



Y-CITYSCI: A Youth-Led Citizen Science Network for Community Environmental Assessment

Introduction to Nature of Science and Citizen Science: Lesson 9

Grade Level: Middle school

Duration: 1 hour

Showcase Preparation

Next Generation Science Standards

Science and Engineering Practice 8: Obtaining, Evaluating, and Communicating Information

Objectives

- 1) Students will explain citizen science research.
- 2) Students will demonstrate how to use environmentally focused citizen science apps.

Materials

- Tablets/laptops (1 per pair)
- Citizen Science App List (1 per pair)
- Poster board (1 per pair)
- Art supplies (scissors, glue sticks, markers, construction paper)

Activities

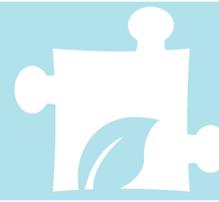
Bellringer: Review the key content areas from the semester:

- What is science and how does it affect our everyday lives?
- What is research and how do data contribute to it?
- What is citizen science?
- Discuss the citizen science apps that we have explored? How do you use them and what is their purpose?

(10 minutes)

Lecture/Activity: Explain the STEM Showcase and pass out flyers/information. Students will share what they have learned this semester with community members either at a STEM Showcase for the public or for other students in their school. If having a public event, have students write down 2 -5 people they will invite.



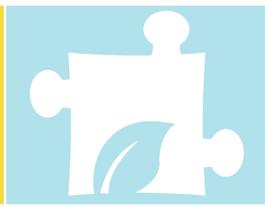


Discuss what the students will do during the showcase. The student pairs will stand around the room with tablets and share various citizen science apps with others. They should discuss what citizen science research is, its purpose, as well as introduce environmentally focused apps in hopes that others will join in on data collection. Hand out the Citizen Science App List and have students pick two apps to practice and demonstrate to others. One will be their main app of focus and the other is a backup just in case guests would like to see further examples, etc. Also, practice discussing program topics and answering questions from the public. (20 minutes)

Pass out posters and art supplies. Have student pairs make informational posters about their citizen science app of choice to display by them during the showcase. They should first make a draft on scrap paper to be approved by the instructor before putting together their final poster. (20 minutes)

Once posters are complete, students should practice talking through their posters and apps, while the instructor moves around the room to give final feedback. Posters will be collected and brought to the showcase by the instructor. Remind students to dress in business casual attire for the showcase and look through their apps at home to review if possible. (10 minutes)

**The purpose of today is to prepare students to discuss and share what they have learned this semester in the program with their community members.*



Environmental Citizen Science Apps

Backyard Bird Blitz Spring 2020 - Through the iNaturalist app, this is specifically for MetroEast local data collection. Take some time out of your day to observe the birds outside your window? Other iNaturalist users will help you ID the species, although you are encouraged to try and figure out the bird identifications on your own, too! <https://www.inaturalist.org/projects/backyard-birding-blitz>

Bumble Bee Watch - With this app, bee sightings can be documented as well as the bee species you see. This is a collaborative effort to track and conserve North America's bumble bees. This community science project allows for individuals to start a virtual bumble bee collection; identify the bumble bees in your photos and have your identifications verified by experts; and help researchers determine the status and conservation needs of bumble bees. <https://www.bumblebeewatch.org/>

eBird - This is an app that helps record the types of birds that are observed in specific locations. The Cornell Lab of Ornithology's goal is to gather this information in the form of checklists of birds, archive it, and freely share it to power new data-driven approaches to science, conservation and education. <https://ebird.org/home>

FrogwatchUSA - This app is offered by a citizen science program of the Association of Zoos and Aquariums (AZA) that invites you to learn about the wetlands in your communities and help conserve amphibians by reporting data on the calls of local frogs and toads. AZA's FrogWatch USA's goal is to provide large scale, long-term data on frogs and toads in the United States. Use FrogWatch - FieldScope to examine species distribution, timing of calls, and other data geographically and over time and see what you can discover! www.frogwatch.org

Global Garlic Mustard Field Survey - This app helps track the invasive species Garlic Mustard (*Alliaria petiolata*) that is threatening the world's natural resources. Through large-scale sampling, scientists can identify areas that differ in the intensity of invasion and try to understand why these differences exist. Through the use of a simple, standardized protocol, volunteers can help to generate valuable scientific data. Participating in this research does not require specialized training. <http://www.garlicmustard.org>

iNaturalist - This app helps record and identify the plants and animals in specific locations. <https://www.inaturalist.org/>

Spider Spotter - This app tracks the colors and types of spiders as well as spider webs. Help collect crucial information about how animals can adapt to climate change: we can use spider color as a natural thermometer and thus better determine how quickly our environment heats up. <https://www.spiderspotter.com/en/>

The Monarch Larva Monitoring Project - This app is a citizen science project involving volunteers from across the United States and Canada in monarch research to collect long-term data on larval monarch populations and milkweed habitat. The project focuses on monarch distribution and abundance during the breeding season in North America. <https://monarchjointventure.org/mlmp>

