LOS ANGELES PUBLIC LIBRARY

PASADENA PUBLIC LIBRARY

Neighborhood SCIENCE

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Neighborhood SCIENCE

Table of Contents

Part 1 | Introduction

In 2018, the Los Angeles Public Library (LAPL) and the Pasadena Public Library (PPL), both urban library jurisdictions located in Southern California, received a Library Services and Technologies Act (LSTA) grant through the California State Library to pilot a citizen science initiative. We named the initiative Neighborhood Science, and will use this term instead of citizen science throughout this Toolkit.

Background

Fifteen LAPL branches and three PPL branches participated in the initial grant. Participating branch staff, primarily children's and teen librarians, as well as the grant project managers, attended four full days of intensive training, provided by the Global Learning and Observation to Benefit the Environment (GLOBE) Program.

Each librarian then distilled what they learned into programs for families and/or teens. We wanted to impart the importance of Neighborhood Science while also demonstrating how to use scientific tools to gather and then share data according to strict protocols. By trial and error, we discovered the topics and protocols that worked best in a public library setting.

Eager to build on the best practices we had learned, we applied for another LSTA grant. This time, we designed the initiative to be more flexible. Library participation in the initiative could be composed of one, two, or all of the following:

- Public programs
- DIY circulating kits
- Working with teachers

When the COVID-19 pandemic shut down library buildings, most participating librarians who had been offering in-person programs made the shift to a virtual environment. Unfortunately, circulation of DIY kits has been temporarily suspended, but will resume when possible.

This Toolkit gives librarians strategies to create and conduct a Neighborhood Science initiative of their own, respond to environmental changes, and extend the boundaries of what they and their patrons can do in and for their communities. This Toolkit is not meant to be exhaustive; it serves as a source of inspiration and resources for librarians to start or expand Neighborhood Science programming for audiences of diverse ages and backgrounds.

Part 2 Neighborhood Science Defined

Neighborhood Science is also known as Citizen Science, Community Science, Civic Science, and Crowd-Sourced Science. The Los Angeles Public Library and the Pasadena Public Library use the term Neighborhood Science in order to emphasize its inclusive, community-based nature and to encourage every member of our neighborhoods to participate.

What is Neighborhood Science?

- Neighborhood Science is defined as people of all ages sharing with the global scientific community data that has been locally gathered and analyzed. Working individually, in teams, or in networks, Neighborhood Scientists contribute to the advancement of scientific knowledge.
- Some well-known examples of Neighborhood Science include the Audubon's 120-year-old annual Christmas Bird Count and the United States Geological Survey's Did You Feel It website.

Importance of Neighborhood Science

- **For scientists and researchers,** Neighborhood Science contributes large amounts of local, relevant data that they might not be able to gather without volunteers, thereby improving, enriching, and accelerating scientific research.
- **For participants,** it offers hands-on, personal engagement with the scientific method and the use of scientific protocols and tools. It increases scientific literacy and allows participation in project-based scientific research concerning issues they care about and that may have a beneficial impact on their communities.
- **For libraries,** it offers a powerful way to merge Science, Technology, Engineering, Art, and Math (STEAM) concepts with community and civic engagement. Many Neighborhood Science projects involve local environmental or social justice issues, from soil/air/water pollution to wildlife preservation.
- **For educators,** Neighborhood Science aligns with several key components of Next Generation Science Standards (NGSS), such as outdoor learning (either in-person or through simulation), connecting to community, addressing real-world problems, and developing 21st-century skills. It can be used to strengthen a school's science curriculum.
- By showcasing the power of individuals to contribute meaningful data to larger research projects, Neighborhood Science is inspirational. It builds capacity, community, and interconnectedness in a world that can no longer wait to confront the impact of changes to our climate. Neighborhood Science is the epitome of the maxim, "Think globally; act locally."

Part 2 | Neighborhood Science Defined

Why STEAM and Neighborhood Science in Libraries?

- Library STEAM programs activate learning and ignite interest by letting people experiment with and apply STEAM ideas to real-world situations. Such opportunities spark curiosity, especially for those who might not think of themselves as scientists.
- Library STEAM programs teach participants valuable skills related to the scientific method and help them build teamwork and communication skills.
- Library staff serve both as educators and facilitators; they provide guidance, encourage risk-taking, and learn along with the participants.
- Library Neighborhood Science programs provide people of all backgrounds equitable access to scientific knowledge and tools needed to take part in authentic scientific research.
- As a trusted institution, libraries offer a safe, welcoming, and inclusive space to participants of diverse backgrounds, enabling and motivating them to contribute to real-world research and scientific endeavors.

Part 3 Getting Started

Things to consider when designing your Neighborhood Science initiative:

When designing your Neighborhood Science Initiative, the first thing is to identify your audience. Will your Neighborhood Science initiative be aimed mainly at children? Teens? Families? Adults? All ages?

Your targeted audience will determine not just the projects you choose and the format of your programs, but also who your partners are and how you promote your initiative.

Once you have identified your audience, here are some more things to consider:

What format will you use? Some examples:

- Public programs: Passive, such as speaker panel or presentation, with no hands-on activities
- Public programs: Active, with hands-on activities
- Public programs: Storytime
- Public programs: After which participants can take home a kit to gather data in their neighborhoods
- DIY circulating kits that contain instructions on doing the project and sharing the data
- A combination of some, or all of the above

Will your programs be virtual or in-person?

During library closures due to the pandemic, virtual programming has allowed libraries to:

- Continue to share Neighborhood Science programs
- Expand their audience far beyond their geographical location
- Enrich program content by adding elements not possible in person, such as inviting scientists from all over the world to speak
- Reduce/eliminate the carbon footprint while bringing together people and ideas

It is likely there will be a role for virtual programming even after libraries reopen, with these caveats in mind:

- Engagement is more difficult, especially with hands-on activities requiring specialized equipment.
- It is difficult to collect demographic data, such as age, gender, etc, from virtual participants.
- It is difficult to measure the effectiveness and impact of online programs.
- Technical issues are more likely.
- Lack of access to devices and the Internet is a barrier to many.

How to choose Neighborhood Science topics:

- If you're new to Neighborhood Science, choose topics that can be explored on many different levels and by different ages; a good example of this is Cloud Observation (see our sample program in Part 4).
- Explore our list of online resources in Part 7 for a vast array of topics and projects.
- Determine which environmental issues are of interest to your community.
- Choose topics and projects of special concern to you. Passion drives engagement.

Involve Your Staff and Recruit Volunteers

Having your staff and volunteers on board with you can make offering a Neighborhood Science program easier, especially in the planning stages.

Neighborhood Science defines "volunteers" as those who participate in contributory research projects. Libraries define "volunteers" as individuals who assist libraries and librarians with a variety of tasks, including the facilitation of programs. For the purposes of this Toolkit, we will refer to individuals who attend and take part in Neighborhood Science programs as "participants," and refer to individuals who assist librarians with facilitating Neighborhood Science programs as "volunteers." Library volunteers can most certainly be contributing participants of Neighborhood Science programs.

Where to Recruit Volunteers?

While we can recruit volunteers through the usual channels, such as schools, volunteer groups, and social media, there are also many large corporations that encourage their employees to volunteer for a cause. Companies such as Sempra Energy, Verizon, Apple, and Google are not only asking their employees to donate their time, but also provide grants/monetary donation to the nonprofit organizations where their employees volunteer on a regular basis.

Libraries should properly vet all volunteers.

Training Staff and Volunteers:

Here are some training resources to get started:

- Introduction to Citizen Science Tutorial by the Network of the National Library of Medicine
  A short interactive tutorial you can use to train staff about the who, what, and why of Neighborhood Science.

Part 3 | Getting Started

- Learn Citizen Science by Ocean Sanctuaries
  Why reinvent the wheel when you can simply direct your volunteers and staff to learn about the fundamentals of Neighborhood Science using Ocean Sanctuaries' free certification online class? This would be a great starting point. If you think the content is too extensive, you can also create an abbreviated version using their materials.

Once your staff and volunteers are acclimated to the fundamentals of Neighborhood Science, your next step is to train them on the specifics of the participatory research projects you are using for your Neighborhood Science programs.

- Ask the partners you are collaborating with if they have training curricula developed that they can share with you or if they could help train your staff and volunteers. They may also be able to offer you a hands-on workshop.
- If you have not established any partnerships for the Neighborhood Science program, try reaching out to platforms such as Scistarter, Anecdata, and Zooniverse. They may have a program coordinator or manager who can help train your staff and volunteers.
- Search for tutorials materials online. Often, practitioners who developed a participatory research project already have tutorial videos or step-by-step instructions created for sharing.
- Platforms such as Scistarter, Anecdata, and Zooniverse frequently offer webinars and training of various participatory research projects that are open to the public. Sign up for their mailing lists to receive notification of new training or webinar opportunities. Just keep in mind that when the word "volunteers" is used in the tutorial, they usually refer to individuals who participate in research projects, such as collecting, sharing, and interpretation data.

Part 4 | Sample Programs

The materials, tools, and supplies used in the following sample program plans are generally household items that are easy to obtain. However, there are a few programs that require specialized tools. Please refer to Part 7: Resources for vendor information.

While these sample programs are designed with children and families in mind, they can easily be adapted for tweens, teens, and adults. When planning teen and adult Neighborhood Science programs, focus on laying the groundwork of Neighborhood Science, introducing the data that will be collected, and then coming back together to share personal experiences with the group. In lieu of read-alouds and booklists, bring current news articles and nonfiction to deepen understanding.

