

Lesson: I am a Citizen Scientist!

Grade Level: K-5th grade, Environmental Literacy & Technology

Overview: Students will learn what it means to be a citizen scientist. Students will learn about the process of making observations, collecting & recording data, and sharing data to the science community. The teacher will guide students to a designated area outside of the classroom. Students can work independently or in small groups to observe a pollinator or plant. Students will use the guided worksheet to complete the data-collecting process. Students will then take their work and upload it to the kid-friendly open source data app, *Seek by iNaturalist*. Teachers should install it on their devices prior to the beginning of the lesson. Students will then work together to share their data with the class.

Environmental Literacy & Sustainability Content & Standards: Pennsylvania New Academic Standards for Science-

<https://www.pdesas.org/Page/Viewer/ViewPage/58/?SectionPageItemId=12998>

Agricultural and Environmental Systems and Resources- Environment and Society

K-2 Grade Band: 3.4.K-2.B Examine how people from different cultures and communities, including one's own, interact and express their beliefs about nature.

3-5 Grade Band: 3.4.3-5.C Examine ways you influence your local environment and community by collecting and displaying data.

Technology & Engineering Content & Standards: Pennsylvania New Academic Standards for Science-

<https://www.pdesas.org/Page/Viewer/ViewPage/58/?SectionPageItemId=12998>

Nature and Characteristics of Technology and Engineering

K-2 Grade Band: 3.5.K-2.CC Discuss the roles of scientists, engineers, technologists, and others who work with technology.

3-5 Grade Band: 3.5.3-5.GG Describe the unique relationship between science and technology, and how the natural world can contribute to the human-made world to foster innovation.

Science Practices:

APPENDIX F – Science and Engineering Practices in the NGSS

<https://www.nextgenscience.org/sites/default/files/Appendix%20F%20%20Science%20and%20Engineering%20Practices%20in%20the%20NGSS%20-%20FINAL%20060513.pdf>

Practice 4 Analyzing and Interpreting Data

K-2 Grade Band:

- Record information (observations, thoughts, and ideas).
- Use and share pictures, drawings, and/or writings of observations.
- Use observations (firsthand or from media) to describe patterns and/or relationships in the natural and designed world(s) in order to answer scientific questions and solve problems.

3-5 Grand Band:

- Compare and contrast data collected by different groups in order to discuss similarities and differences in their findings.
- Analyze and interpret data to make sense of phenomena, using logical reasoning, mathematics, and/or computation.

Materials:

- Electronic Device w/ a camera & internet capability; (Ipad, Chromebook, Android, and ect.)
 - Download the Seek app on their device prior to the start of the lesson for time-efficiency
- I am a Citizen Scientist Student Guide located on the website

Resources:

- Downloadable *Seek by iNaturalist* App, https://www.inaturalist.org/pages/seek_app
- Short student resources video, “*You are already a Scientist*” - <https://youtu.be/lbjxR09LM9k>
- Teacher & student book, *Citizen Scientists: “Be a Part of Scientific Discovery From Your Own Backyard”*, by Loree Griffin Burns- https://www.amazon.com/Citizen-Scientists-Scientific-Discovery-Backyard/dp/0805095179/ref=asc_df_0805095179/?tag=hyprod-20&linkCode=df0&hvadid=312087669297&hvpos=&hvnetw=g&hvrnd=17699021406619985769&hvpones=&hvptwo=&hvqmt=&hvdev=c&hvdvcmdl=&hvlocint=&hvlocphy=1025314&hvtargid=pla-491716186680&pssc=1

Learning Objectives:

- **Students will learn what it means to be a Citizen Scientist.**
- **Students will learn the process of observing, collecting & recording data.**
- **Students will use technology to collect & record data.**
- **Students will share data with other Citizen Scientists from their community and around the world.**

Pre-Procedure:

- Download the *Seek by iNaturalist* App to all devices.

Procedure:

1. Teacher will introduce the lesson by presenting the short video, “You are Already a Scientist”.
2. Teacher will then follow the short video with a brief explanation of the term, “Citizen Scientist”.
3. Students will receive the “I am a Citizen Scientist” student guide and an electronic device to collect data.
4. The teacher will go over the Seek by iNaturalist app with the class.
5. The teacher will guide students outside to observation spots.
6. Students will then have 15-20 minutes to use the student guide and follow the steps to become a citizen scientist. (Students can work independently or in small groups.)
7. Students will complete the student guide and upload any collected data to the app.
8. The teacher will guide students back to the classroom and conduct a whole group discussion on students’ work and create a discussion on student’s findings.
9. The teacher can complete the lesson by reading aloud, “*Be a Part of Scientific Discovery From Your Own Backyard*”, by Loree Griffin Burns.