**Monitor My Maple**

What is Citizen Science?

**Lesson Designer:** Emlyn Crocker

**Grade Level / Subject**: 7th-8th grade science

**Standards addressed:** Literacy: MS- SL1 (Speaking and Listening: Comprehension and Collaboration)

**Resources:**

* Reading: *Citizen Scientists: Be a Part of Scientific Discovery from Your Own Backyard* by Loree Griffin Burns, Chapter 1
	+ Video, Loree Griffin Burns reads Chapter 1: <http://sciencenetlinks.com/videos/loree-griffin-burns-reading-citizen-scientists/>
	+ Full sciencenetlinks.com Citizen Science Lesson Guide: <http://sciencenetlinks.com/lessons/citizen-scientists-be-part-scientific-discovery-your-own-backyard/>
* Nature Up North *Monitor My Maple* Tutorial Video

Link: [www.natureupnorth.org/monitor-my-maple-project](http://www.natureupnorth.org/monitor-my-maple-project)

* Citizen Science Read-and-Report Worksheet
* Access to an internet connection and computers or tablets for students to work on in small groups

**Total time:** 45 min

**Location:** Classroom

Lesson Goals (KUD)

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| By the end of the lesson students will: |
| **Know**(Key terms, facts, names, etc.) | **Understand**(Big ideas, essential questions) | **Do**(Skills, performances (action verbs) |
| -Definition of citizen science-Science is the study of the natural world around us-What Monitor My Maple is-What Nature Up North is-Where Maple syrup comes from -Maple trees aren’t doing as well as they used to here in NY -Scientists are currently studying the impact of climate change on maple trees-Sugaring is culturally significant in the North Country | -Anyone can be a citizen scientist-Scientists need our help-Sugar Maples aren’t doing as well as they used to and scientists are trying to find out why*Essential Questions:*-Are maple struggling here?-What is good science?-Who makes a good citizen scientist? | -Read chapter 1 from Loree Griffin Burns- Read and Report using Citizen Science Project Worksheet- Debrief: Who makes a good Citizen Scientist?-Answer questions about existing knowledge of maples  |

Planning pre-assessment

Before the unit begins, students will be asked to complete a pre-assessment distributed by Nature Up North. This survey will assess their level of understanding of science, citizen science, stewardship aptitude, environmental behavior, and knowledge of maple trees. This should take 5 minutes and is a good way to begin this first lesson. They will then be asked to take a similar survey at the end of the unit (\*this is optional, and as of August 2019 is not yet developed).

Before beginning this lesson, the teacher should have a good sense of students’ exposure to science and to citizen science, if at all. It is likely the majority of 7-8th grade students aren’t familiar with citizen science, but asking students about their familiarity is recommended.

Introduction/Expectation Setting

**Hook:** Teacher asks students “What is science?” (Answer: the study of the natural world around us). Has anyone ever been part of a science project?” (Ask for raised hands). “Has anyone heard of Citizen Science?” (Share definition).

**Goal:** Students think critically about local research and citizen science, and engage in cooperative discussions.

**Expectations:** Students will have a basic understanding of science but be unfamiliar with citizen science. Students are expected to read along, participate in discussion, and work in teams for the activity.

Lesson Body:

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| --- | --- | --- | --- | --- |
| **Time** | **Teacher Does** | **Student Does** | **KUD Addressed/KUD Assessed** | **UbD, HPL theory/concept supporting strategy or choice** |
| 20 min | Facilitates reading Chapter One of *Citizen Scientists: Be a Part of Scientific Discovery from Your Own Backyard* by Loree Griffin Burns.Asks the class open ended questions to prompt class discussion:*-What is good science?**-Who makes a good citizen scientist?*Records working definition of citizen science on whiteboard. | Take turns reading paragraphs; discuss as a class after readingEngage in class discussion, answer questions.  | -Definition of citizen science (K)-Science is the study of the natural world around us (K)-Anyone can be a citizen scientist (U)-Scientists need help (U)-Read chapter (D)-Who makes a good citizen scientist? (U) | Transfer: use previous knowledge of science to build on concept of citizen science (HPL); real life meaning, participating in MMM has positive impact on school and local community (HPL) |
| 10 min | Introduce Nature Up North and website, and mention local and national citizen science projects. Break students into groups of 3 with one computer or tablet per group. Pass out Citizen Science Project Worksheet. | Explore citizen science projects and answer questions on the worksheet.  | -What is good science? (U)-Read and Report using Citizen Science Project Worksheet (D)-What Monitor My Maple is (K)-What Nature Up North is (K) | Use of storytelling/ interpretation (HPL); ask personal questions to develop understanding (HPL) |
| 15 min | Surprise students by telling them they are going to be doing *Monitor My Maple*! Play video, ask what students: *What do you know about maples already*? (class discussion). Record existing maple knowledge for reference. | Watch maple video from NUN; share maple knowledge | -Answer questions about existing knowledge of maples (D)-Sugaring is culturally significant in the North Country (K)-What Monitor My Maple is (K) | Uncovering (UbD) by surprising students with the plan to do MMM. |

Closure

Ask the class the question again: Who makes a good citizen scientist? (wait for answer) Ask: Would we make good citizen scientists? Why/How? (write down answers).

Assessment

The two assessments in this lesson are both formative, ungraded assessments that function as facilitated checks for understanding. These activities are designed to focus on meeting the literacy goal of speaking and listening though collaboration and communication while teaching about citizen science. Having students read about one project and report out to the class what they learn helps them develop those skills, while making them feel that what they are doing is helping the whole class learn. The class reflection prompt/closure is listed as an assessment because it can be adapted as a homework assignment.

* Read and Report— Citizen Science Project Worksheet
* Class reflection prompt— Who makes a good citizen scientist?

**Citizen Science Activity**

Read and Report

Name(s): \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Which Citizen Science Project are you Reporting on? Please Circle One.

Monitor My Maple (Nature Up North): [natureupnorth.org/monitor-my-maple-project](http://www.natureupnorth.org/monitor-my-maple-project)

1. Water Monitoring (Nature Up North): [natureupnorth.org/watermonitoring](http://www.natureupnorth.org/watermonitoring)
2. iNaturalist, California Academy of Sciences/National Geographic: [inaturalist.org/](https://www.inaturalist.org/)
3. eBird (Cornell Lab of Ornithology): [ebird.org/home](https://ebird.org/home)
4. Nature’s Notebook (National Phenology Network): [usanpn.org/natures\_notebook](https://www.usanpn.org/natures_notebook)
5. In your own words, define Citizen Science:
6. Describe the purpose of the project you are researching.
7. Could we do this project here at school? Why or why not?
8. Would you be interested in participating in the project? Why or why not?