You do not have to use every element in each sample program. Feel free to pick and choose the parts that are suitable for your participants.

Tips for Program Planning:

- Do a dry run before your program, especially if you are using tools or apps that you aren't very familiar with.
- If you are hosting a guest speaker, keep the speaker informed about the timing and logistics of your program, including any updates or changes.
- Always have a plan B, especially when you are planning to take the participants outdoors and the weather is not cooperating.
- If you are hosting a children's Neighborhood Science program with a partner, make sure there is a fun element to the program (e.g. hands-on activity, video or game).
- Split programs over 60 minutes into a multi-session series.
- Keep virtual programs and/or prerecorded online programs under 30 minutes.
- Encourage your participants to sign up or create an account for the project they contributed to.
- Consider registering a Scistarter account for your Neighborhood Science program or for your library. When possible, pre-register your program participants.

2-4 Weeks before the program:

- Prepare publicity assets with the following reminders for participants:
    - Bring your own device (BYOD), if necessary.
    - Download the apps needed for hands-on activities before the program.
    - Bring protective gear if activity is outdoors: sunglasses, insect repellent, sunscreen, and appropriate clothing.
- If planning an outdoor observation activity, be sure to identify the sites, consider all safety measures, and obtain needed permissions.
- Order and prepare enough materials for the expected number of participants.
- Set aside or request library materials and curate a digital content resources sheet about the topics of your program. If your library has additional smart devices for patron use during the program, request them; download the apps and have an account set up and ready for use.
- Play, test, and familiarize yourself with the features in the apps you will be using. Download the apps you will be demonstrating onto the smart device you plan to use during your program. Create a library account if required by the apps.
- Make a sign or poster with the login information of this library account to be used during the program.
- Try out the hands-on activities and make a sample for demonstration or display.

During the program:

- Collect all signed liability waiver and personal photo release forms.
- Repeat safety rules and ethics guidelines, especially right before commencing the hands-on or outdoor activities.
- If materials for hands-on activities are set up at each table, remind participants not to touch them until instructed so.
- If using apps during the program, be sure to ask participants to turn on the GPS (Global Position System) capability in their devices. Accurate reading of GPS coordinates is crucial scientific research data that will allow scientists and researchers to precisely sort or validate the data they receive.

Part 4 | Sample Programs

At the end of the program:

- Pass out and collect participant surveys (let participants know the surveys can help us improve and sustain the program - get more funding, etc.).
- Remind participants that books on display can be checked out.

Making programs virtual

Most of the following sample programs are designed to be done in-person. Here are some simple tips for making them virtual:

- Keep your program short (30 minutes or less).
- Include any prerequisites for hands-on participation in the publicity assets:
    - Pre-download the apps, need to have a mobile device with data plan for outdoors or WiFi when indoors, adult supervision, etc.
    - Links to safety rules, ethics guidelines, liability waiver and personal photo/video release (samples in the appendix)
- Turn off participants' video and sound upon entering the meeting platform.
- If the program will be recorded, be sure to inform participants before you begin recording and offer participants the option to turn on/off video/sound.
- Be sure to adhere to ADA guidelines regarding captioning and other accessibility issues.

PROGRAM 1

Clouds

Learning goal: Learn about three aspects of clouds–height, cover, and type–and their effect on precipitation, weather, climate, and temperatures. Understand cloud formation through the "cloud in a jar" STEM activity. Understand why scientists are studying clouds and how participants can help scientists by collecting data using the GLOBE Observer app.

Audience level: Families and children age 5+

Length of program: 90-120 min.

Supplies needed: (equipment, books, apps)

- ACTIVITY: Clouds in a jar materials
  - 1 clear glass jar per group
  - 1 metal tray or plate (e.g., pie pan) per group
  - 1 bag of ice (enough for fill 5 12oz-mugs or paper cups)
  - Hot water (enough to fill up to 2 inches in height of each jar)
  - Thermos (for hot water; optional but highly recommend)
  - Coffee stirrer or wooden chopstick
  - One 12-oz mug or paper cup per group
  - Pencil (one per participant)
  - Blank paper (one per participant)
  - Instructions

Part 4 | Sample Programs

- ACTIVITY: Outdoor Cloud Observation
  - Smart device with data plan
  - Mobile Hotspot/MiFi (optional)
  - Clipboards
  - Pencils
  - GLOBE Cloud data sheet (for individuals without mobile devices)
  - Cloud Identification charts
- ACTIVITY: Cloud Mobile materials:
  - Popsicle sticks
  - Wooden skewers
  - Cardstock
  - White twine or yarn
  - Blue or silver tinsel
  - Scissors, scotch tape

Booklist:

- Costa, Vila M, and Jordi Mazón. *Conocer Las Nubes.* Lectio, 2009.
- Day, John A. *The Book of Clouds*. Sterling Publishing Co, 2006.
- Edison, Erin. *Nubes/Clouds.* Capstone Press, 2013.
- Hansen, Grace. *Clouds.* Abdo Kids, 2016.
- Kovacs, Vic. *Get into Citizen Science.* Crabtree Publishing Company, 2018.
- Pretor-Pinney, Gavin. *The Cloud Collector's Handbook.* Chronicle Books, 2011.
- Pretor-Pinney, Gavin. *The Cloudspotter's Guide: The Science, History, and Culture of Clouds.* Tarcher Perigee Book, 2007.
- Rajczak, Michael. *Be a Citizen Scientist!,* Gareth Stevens Publishing, 2019.
- Teckentrup, Britta. *Look at the Weather.* Owlkids Books, 2018.

Apps

- NASA GLOBE Observer Clouds Module

PROGRAM 1

Clouds

Activities, step by step

Specific preparation in advance of this program:

2-4 weeks before the program:

- Download, play and familiarize yourself with the features in the NASA GLOBE Observer Clouds Module
- Take a picture of the clouds in the sky and make a sample cloud mobile corresponding to the cloud patterns in the photo. Note the date of observation on the mobile.

Day before the program:

- Make sure there will be hot water and ice for the program.

Let the program begin...

1. Divide participants into groups of 2-4 and go over program agenda.

2. Go over safety rules and ethics guidelines and collect liability waiver and/or photo release forms. Remind participants not to touch the materials for hands-on activities until instructed to do so.

3. Introduce Neighborhood Science and GLOBE Clouds concepts with *Neighborhood Science & Clouds powerpoint presentation*

4. Start ACTIVITY: "Cloud in a jar"
   - Give each group a cup of ice and ask a participant to pour it on the metal tray.
   - Pour 2 inches of hot water in each group's glass jar. Ask one member per group to stir the hot water for a couple of seconds, then put the metal tray with ice on top of the jar, making sure to cover the jar opening completely.

Part 4 | Sample Programs

   - Ask one member per group to lightly swirl the jar while holding the metal tray in place. What is happening?
   - Give participants a few minutes to draw the reaction forming inside the jar.
   - Explain again how clouds are formed by referring back to the Powerpoint slides.

5. Prep the groups for ACTIVITY: Outdoor cloud observation:
   - Go over the steps to set up a GLOBE Observer account.
     - For participants who do not wish to create an account, ask them to sign in using the library's GLOBE Observer account.
   - Have them choose group roles, supply with clipboards, pencils, Cloud data sheets (for participants who don't have a mobile device) and Cloud identification charts.

6. Start ACTIVITY: Outdoor cloud observation:
   - Take groups to safe outdoor area (park, patio etc.) for 15-20 minutes of cloud observation and data collection.
   - Demonstrate how to use the Cloud identification chart and record their observations using the GLOBE Observer app.
   - Gather the groups when time is up.
   - Allow 5-10 minutes to compare and share observations.

7. Return to the program room.

8. Start ACTIVITY: Create a Cloud Mobile based on participants' observation of clouds (i.e., demonstrating cloud types and heights).

PROGRAM 2

Mosquito Habitat Mapping

Learning goal: Understand why scientists are studying mosquitoes. Learn about mosquito anatomy and types, mosquitoes as disease vectors, and how to identify and remove mosquito habitats. Find out how to help scientists collect data on local mosquito habitats using GLOBE Observer's Mosquito Habitat Mapper module.

Audience level: Families and children age 7+

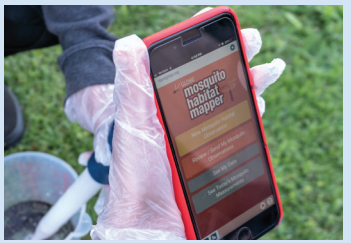
Length of program: 90-120 min.

Supplies needed: (equipment, books, apps)

- Large Mosquito Puppet (optional)
- Smart Device with data plan
- Mobile Hotspot/MiFi (optional)
- Mosquito repellent
- ACTIVITY: Mosquito larvae observation materials:
  - Clip-on coin magnifiers for phones (available on Amazon.com)
  - Smartphone or tablet with camera
  - White paper plate 2-3 per group
  - Turkey baster
  - Measuring cup or 12-16-oz paper cup
  - Paper and pencils (one per participant)

Part 4 | Sample Programs

- ACTIVITY: Mosquito Larvae-Habitat Scavenger Hunt materials (enough for 12 participants):
  - Mosquito Identification Worksheet (one per group or one per participant)
  - 1 Mosquito Identification poster
  - Adult mosquito images on letter-size sheet (one per species)
  - Images of various mosquito habitats
  - Mosquito larvae image printed cutouts (12 per mosquito habitat image)
  - Envelopes (optional)
  - Scotch tape
  - GLOBE Observer Mosquito Habitat Mapper Step-by-Step Guide (one per participant)
- ACTIVITY: Build a Mosquito Trap materials:
  - Recycled soda bottles (2 liter bottle preferred)
  - Scissors or box opener (not needed if pre-cut the bottles per instructions)
  - Netting or mesh with ⅜" holes
  - Rubber bands
  - Water (just enough for demonstration)
  - Sharpie
  - Black construction paper
  - Packing tape or scotch tape
  - Instructions



Booklist:

- Hansen, Grace. *Mosquitoes.* Abdo Kids, 2015.
- Hansen, Grace. *Becoming a mosquito.* Abdo Kids Jumbo, 2019.
- Novak, Jordan P. *Mosquitoes Can't Bite Ninjas.* Bloomsbury USA Childrens, 2017.

