group.
- The to-go craft kits for younger children don't require as much direction or extra materials.
- The to-go craft kits for older children are more advanced and require materials that children need to be able to handle like scissors.





# To-Go Kits Evaluation

- The more complex the project the less likely the to-go kit will be picked up.
- It took several weeks for people to start picking up the to-go kits (even with flyers, website post, and social media posts of finished projects).
- The cost of the to-go kits was relatively inexpensive, but projects were dependent on the items readily available to use.
- STEAM to-go kits will start in the summer.





# To-Go Kits Tips

- Know your target age group and adapt your project to fit your audience.
- Only provide a certain number of kits each week or month and advertise that the supply is limited.
- Select projects that don't require too many at-home supplies.
- Provide clear instructions so that your target audience can understand.
- Make sure to provide an example of the finished project for people to view and take a picture to advertise it on social media.

# ecoEXPLORE

## What is ecoEXPLORE?

- An initiative through the NC Arboretum.
- ecoEXPLORE stands for Experiences Promoting Learning Outdoors for Research and Education.
- Incentive based citizen science program for K-8.

## How does my organization become a LoanSpot or HotSpot?

- Apply for program on [ecoexplore.net/about](http://ecoexplore.net/about).
- LoanSpot: a location where people can check out Discovery Packs.
- HotSpot: locations where people can observe wildlife.

## How do kids participate?

- Kids can sign up on [www.ecoexplore.net](http://www.ecoexplore.net).
- Kids can explore nature and submit pictures of their findings on the website.
- Their observations are then submitted to the iNaturalist Network.



# Discovery Packs

- ecoEXPLORE provided Central Library with three discovery packs for patrons to check out and use to explore nature.
- Each pack is equipped with a critter cam, magnifying glass, butterfly net, bird call, binoculars, and bug binoculars.
- Very successful because the discovery packs rarely stay checked in at any given time.



# THANK YOU



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# Jo Klein

- Geocaching Lunch & Learn
- Data visualization & science communication



# LUNCH & LEARN: GEOCACHING



Join GIS & Data Visualization Librarian Jo Klein to learn about geocaching, a world-wide scavenger hunt. Geocaching is a great way to get outdoors and practice your "finding" skills, while having fun! For field biologists, ecologists, geologists, surveyors, and other professionals who work with GPS, geocaching is a fun hands-on activity to learn or practice skills like navigation and recording observational data.

May 11, 2021 at 12pm EST via Zoom

Topics covered will include what geocaching is, how it works, and how you can join, featuring geocaches you can find on or near campus

All UNCG students, faculty, staff, and community members are welcome

Register at [go.uncg.edu/qse4z8](https://go.uncg.edu/qse4z8)



Questions?

Contact Jo Klein ([ejklein@uncg.edu](mailto:ejklein@uncg.edu))

## Geocaching at UNCG

**Lunch & Learn Recording:** [go.uncg.edu/qse4z8](https://go.uncg.edu/qse4z8)

**Lunch & Learn Slides:** [go.uncg.edu/geocaching-lunch](https://go.uncg.edu/geocaching-lunch)

**Overview:** Starting with a Lunch & Learn webinar, this program will introduce participants and attendees to GPS navigation and data collection, data logging, and GIS mapping, through geocaching.

Future events include a geocaching challenge inspired by the [geocaching challenge at the University of Regina](#), a Create-a-Cache activity, and virtual mapping/GIS workshops integrated with the Fall 2021 GIS Day.

**Age Range or Target Audience:** college students, staff, faculty, and community members

# Geocaching at UNCG

## Resources Needed

### Lunch & Learn

- Zoom, Youtube, or other video conferencing tool.
- Webcam & mic

### Geocaching Challenge

- Mobile device and/or GPS handheld
- Prizes
- Website or landing page
- Free Geocaching.com account\*

### Create-a-cache

## Time Commitment

### Lunch & Learn

- 30 minute webinar
- Setting up registration & outreach, preparing slides and recording

### Geocaching Challenge

- Asynchronous event
- Setting up registration and outreach, preparing webpage and tech checkout as needed

## Lessons Learned

### Burnout & Zoom fatigue

- Don't expect cameras to be on
- Bring a co-presenter
- (A)synchronous participation

### Outreach

- Use social media and networks
- Invitation to register for recording or asynchronous participation
- Consider device requirements and alternatives

# What question interests you?

Do green spaces improve heart health?

How do pathogenic fungi survive outside the host ?

Are the side effects of COVID vaccine same in all people?

Are iron carboxylic metal-organic frameworks good thermoelectric materials?

Environmental science and health effects of environmental quality

How can we tell when COVID-19 is over?

What materials including Phosphorous will enhance CNDs' antioxidant power more??

How can thermodynamic factors be used to tailor assembly?

Do participants in citizen science projects learn about the process of science?

Is the COVID vaccine safe/effective for children?

3 minutes

Look at the dataset you found before class in Datawrapper

1. Identify variables of interest
2. Take note of categories you could group by
3. Identify formats, units, & expected data

Country	GDP per capita	Life expectancy	Population	Continent
Lesotho	2598	47.1	2174645	Africa
Central African Republic	599	49.6	4546100	Africa
Swaziland	6095	51.8	1319011	Africa
Afghanistan	1925	53.8	33736494	Asia

## Class Sessions on Data Literacy

### NAN 708: Science Communications

**Overview:** In-class instruction session on communicating science with data visualization, from finding and evaluating data to representing it with charts and graphs.

Created an online tutorial introducing how and where to find data for students to complete asynchronously before class, and gave two in-class sessions with interactive activities using Datawrapper to create a data visualization.

**Age Range or Target Audience:** graduate students.

5/13/2021

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# Class Sessions on Data Literacy

## Resources Needed

- Access to class syllabus & learning objectives
- Webcam & mic
- Tools for polling & interactive activities
- Tools for data visualization

## Time Commitment

- Online tutorial, plus time to add it to Canvas & assign it
- 4-8 hours for slide creation, coming up with activities
- Time to learn Datawrapper and other tools

## Lessons Learned

- Keep it interactive!
- Connect the topic with student interests
- Plan x number of activities, but expect to actually get through less
- Keep in mind different devices