Videos:

- GLOBE Observer Mosquito Habitat Mapper
- GLOBE Observer Mosquito Habitat Mapper App (Getting Started)
- How Mosquitoes Use Six Needles to Suck Your Blood | Deep Look
- Mosquito Life Cycle

Apps:

- NASA GLOBE Observer Mosquito Habitat Mapper module

PROGRAM 2

Mosquito Habitat Mapping

Activities, step by step

Specific preparation in advance of this program:

2-4 weeks before the program:

- Download, play, and familiarize yourself with the features in the NASA GLOBE Observer Mosquito Habitat Mapper Module.
  - Watch GLOBE Observer Mosquito Habitat Mapper Getting Started Youtube video.
  - Review the GLOBE Observer Step-by-Step Mosquito Habitat MapperTutorial Powerpoint slides.

3 Days before the program [optional]:

- Build and set up mosquito traps to catch live mosquito larvae to view with magnifiers.

Day before the program:

- Set up indoor habitat hunt activity if needed. Placing mosquito habitat pictures or props around the room. Hide printed cutouts of corresponding mosquito larvae under habitat props. (Cutouts can be loose or in a small envelope).
- Collect the mosquito traps.

Let the program begin...

1. Divide participants into groups of 2-4.
2. Introduce Neighborhood Science and mosquitoes with Powerpoint presentation.
   - Discuss how mosquitoes spread disease and how GLOBE's Mosquito Habitat Mapper can help NASA scientists mapping and tracking the spread of mosquito species.
   - Use the mosquito puppet and mosquito books to discuss mosquito life cycle and anatomy.
3. ACTIVITY: Mosquito larvae observation
   - Distribute traps and ask each group to look inside to see if there is anything moving on the surface of the water. If yes, have one member from each group use a turkey baster to draw it out onto the white paper plate.

Part 4 | Sample Programs

   - Use a smart device with clip-on magnifier lens to get a closer look at the larvae and take a picture.
   - Ask participants to draw the larvae they observed.
4. ACTIVITY: Mosquito habitat scavenger hunt
   - Go over the steps to set up a GLOBE Observer account:
     - For participants who do not wish to create an account, ask them to sign in using the library's GLOBE Observer account.
   - Demonstrate how to collect and share data by using the GLOBE Observer's Mosquito Habitat Mapper module step-by-step.
   - **OUTDOOR Scavenger Hunt (if weather permits)**
     - Prep the groups for the activity:
       - Make sure all participants wear insect repellent or appropriate clothing.
     - Start the ACTIVITY:
       - Take the group to safe outdoor space and search for possible mosquito habitats, collect and share data using the app (15-20 min).
       - Ask participants to tip and toss any items or sites with stagnant water that have been identified as potential or confirmed mosquito habitats.
     - Return to the program room and allow 5-10 minutes to compare and share observations.
   - **INDOOR Larvae-Habitat Scavenger Hunt (Plan B):**
     - This activity does not need the GLOBE Observer app.
     - Allow 15-20 minutes for participants to go around the room to collect, identify and graph numbers of different mosquito larvae types.
     - Allow 5-10 minutes to provide answers and share observations.
5. Start ACTIVITY: Build a Mosquito Trap for participants to take home.
   - Demonstrate the steps to build the trap and ask participants to follow along.
   - Ask participants to add water when they get home before they place the trap outside.
   - Remind participants not to leave the trap out for too long (3 days max). It will give larvae time to become adult mosquitos!
   - Remind participants to tip and toss any potential mosquito habitats.

PROGRAM 3 All About Trees

Learning goal: Learn how to use tape measures and clinometers to measure tree circumference, height and canopy cover, and collect and share data with scientists using GLOBE Observer app. Understand how these measurements reflect tree health, and how the presence and health of trees contributes to human and ecosystem health.

Audience level: Families and children age 7+

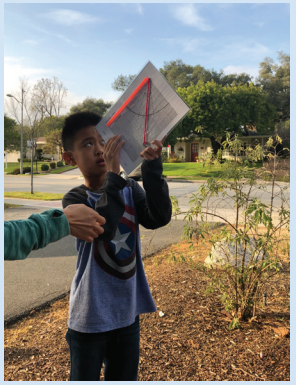
Length of program: 90 min.

Supplies needed: (equipment, books, apps)

- Smart device with data plan (for outdoor activity)
- Mobile Hotspot/MiFi (optional)
- 50-yard tape measures (1 per group) or a roll of yarn or string
- Ruler or yardstick
- Digital clinometers (optional; 1 per group)
- Clipboard (2 per group; one for Build a Clinometer activity, one for the Tree Height Comparison Activity Guide)
- Pencils
- Tree Height Comparison Activity Guide (one set per group)
- 1 to 2 trees in the proximity of the library and safe enough for participants to measure and observe

Part 4 | Sample Programs

- ACTIVITY: Build a Clinometer activity materials:
  - Cardstock for clinometer template printout (thicker the better; one per participant)
  - Clinometer template and instructions - choose one:
    - Clinometer Template #1 (one per participant)
    - Clinometer Template #2 (easier for younger participants; one per participant)
  - Straw
  - String
  - Tape
  - Scissors
  - Pen or pencil
  - Hard surface (clipboard, book, or cardboard)
  - Weight (beads, paper clip, or metal washer)



- ACTIVITY: Leaf Printing
  - Construction Paper
  - Paint
  - Leaves

Booklist:

- Used in program:
  - Watts, Tom. *Pacific Coast Tree Finder.* Nature Study Guild, 1973.
- Displayed:
  - Arnosky, Jim. *Crinkleroot's guide to knowing the trees.* Simon & Schuster Books for Young Readers, 1992.
  - Kay, Paul Jr. *If trees could talk.* Vantage Press, 2010.
  - Lipkis, Andy. *The simple act of planting a tree.* J.P. Tarcher, 1990.
  - Lyon, George Ella. *ABCedar: an alphabet of trees.* Orchard Books, 1989.
  - Seifert, Patti. *Exploring tree habitats.* Mondo, 1994.
  - Webb, Barbara. *Los árboles : pulmones de la Tierra.* Rourke Educational Media, 2014.

Apps:

- NASA GLOBE Observer Trees module

PROGRAM 3

All About Trees

Activities, step by step

Specific preparation in advance of this program:

2-4 weeks before the program:

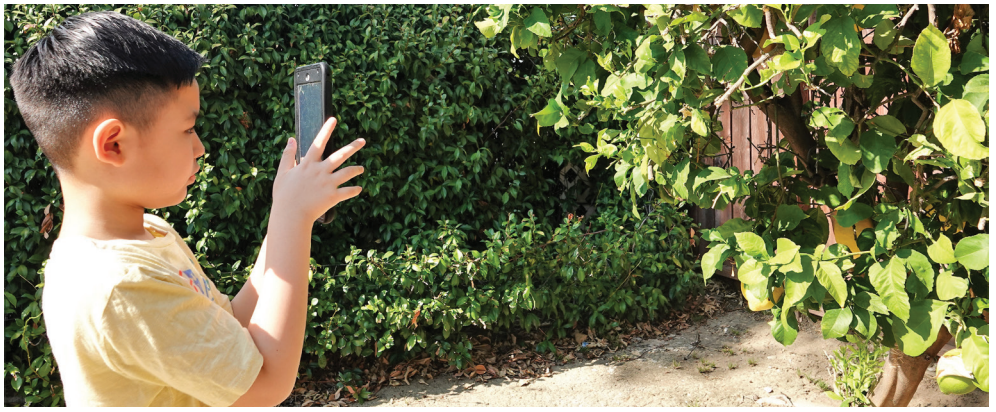
- Include in the publicity assets that sunscreen and appropriate clothing is required for the outdoor observation activity.
- Download, play and familiarize yourself with the features in the NASA GLOBE Observer Trees Module.
  - Watch Introduction to GLOBE Observer: Trees video
  - Review GLOBE Tree Height Comparison Activity Guide.
- Review Trees Powerpoint slides (Deck 1 | Deck 2) for talking points.

Let the program begin…

1. Divide participants into groups of 2-4 and go over program agenda.
2. Go over safety rules and ethics guidelines and collect liability waiver and/or photo release form.
3. Have the participants stand and imagine being trees. Describe tree parts bottom to top and the benefits they contribute to the ecosystem (roots holding soil and drawing up minerals, bark absorbing toxins, leaves producing oxygen, water vapor and shade, and absorbing carbon dioxide).
4. Discuss GLOBE's Trees Around the World campaign and Trees app, and compare taking tree measurements with a doctor's visit (taking tree heights/weights to measure growth and health).
5. Highlight the importance of having Neighborhood Scientists collect and share tree data with the researchers to compare and validate the data collected using satellites.

Part 4 | Sample Programs

6. Start ACTIVITY: Build a Clinometer with step by step demonstration.
7. Go over the steps to set up a GLOBE Observer account and use it to collect and share data.
   - For participants who do not wish to create a personal account, ask them to sign in using the library's GLOBE Observer account.
8. Start ACTIVITY: Outdoor Observation
   - Bringing tools and GLOBE Tree Height Comparison Activity Guide, take groups to park or the tree site. Demonstrate how to use the tape measures and clinometers, then assist groups taking data as needed (15-20 minutes).
   - Gather the groups when time is up, allow 5 minutes to compare observations and debrief.
9. For younger participants, return to the program room and start ACTIVITY: Leaf printing craft with leaves from local trees.
10. For teens and adult participants, remain outdoors for 15 minutes and start ACTIVITY: Tree identification activity using the book, "Pacific Coast Tree Finder". Return to the program room after the activity. Allow 5 minutes to compare observations and debrief.



PROGRAM 4 Exploring Biodiversity

Learning goal: Understand biodiversity and its importance to humans and ecosystems. Explore and use the iNaturalist and Seek app. Learn to collect and share data using the apps. Demonstrate appropriate etiquette and ways to observe and take photos for data collection.

Audience level: Families and children ages 8+

Length of program: 90 minutes

Supplies needed: (equipment, books, apps)

- Smart device with data plan (for outdoor activity)
- Clip-on cell phone lens kit (optional but highly recommend; available on Amazon.com)
- Internet connection/WiFi (for indoor activity)

Apps:

- Seek (more suitable for use with children) - OR -
- iNaturalist (requires users to be at least 13 years old and create an account)

Part 4 | Sample Programs

Booklist:

- Hoare, Ben. *The Wonders of Nature.* DK Publishing, 2019.

Activities, step by step

Specific preparation in advance of this program:

2-4 weeks before the program:

- In publicity assets, emphasize insect repellent, sunscreen, and proper clothing are required for outdoor activities.
- Download, play and familiarize yourself with the features in the Seek by iNaturalist and iNaturalist apps.

Let the program begin...

1. Divide participants into pairs and go over program agenda.
2. Go over safety rules and ethics guidelines and collect liability waiver and/or photo release forms.
3. Intro, short interactive discussion about biodiversity.
4. Booktalk Hoare's *The Wonders of Nature.*
5. Demonstrate how to use the Seek and iNaturalist apps.
6. If providing clip-on lenses, demonstrate how to use and handle the lenses.
7. Start ACTIVITY: Outdoor Observation
   - Take groups to a park or safe site around the library to photograph and identify specimens (15-20 mins).
   - Explain to participants their tasks and responsibilities (they can take turns):
     - one will be in charge of the kit.
     - one will be in charge of the iPad.
   - Challenge the groups to photograph and identify at least 25 different examples of biodiversity, e.g., wildlife, insects, plants, etc.
   - Gather the groups when time is up, allow 5 minutes to share their observations, including any challenges using the equipment or app.
8. Return to the program room.

PROGRAM 5 Monitoring Water Quality

Learning goal: Understand the importance of clean water for human and ecosystem health. Understand how climate change is affecting our water sources. Learn to use TDS meters and pH strips to test electrical conductivity, total dissolved solids, and temperature in water samples. Use the mWater Surveyor app/website to collect, display and share data.

Audience level: Families and children ages 9+

Length of program: 90 minutes

Supplies needed: (equipment, books, apps)

- Smart device with data plan or laptop/desktop computer
- Internet/WiFi or Mobile Hotspot/MiFi
- 1 Pack of pH Paper
- 3-7 12oz clean paper cups (per group)
- 1 HANNA DiST TDS Meter (see Part 7- Resources for recommended vendor list)
- 1 pencil
- 1 pair of gloves for each participant
- Distilled water in gallon jug
- Solution of lemon juice and water in gallon jug
- Solution of baking soda and water gallon jug
- Empty bowls for rinsing the TDS meter (must use fresh or tap water; DO NOT use distilled or salt water)
- Simplified water sample data worksheet

Part 4 | Sample Programs

Apps:

- mWater Surveyor

Activities, step by step

Specific preparation in advance of this program:

2-4 weeks before the program:

- Recommended: Include in publicity assets a suggestion that participants bring a sample of tap water (6 oz.) from their home.
- Download, play and familiarize yourself with the features in the mWater apps:
  - Review the mWater surveyor app manual. Focus only on Total Dissolved Solids (TDS), pH, and temperature data collection.
- Prepare a large poster (or write on blackboard) showing the link to mWater Surveyor site (https://www.mwater.com), login, and instructions for how to create a new survey.

Day before the program:

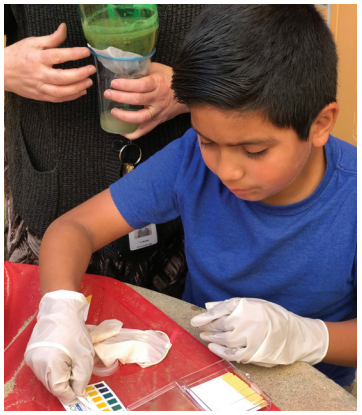
- Prepare one acid and one alkaline solution:
  - Mix solution of lemon juice and water in gallon jug.
  - Mix solution of baking soda and water in gallon jug.
- Have available a gallon jug or pitcher of tap water from your own home or library.
- Have available a gallon jug of distilled water.

PROGRAM 5

Monitoring Water Quality

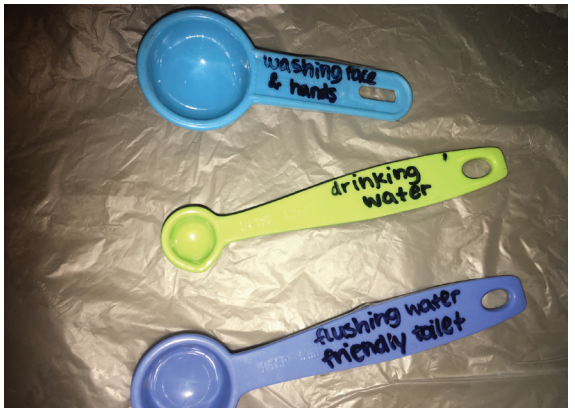
Let the program begin...

1. Divide participants into groups of 2-4 and go over program agenda.
2. Go over safety rules and ethics guidelines and collect liability waiver and/or photo release forms.
3. Intros and brief discussion about why clean water is important to human health and the environment, the difference between clean and dirty water, and how the measurements recorded (pH, electrical conductivity, total dissolved solids, and temperature) will reveal how clean the water is.
4. Explain the importance of collecting and sharing data on water samples with scientists and researchers and how it can be done. Emphasize the need to record an accurate GPS location of the water source.
5. Start ACTIVITY: Water Quality Testing
   - Go over the steps to set up the mWater Surveyor app.



Part 4 | Sample Programs

   - Go over the tools, samples and worksheets on the table. Make sure at least one person per group is tasked with recording measurements.
   - Demonstrate how to use the pH strips and TDS meters, including not touching the probe and not exposing the unused strips to air.
   - Provide each table with the following water samples in clean paper cups:
     - regular (tap water from your home or library)
     - acid
     - alkaline
     - one empty cup for water sample participants brought from home
   - Ask participants to test water samples using pH strips and TDS meter, and record pH, electrical conductivity, total dissolved solids, and temperature on the worksheets. Clear away bowls and cups when done and wipe down tables.
   - Have the participants use their devices to log on to the mWater Surveyor web-based app.
   - Participants will start a new survey and record their data for the water sample they brought from home into the app.
6. Allow 5 minutes for participants to share what they learned and ask questions.



PROGRAM 6 The Air We Breath: Air Quality 101

Learning goal: Participants will be inspired to learn more about our atmosphere and air quality, and will contribute to keeping our environment clean for the health of ourselves and our planet. Participants will also learn to how to take part in the air quality research project to help scientists understand the air quality in their neighborhoods.

Audience level: Families and children 6+

Length of program: 45-60 min

Supplies needed: (equipment, books, apps)

- Smart device with data plan (for outdoor activity)
- Internet/WiFi or Mobile Hotspot/MiFi
- Activity: Make Gas You Can't See (CO_2) materials:
  - Balloon
  - Vinegar
  - Baking soda
  - Funnel (or roll a piece of paper into cone shape)
  - Bottle (plastic or glass)

Part 4 | Sample Programs

Booklist:

- Ladd, Irene. *The Air We Breathe*. NASA Langley Research Center, 2004.

Apps:

- ISeeChange

Activities, step by step

Specific preparation in advance of this program:

2-4 weeks before the program:

- In publicity assets, emphasize sunscreen and appropriate clothing are required for outdoor activity.
- Download, play and familiarize yourself with the features in the ISeeChange app.
  - Watch the Introduction to ISeeChange video on Youtube.
  - Check out the ISeeChange project page on SciStarter.org.

Let the program begin...

1. Divide participants into groups of 2-4 and go over program agenda.
2. Go over safety rules and ethics guidelines and collect liability waiver and/or photo release forms.
   - Remind participants not to touch materials for hands-on activities until instructed to do so.
3. Ask participants to take a deep breath in and out.
   - Ask participants if they can see the air they just breathed in.
   - Explain that although the air all around us is invisible, we know that it's there and we want to make sure that we protect this air and keep it clean.
4. Read aloud the NASA book "The Air We Breathe".

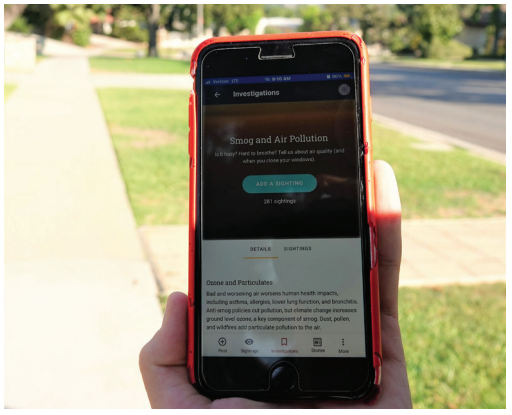
PROGRAM 6

The Air We Breath: Air Quality 101

5. At the end of the book, ask participants what happens when we breathe in dirty air.
   - Explain that dirty air causes respiratory and cardiovascular problems because the particles in the air (particulate matter) will get into our body when we breathe.
6. Talk about ways that we can help keep our air clean.
7. Start ACTIVITY: Make Gas You Can't See (CO_2)
   - Pour some baking soda into a balloon.
   - Pour some vinegar into an empty water bottle.
   - Cover the opening of the water bottle with the lip of the balloon, shaking the baking soda into the water bottle.
   - Show participants that the invisible gas created from the chemical reaction is carbon dioxide, which inflates the balloon.

Part 4 | Sample Programs

   - Ask participants if they know what produces carbon dioxide and what happens when we have too much carbon dioxide.
8. Talk about how everyone can be a Neighborhood Scientist to help monitor our air quality and help scientists understand the impact of air quality by collecting data using ISeeChange app.
9. Go over the steps to create an ISeeChange account and demonstrate how to use it to record and share participants' observations.
   - Participants who do wish to create a personal account can sign in using the library's iSeeChange account.
10. Start ACTIVITY: Outdoor Air Quality Observation
    - Take groups to a park or site around the library where it is safe to photograph, record and upload their air quality observations to the app (15-20 mins).
    - Gather the groups when time is up, allow 5 minutes to share their observations.
11. Return to the program room.



PROGRAM 7 Globe at Night - Monitoring Light Pollution

Learning goal: Understand why scientists study light pollution and its impact on ecosystems, and how we can help by collecting and sharing our data using the project apps.

Audience level: Children ages 7+
Length of program: 30 minutes
Supplies needed (equipment, books, apps):

- Desktop or laptop computer or smart device with data plan
- Internet/WiFi or Hotspot/MiFi
- Sky quality meter (SQM) (for Globe at Night app; see Part 7: Resources for vendor information)
- Flashlight or red LED (preferred) flashlight
- Store-bought planisphere for your geographic location (check latitude)
- ACTIVITY: Planisphere (Starwheel) materials:
  - Planisphere template set printout (one set per participant; be sure to choose the version that includes your geographic location)
  - 8 1/2"x11" cardstock (2 sheets per person)
  - Scissors
  - Split-pin fastener (1 per person)
  - Letter-size transparent plastic, e.g. acetate designed for use with overhead projectors (optional)
  - Glue or tape (optional)
  - Instructions and templates

Part 4 | Sample Programs

Apps:

- Globe at Night
- Loss of the Night (iOS | Android)

Booklist:

- Stiefel, Chana. *Lives of Stars: From Supernovas to Black Holes.* Rourke Educational Media, 2014.
- Laura Loria. *What Is A Constellation.* Britannica Digital Learning, 2015.
- Baby Professor. *Planets, Stars & Constellations.* Speedy Publishing LLC, 2017.

Activities, step by step

Specific preparation in advance of this program:

2-4 weeks before the program:

- In publicity assets, emphasize insect repellent and appropriate clothing are required for outdoor activity; flashlight is highly recommended.
- Download, play and familiarize yourself with the features in the Globe at Night and Loss of the Night apps:
  - Check out the Globe at Night project page on SciStarter.org.
  - Check out the Loss of the Night project page on SciStarter.org.
  - Review the Loss of the Night App Tutorial video (iOS |Android).

Day before the program:

- Observe the night sky using the Loss of the Night app. Screen record or screenshot your observations to be shared during the program.

PROGRAM 7

Globe at Night - Monitoring Light Pollution

Let the program begin...

1. Divide participants into groups of 2-4 and go over program agenda.

2. Go over safety rules and ethics guidelines and collect liability waiver and/or photo release forms.
   - Remind participants not to touch materials for hands-on activities until instructed to do so.

3. Ask participants what can we find in the sky on a clear night.

4. To know what star we are looking at or to find constellations, we need a tool called a “planisphere”, also known as starwheel or stargazing chart.
   - Explain that people in the northern hemisphere and southern hemispheres are looking at different constellations and stars.

5. Start ACTIVITY: Make a planisphere suitable for your geographic location.

6. Explain light pollution and its impact, not only on the visibility of stars, but also nocturnal wildlife and ecosystems. More importantly, artificial lights have shown to increase air temperature which contributes to climate change. Have an image that demonstrates light pollution to show the group during the discussion.

7. Explain why scientists need Neighborhood Scientists’ help in collecting data.

Part 4 | Sample Programs

8. Introduce the Globe at Night web app and Loss of the Night app.
   - Demonstrate step by step how to observe the night sky and share the observations/data with scientists using either the Globe at Night or the Loss of the Night app.

9. ACTIVITY: Observe the night sky outdoors
   - Take participants to a safe outdoor space around the library (sidewalk, patio, etc.) with an unobstructed view of the night sky and allow 15-30 minutes to complete the following activities:
     - Explore the night sky and try to identify constellations, stars, or planets using the DIY planisphere.
     - Next ask participants to observe the night sky, using their smart device to record and upload their observations to the Loss of the Night app.
     - If SQM is available, work together to capture and record the observation using the Globe at Night web app.
   - When time is up, gather all participants and return to the program room.

10. Allow 5-10 minutes to share their observations and thoughts.

PROGRAM 8

Playing 4 Our Planet - Stall Catchers Game

Learning goal: Understand how being a Neighborhood Scientist can help advance medical research. Help researchers at Cornell University learn more about the causes of Alzheimer's disease while playing the Stall Catchers online game together.

Audience level: Children ages 7+

Length of program: 30-40 minutes

Supplies needed (equipment, books, apps):

- A desktop or laptop computer or a smart device
- Internet/WiFi
- Stall Catchers slide deck and/or image
- Projector (optional)

Apps/Websites:

- https://stallcatchers.com/main

Booklist (ebooks):

- e-books about Alzheimer's disease and the brain
- Digital media/database: ScienceFlix

Part 4 | Sample Programs

Activities, step by step

Specific preparation in advance of this program:

2-4 Weeks before the program:

- Download, play and familiarize yourself with the features in the Stall Catchers game.
- Check out the Stall Catchers project page on SciStarter.org.

Let the program begin...

1. Divide participants into groups of 2-4 and go over program agenda.
2. Ask participants what they know about Alzheimer's disease, talk about the symptoms, and explain that scientists are still trying to understand the causes and effects.
3. Explain why and how Neighborhood Scientists can help scientists accelerate research for effective treatment.
4. Demonstrate the steps to create a Stall Catchers account and to navigate the Stall Catchers portal. Participants who don't want to create an account can sign in using the library's group account.
   - Participants who do not wish to create a personal account can sign in using the library's Stall Catchers account.
   - Scroll down the page and go over the facts, short tutorial example, and the partners for this project.
5. Demonstrate step by step how to play the Stall Catchers game. If possible, project the steps on screen for an enlarged view. For younger participants, this is a good time to go over the definitions of stalled and flowing.
6. Start ACTIVITY: play the Stall Catcher Game (15-20 min)
   - Participants can play as a team or individually.
   - Allow 5-10 minutes to share their observations and thoughts.

PROGRAM 9 COVID Near You/ Flu Near You

Learning goal: Participants will learn the structure of the virus and why it is important to wash hands frequently. Participants will understand how being a Neighborhood Scientist can help researchers accelerate their study of the COVID-19 virus and develop an effective treatment. Participants will also learn about the COVID Near You project and contribute health data to help advance research on COVID-19.

Audience level: Families and children age 5+

Length of program: 45-60 min.

Supplies needed: (equipment, books, apps)

- ACTIVITY: Germs
  - Food coloring
  - Shallow white bowl or plate or pan (cake or pie pan works)
  - Water (tap water is fine)
  - Dish soap
  - Black pepper
  - Germs experiment video by Wilmington Branch Library
- ACTIVITY: Explore and participate in the COVID Near You or Flu Near You Project
  - Smart device with data plan
  - Internet or WiFi

Part 4 | Sample Programs

Booklist:

- Minden, Cecilia, PhD. *Keep It Clean: Germ Free.* Cherry Lake Publishing, 2011.
- Ross, Tony. *I Don't Want to Wash My Hands.* G.P. Putnam's Sons Books for Young Readers, 2001.
- Macgregor, Eloise. *Be a Virus: A Kid's Guide to Keeping Safe.* The Rosen Publishing Group, 2020.
- Krasner, Barbara. *Influenza: How the Flu Changed History.* Capstone Press, 2019.
- Roumanis, Alexis. *What is COVID-19? (Engaging Readers, Level 4).* Engage Books, 2020.

Apps/Website:

- COVID Near You
- Flu Near You

Activities, step by step

Specific preparation in advance of this program:

2-4 weeks before the program:

- Familiarize yourself with the features on the COVID Near You or Flu Near You project on SciStarter.
- Try the experiment to make sure it works.
  - Check out: COVID-19 Germs Experiment for Kids! video.
- Learn the basics of the virus structures. Check out the following for talking points:
  - Why does soap work so well on SARS-CoV-2/COVID-19 virus
  - Why is simple soap most effective in destroying coronavirus - SARS-CoV2

PROGRAM 9

COVID Near You/ Flu Near You

Let the program begin...

1. Divide participants into pairs and go over program agenda.
2. Review safety rules and ethics guidelines and collect liability waiver and/or photo release forms.
   - Remind participants not to touch the materials for hands-on activities until instructed to do so.
3. Book talk or read aloud a title on germs and viruses from the booklist above.
4. Start ACTIVITY: Pepper Germs Experiment.
   - Demonstrate the experiment and ask participants to follow.
   - Explain how this experiment relates to germs. It's the reason why we should wash our hands!
     - Breaking down the supplies: Pepper (which acts as the germs), bowl of water (which acts as surface of our skin on our hands), dish soap.
     - Step 1: Shake pepper on top of the water. Give it a good coat! These are the germs that are on the surface of our skin.
     - Step 2: Stick one fingertip directly into the bowl of water with pepper or "germs" on it. You'll see the germs stick all over your hand when you don't wash your hands!
     - Step 3: Rub some dish soap on a clean fingertip. Make sure it is coated well.
     - Step 4: Stick the finger with the soap on it into the "germy" water and watch the germs spread out across the water run away from your fingertip.

Part 4 | Sample Programs

     - Reason behind this: Germs or viruses such as COVID-19 or flu are coated with a lipid (fat) membrane that protects the virus and holds it together.
     - Dish soap, or regular soap soap breaks down the virus, just like how dish soap and water rid the grease on a dirty plate.
     - Therefore, soap and water is the best way to destroy viruses, especially COVID-19 or flu It works even better than 70% rubbing alcohol or hand sanitizer, or wipes.
     - Demonstrate how to properly wash hands to destroy germs.
   - Besides washing hands, emphasize the importance of social distancing, and face covering.
5. Explain how to contribute to research as a Neighborhood Scientist can help researchers and scientists track the spread of COVID-19 and accelerate research for effective treatments and vaccines.
6. Introduce COVID Near You or Flu Near You project. - Contribute to the research by simply tracking their own health condition and self-monitoring for COVID or flu symptoms.
7. Start ACTIVITY: Track your health with COVID Near You or Flu Near You
   - Go over and demonstrate the steps by answering 4 simple questions daily. No need to register an account.
8. Allow 5 minutes to share thoughts and ask if participants feel they will contribute daily. If yes, they can add their cell phone number and will receive a daily reminder to go to the site and share their self-monitoring health conditions.
9. Remind participants that it is very important to continue practicing social distancing, wear a face covering and WASH HANDS!

PROGRAM 10 Climate Reality Storytime

Learning goal: Raise awareness of climate change, loss of biodiversity, and the importance of preserving/protecting planet ecosystems. Be a Neighborhood Scientist by observing, wondering, and learning (OWL) in your own neighborhood.

Audience level: Children ages 5-10, and their families
Length of program: 15-20 minutes per session
Supplies needed (props, equipment, books, apps):

- Flannelboard with easel
- Felt letters

Apps: NONE

Booklist:

- **Our Beautiful Earth: Every Day is Earth Day**
  - Lewis, J. Patrick. *Make the Earth Your Companion.* Creative Editions, 2017.
  - Murphy, Patricia J. *Mama, Look!* Little Bee Books, 2017.
- **Our Beloved Species: For the Love of Animals**
  - Barroux, *Where's the Elephant?* Candlewick Press, 2015.
  - Moore, Lindsay. *Sea Bear: A Journey for Survival.** Greenwillow Books, 2019.
  - McClimans, David. *Gone Wild: An Endangered Animal Alphabet.** Walker Books for Young Readers, 2006.
  - Thimmesh, Catherine. *A Baby Like You.** Houghton Mifflin Harcourt, 2019.

Part 4 | Sample Programs

- **Biodiversity**
  - Rayner, Catherine. *One Happy Tiger.* Tiger Tales, 2017.
  - Aston, Dianna Hutts, illus. by Sylvia Long. *A Beetle Is Shy.** Chronicle Books, 2016.
  - Underwood, Deborah. *Carl and the Meaning of Life.* 2019.
  - Teckentrup, Britta. *Under the Same Sky.* Tiger Tales, 2018.
- **OWL: Observe, Wonder, Learn**
  - Diesen, Deborah. *The Pout-Pout Fish Cleans Up the Ocean.* Farrar Straus Giroux, 2019.
  - Carson, Rachel. *The Sense of Wonder: A Celebration of Nature for Parents and Children.** Harper Perennial, 2017 (originally pub. 1965).
  - Archer, Micha. *Daniel Finds a Poem*. Nancy Paulsen Books, 2016.
  *A few pages shown, do not have to read in full.
- **Other books consulted for inspiration and guidance:**
  - Kurlansky, Mark. *Bugs in Danger: Our Vanishing Bees, Butterflies, and Beetles.* Bloomsbury Children's Books, 2019.
  - Williams, Lily. *If Polar Bears Disappeared.* Roaring Brook Press, 2018.
  - Ritchie, Scot. *Join the No-Plastic Challenge! A First Book of Reducing Waste.* Kids Can Press, 2019.
  - Salt, Rachel. *The Plastic Problem.* Firefly Books, 2019.
  - Zabinski, Tanya. *Peace, Love, Action! Everyday Acts of Goodness from A to Z.* Plum Blossom Books, 2019.
- **Flannelboard Songs:**
  - Coral Reef, sung to And the Green Grass Grows All Around
  - Good Night, Irene (Raffi version)

Activity Step-by-Step

1. Focus on two letters:
   - C-climate, community, change, coexist, connect, etc.
   - E-environment, ecosystem, extinction, engagement, Earth, etc.
2. Four concepts:
   - Earth Day
   - For the Love of Animals–Extinction and the importance of numbers
   - We All Live Together on Planet Earth–Coexistence and Biodiversity
   - Observe, Wonder, Learn–bring things full circle and return to the series acronym, OWL

Part 5 | DIY Circulating Kits

We created DIY circulating kits in order to make participation in Neighborhood Science projects available to community members who can't attend our programs, or who want to learn about and contribute to the projects at their own pace. These DIY kits can significantly lower the barriers to entry due to lack of resources (e.g., equipment, tools, and easy-to-follow instructions, etc.) and motivate patrons of all ages to contribute to real-world scientific research.

DIY circulating kits need to be:

- Simple enough for people to understand how to do the projects without assistance
- Small enough to be carried and stored easily
- Inexpensive enough to create multiple kits, with additional funds available to purchase replacements if any elements become lost or damaged
- Interesting enough to appeal to all ages
- Flexible enough that community members without access to mobile technology can still participate in gathering and sharing data

Each DIY circulating kit contains:

- Instruction packet and laminated, erasable data collection sheets
- User feedback form
- Collection & observation tools
- Observation journal or notebook

To better sustain a high level of engagement, consider surveying your patrons, frontline librarians, and staff to identify interests and community concerns. While they can be fun STEAM activities, these Neighborhood Science kits will be even more meaningful to your patrons when they are tied to a research project that addresses topics relevant to their neighborhood, such as loss of biodiversity, pollution, or health issues.

Globe at Night (Light Pollution Monitoring) Kit

Why Do Scientists Study Light Pollution?

Scientists study light pollution in order to better understand how it impacts the climate and the ecosystem in urban areas. The thousands of lights that illuminate the cities of today have been shown to increase the average air temperature which contributes to the harmful effects of climate change.

What's in the Kit?

- 1 Sky Quality Meter (SQM)
- 1 Red LED Light Flashlight
- 1 Planisphere (Stargazing Chart)
- 1 Mini GPS Location Finder
- 1 USB Charging Cable
- 1 Spare 9V Battery
- 1 spare AA Battery
- 1 Sharpie
- 1 Eraser
- 1 Observation Journal
- Safety Rules

Part 5 | DIY Circulating Kits

How to Help Scientists Collect Data?

Go to *SciStarter* and view the instructions on how to conduct a night sky observation. You will first need to create a free account.

Step 1

If you have a smart device, turn on the GPS feature. You can also use Google Maps or download a free GPS-Map app for your iOS/Apple or Android device.

If you don't have a smart device, use the Mini GPS tracker included in the kit for location coordinates and elevation information. Press and hold the middle button to turn on the GPS and give it 8-15 minutes to connect to a satellite. When connected, the screen will display a signal icon with bars and a blinking black bullet. Press the top button three times to see coordinates and two more times to see the elevation information measured in meters. Press and hold the middle button to turn the GPS off.

Step 2

On a night when the moon is not high, at least an hour after sunset, go outside to a clear spot with your Sky Quality Meter (SQM), your planisphere/constellation guide, and your red LED flashlight to protect your night vision. Make sure to write down the serial number of your SQM for when you are submitting your data.

Step 3

With the sensor/faceplate pointing towards the sky, push the red button on your SQM once and wait as it takes its reading. Once it's finished be sure to take note of the measurement or record the measurement on the data card.

Step 4

Next, using your planisphere and the Observe tab on the Globe at Night website, see which constellations you can find on your own.

Step 5

Go to the Globe at Night website to enter the data you collected from your observation. Allow the webapp to use your current location.

Step 6

Complete our survey and return the kit to the library so someone else can contribute.

Monitoring Water Quality Kit

Why Do Scientists Study Water Quality?

Rising sea levels and increasing average global temperatures due to climate change are threatening the quality of water that is essential to ecosystems across the globe. Scientists study data such as pH, electrical conductivity (EC), and temperature from samples of different water sources to better understand the effects that climate change may have on the quality of water.

What's in the Kit?

- 1 Distilled Water Wash Bottle
- 1 Empty Water Bottle with Cap
- 1 Pack of pH Paper
- 2-3 Glass Vials with Cap
- 1 HANNA DiST TDS Meter
- 1 Mini GPS Location Finder
- 1 USB Charging Cable
- 1 Instructions Packet
- 1 Sharpie
- 1 Eraser
- 1 Observation Journal
- 1 Pair of Gloves
- Safety Rules

How to Help Scientists Collect Data?

- Download the *mWater Surveyor* app for Android or iOS/Apple. Open the app and follow the instructions to create an account using your email address.
- Turn on the GPS feature on your smart device for accurate location coordinates and elevation. You can also use Google Maps or download a free GPS-Map app for your iOS/Apple or Android device.
- Access the complete mWater Surveyor app tutorial and reference guide.

Collecting and Surveying Water Samples

Step 1

Fill the clear 250 mL bottle in the kit with water from the source you want to sample (e.g. faucet, hose). To test water from additional sources, fill the glass vials in the kit for sample collection.

Part 5 | DIY Circulating Kits

Step 2

Immerse 1 pH testing strip into the water sample for up to 2 seconds and then remove. Shake off excess liquid. Wait 10 seconds and then compare the colors produced on the indicator pads with those on the color chart before the indicator pads dry. Record the pH value that contains colors that best reflect the colors that are on the strip. *Keep all unused pH testing strips in the original packaging.*

Step 3

Record the pH value on the data card using the Sharpie included the kit (marking is erasable using the included eraser).

Step 4

Turn on the TDS meter in the kit and dip the meter probe into the filled bottle (included) or a paper cup (not included) that contains the water sample. You will use TDS meters to test Total Dissolved Solids (TDS) in parts per million (PPM), and Electrical Conductivity (EC). Conductivity of water is important because it reveals water's salinity and the concentration of other minerals and contaminants. Record the values that appear on the display on the data card.

Only use the TDS meter for fresh water testing. Do NOT use it to test ocean/salt water.

Step 5

Return to the *mWater* app or website and input and submit the data you collected.

Step 6 - Cleaning

Drain the water sample in the collecting bottle or vials. Use the included distilled water to rinse the bottle and vials. Leave the cap off of the vials and bottle to dry. Place the caps back on the dried bottles and vials and put them back into the kit bag along with other equipment and materials that need to be returned.

Rinse the probe of the TDS meter in *tap water only* to neutralize the acidic fluid that was tested. *Do not* rinse it with distilled water.

Step 7

Complete our survey and return the kit to the library so someone else can contribute.

Don't have a smartphone or tablet? Follow these steps to participate in this project.

Clouds with NASA GLOBE Observer Kit

Why Do Scientists Study Clouds?

Clouds affect the overall temperature of the Earth and play a large role in controlling the planet's long-term climate. Scientists need accurate data on clouds to understand their impact over time. Satellites only see the top of the clouds while we see the bottom—together we get a much more complete picture of clouds and their effects in the atmosphere.

What's in the Kit?

- 1 Book: *What is Happening to Our Climate?*
- 1 GLOBE Cloud Identification Chart
- 1 Mini GPS Location Finder
- 1 USB Charging Cable
- 1 Sharpie
- 1 Eraser
- 1 Observation Journal
- Safety Rules

Part 5 | DIY Circulating Kits

How to Help Scientists Collect Data?

Step 1

Go to ***SciStarter.*** Create an account to access instructions on how to conduct, record, and share your cloud observations. You will also be directed to download the *GLOBE Observer* app.

Step 2

Open the *GLOBE Observer* app and follow the instructions to create an account.

Step 3

Turn on the GPS feature on your phone for the *GLOBE Observer* app to capture accurate location coordinates. You can also use Google Maps or download a free GPS-Map app for your iOS/Apple or Android device.

Step 4 (Optional)

Still not sure about your observations? Check out the *GLOBE Observer* tutorials page.

Step 5

Complete our survey and return the kit to the library so someone else can contribute.

Don't have a smartphone or tablet? Follow these steps to participate in this project.

Exploring Biodiversity with iNaturalist Kit

Why Do Scientists Study Biodiversity?

Biodiversity—the variety of life in a habitat or ecosystem—is a good indicator of how healthy an ecosystem is, which is why it is important for scientists to know about the different types of species living in a particular area. Studying biodiversity gives scientists and researchers a better understanding of the impacts of human activity and climate change on the ecosystem.

What's in the Kit?

- 1 Clip-On Lens Kit for Mobile Device
- 1 Plastic Tweezer
- 1 Mini GPS Location Finder
- 1 USB Charging Cable
- 1 Instructions Packet
- 1 Sharpie
- 1 Eraser
- Safety Rules

Part 5 | DIY Circulating Kits

How to Help Scientists Collect Data?

Step 1
Download the *iNaturalist* app for Android or iOS/Apple. Open the app and follow the instructions to create an account.

Step 2
Go to *SciStarter*. Create an account to view the *Exploring Biodiversity* page and instructions.

Step 3
Turn on the GPS feature on your smart device for accurate location coordinates and elevation. You can also use Google Maps or download a free GPS-Map app for your iOS/Apple or Android device.

Step 4
Connect your *iNaturalist* account to your *SciStarter* account through the Account Settings on your *SciStarter* Dashboard.

Step 5
To take pictures of small things like insects or flowers, use the clip-on macro lens in the kit from about an inch away. To take pictures of things far away, clip the zoom or telephoto lens onto your smart device.

Step 6
Open the *iNaturalist* app and click on the camera icon to take pictures of and submit your observations.

Step 7
Complete our survey and return the kit to the library so someone else can contribute.

Don't have a smartphone or tablet? Follow these steps to participate in this project.

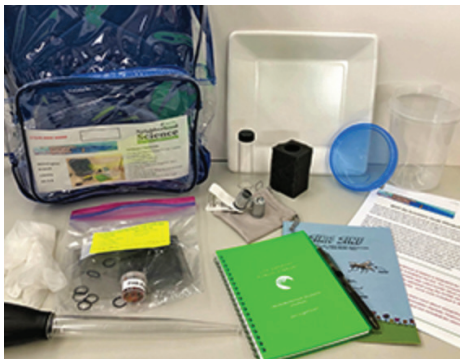
Mosquito Habitat Mapping with NASA GLOBE Observer Kit

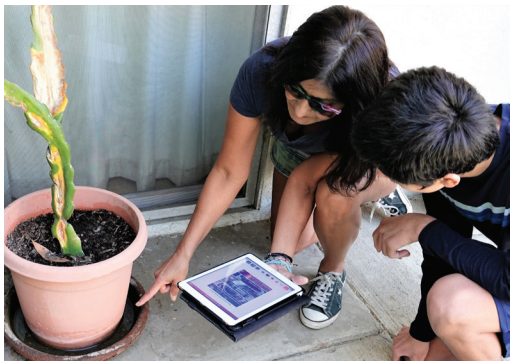
Why Do Scientists Study Mosquito Habitats?

Invasive mosquito species are spreading rapidly across Southern California with the potential to transmit viruses that cause serious diseases such as West Nile virus, dengue, and Zika. Surveillance and breeding site mitigation are key to preventing mosquito-borne disease outbreaks.

What's in the Kit:

- Trap Supplies
- 1 Turkey Baster
- 1 Plastic Container with Lid
- 2 White Paper Plates
- 1 Clip-on Cellphone Magnifier
- 1 Plastic Tweezer
- 1 Glass Vial of Rubbing Alcohol
- 1 Pair of Gloves
- 1 Sharpie
- 1 Eraser
- 1 Observation Journal
- 1 Book: *Zika Zine*
- 1 Instructions Packet
- Safety Rules





Part 5 | DIY Circulating Kits

How to Help Scientists Collect Data?

Step 1
Download the *GLOBE Observer* mobile app to your smartphone or tablet.

Step 2
Open the app and follow the instructions to create an account. You must have a valid email address.

Step 3
Turn on the GPS feature on your phone for the *GLOBE Observer* app to capture accurate location coordinates. You can also use Google Maps or download a free GPS-Map app for your iOS/Apple or Android device.

Step 4
Go to *SciStarter* and view the instructions on how to conduct, record, and share your mosquito observations digitally from a natural container. You will first need to create a free account.

Step 5
To conduct observations using your own mosquito trap, use the supplies in the kit and follow the instructions to build and set up a mosquito trap. To record your observations, select *New Mosquito Habitat Observation* in the app, and select *Container: Artificial.* Next, select Other, and then select *Adult Mosquito Trap.* Now make your observations of any larvae or any eggs in your trap. Make sure to submit your observations once a week.

Step 6
Read the Mosquito Habitat Mapper Tutorial, for detailed, step-by-step instructions on how to collect specimens and observations with the *GLOBE Observer* Mosquito Habitat Mapper.

Step 7
Complete our survey and return the kit to the library so someone else can contribute.

Don't have a smartphone or tablet? Follow these steps to participate in this project

Part 6 Evaluation

Evaluation is a crucial part of any library initiative or service. It enables you to:

- **Determine if the initiative is meeting its goals and objectives**
- **Pinpoint and strengthen areas where improvement is needed**
- **Demonstrate to funders and stakeholders the impact of the initiative**

Asking participants to fill out surveys is a common way to gather information in order to evaluate the program. Because our Neighborhood Science initiative was funded by a California State Library (CSL) LSTA grant, we used a survey tool supplied by CSL. The post-program survey tool contains nine questions. The first six questions, required by CSL, focus primarily on participants' discovery of and interest in library programs. We created three additional questions each year, which were intended to gather specific information related to our goals for the initiative.

The surveys for Year 1 and 2 can be found in the Appendix section of this Toolkit. While we are still waiting for final survey results from Year 2, survey results for Year 1 include:

- 94.9% learned something from the program
- 81.3% had more confidence about the topic
- 84% intended to apply what they learned
- 83.2% learned something about their neighborhood or community

While survey fatigue is commonly observed among participants, there are several ways to make surveying less of a chore. Here are some suggestions:

- Issue the survey via laptop, tablet, or phone instead of passing out paper surveys.
- Adopt the Talkback Boards surveying method.
- Reserve the last three to five minutes of your program to invite participants to talk about their experience of the programs. You can also choose to do a group poll, asking participants to raise their hands in response to close-ended questions.

When you are conducting a program virtually, gathering evaluation data from surveys can be tricky. You can put a link to your survey in the chat during the program; however it is unlikely that most attendees will click on the link to fill out the survey. Invite response and conversation by asking a reflective open-ended question at the end of your program. Participants can either share answers aloud or type them in the chat. These responses are very helpful to insert as quotes to any reports you may write or future grant opportunities you may apply for.

Here are some examples of open-ended questions:

- What was your favorite part of today's program?
- What is one thing about this topic that you would tell a friend about?
- What is something related to this topic that you plan to do on your own?

Open-ended questions can also be used during in-person programming, both to gauge interest and to determine if learning objectives are being met.

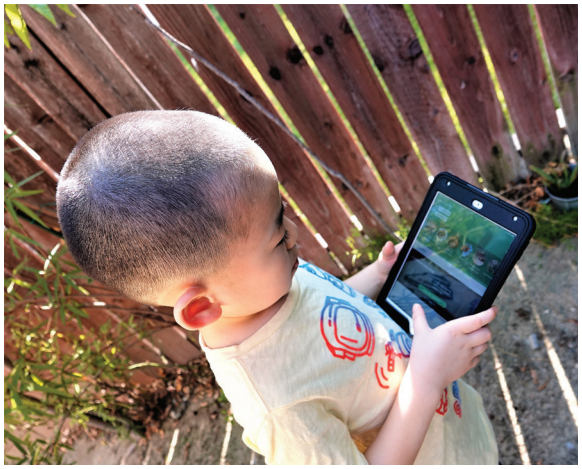
Another way to gather evaluation data from the virtual participants is to incorporate online polling tools. These tools help you gauge the audience engagement by tallying the number of responses you receive. Here are some popular polling tools:

- Kahoot!
- Zoom or Google Meet Polls
- Mentimeter

Limit the polling to 2-5 questions that you can pose throughout your program.

Part 6 | Evaluation

In addition to participant surveys, soliciting post-program feedback from librarians is a good way to measure and improve the quality of the Neighborhood Science program. Their interactions with participants allow librarians to capture anecdotes and observations, comments and reflections, which can help gauge the community's responses to the Neighborhood Science experience and identify challenges and areas of improvement needed for future programs. A sample librarian post-program feedback form can be found in the appendix.



Part 7 | Neighborhood Science Resources

Where to buy supplies for programs and kits?

While many smaller and more common observation gadgets and tools can easily be purchased through Amazon.com, Dollar Tree or 99 Cent stores, there are some specialized or research-grade tools you may need to have in your kit to ensure the quality of the data collected by your participants.

When shopping on Amazon.com you will often find hundreds of listings for the same item. It is important to read the product description carefully before purchasing items to make sure they have the specifications you are looking for, such as the magnifying power of the zoom lens for the Explore Biodiversity kit.

Here are some of the recommended vendors for more specialized tools:

1. Carolina Biological Supply
2. Grainger Industrial Supply
3. Unihedron

In addition, SciStarter continues to curate its "Citizen Science Tools" page where you can easily locate the vendors of specialized observation or data collection tools you may need for your programs and kits. Some of the vendors may offer discounts if you mention Scistarter when calling them directly or purchase through the link provided by SciStarter.

Where to find Neighborhood Science projects and information?

- Scistarter
- Zooniverse
- Spotteron
- The Network of the National Library of Medicine (NNLM)
- Anecdata
- Citizen Science at Arizona State University
- National Audubon Society
- National Geographic
- US Environmental Protection Agency
- US Geological Survey

- NASA
- National Oceanic and Atmospheric Administration (NOAA)
- National Park Service
- California Department of Fish and Wildlife
- California Air Resources Board
- California Coastal Commission
- University of California

State Government agencies such as the California Department of Fish and Wildlife, California Air Resources Board and California Coastal Commission are other credible sources when seeking projects. They may also have experts willing to participate in projects hosted by your library.

Further, look to Universities to find comprehensive neighborhood science projects covering a multitude of topics.

Part 7 | Neighborhood Science Resources

Where to find guest speakers or subject experts to appear at your program?

- The NASA Speakers Bureau
- Citizens Climate Lobby - local chapter near you
- Climate Reality Leadership Corps – a local chapter near you
- Sidewalk Astronomers/Planetary Society
- Skype a Scientist
- Search for and reach out to local science/STEM-topic meetup groups using Meetup.com
- Reach out to local schools/universities, museums, arboretum/ nursery, etc.
- Your city's department of sanitation, waste management, fire, public health, etc.
- South Coast Air Quality Management District (aqmd.gov)
- California Coastal Commission and other state agencies
- Ask your friends and family members

Part 8 | Partnerships

Establishing and maintaining partnerships for your Neighborhood Science program is crucial.

Benefits of Partnerships:

1. Your partners can help amplify your efforts locally, nationally, even globally.
2. You can tap into their existing promotional channels.
3. Your partners may share their resources with you, including access to subject matter experts.
4. Your partners can help you reach or recruit potential program volunteers or participants.
5. Your partners may provide free professional development opportunities to your librarians, library staff, volunteers, and participants.
6. You may be able to apply for grants with your partners.

How to Find Partners?

1. Reach out to Neighborhood Science platforms.
2. Join Neighborhood Science-related organizations.
3. Attend webinars offered by universities or organizations that are leading various Neighborhood Science research projects.
4. Connect with local networks, organizations and businesses that are invested in community based work.
5. Network with municipal agencies that may have campaigns or initiatives that can be integrated into your Neighborhood Science programs.

Recommended Partnering Organizations:

- Scistarter
- Zooniverse
- Anecdata
- Audubon Society
- Environmental Protection Agency
- The Network of the National Library of Medicine (NNLM)
- GLOBE
- NASA
- Treepeople
- City or county's mosquito vector control unit
- Museums, Botanical Gardens, Zoo, etc.

Tips for working with Partners:

- Research the background of an organization to make sure their goals align with your Neighborhood Science programs.
- Follow up and check in with the potential partner. It takes time to establish a partnership.
- Create a one-pager about your program or initiative that allows you to quickly highlight its missions, goals, and objectives.
- Reach out to potential partners early on. Even if your idea is still in development, partners can help define and narrow scope.
- Share the cost of supplies with partners or contribute in other ways if possible.
- Some partnerships may require an application process. Be sure to read through the application instructions carefully and note the submission deadline.

Part 9 | Acknowledgements

Our first two years of Neighborhood Science have been filled with adventure, excitement, challenge, and a strong sense of mission. We couldn't have done it without a lot of support.

Thanks first of all to the California State Library for the opportunity to apply for two related LSTA grants.

The support of the directors and administrative leadership of both the Los Angeles Public Library (LAPL) and the Pasadena Public Library (PPL) has allowed us to experiment and take risks with this brand new initiative.

Our partners have provided essential expertise and guidance to us along the way. Thanks in particular to GLOBE, SciStarter, the Environmental Protection Agency, the Pasadena Audubon Society's Young Birders' Club, Carnegie Observatories, and Safecast.

Special thanks to the librarians who created this Toolkit: Vivienne Byrd, Lauren Kratz, Rae McBride, Eva Mitnick, Diane Olivo-Posner, Michael Pierce, Laurie Reese, Jesse Roth, and Hsin-Yi Wang.

Finally, Neighborhood Science would have never happened without the passion, creativity, and courage of our pioneering library staff at both LAPL and PPL!

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- Christine Chai, Arroyo Seco Branch, LAPL
- Shakti Maisen, Arroyo Seco Branch, LAPL
- Oscar Giurcovich, Durant Branch, LAPL
- Caitlin Quinn - Eagle Rock Branch, LAPL
- Patsy Tuck, Eagle Rock Branch, LAPL
- Rachel McBride, Echo Park Branch, LAPL
- Shuhong Ni, El Sereno Branch, LAPL
- Laurie Reese, Felipe de Neve Branch, LAPL
- Ken Ornstein, Lake View Terrace Branch, LAPL
- Nawal Takidin, Lake View Terrace Branch, LAPL
- Shirley Ly, Lincoln Heights Branch, LAPL
- Senele Rios, Mark Twain Branch, LAPL
- William Bermeo, Mark Twain Branch, LAPL
- Anna-Marie Farquhar, Robertson Branch, LAPL
- Lauren Kratz, Studio City Branch, LAPL
- Dana Eklund, Sylmar Branch, LAPL
- Charlene Nichols, Watts Branch, LAPL
- Leilany Chavez, Watts Branch, LAPL
- Chrissy Carr, West Los Angeles Branch, LAPL
- Ian Rosen, West Los Angeles Branch, LAPL
- Kristin Peers, West Valley Branch, LAPL
- Jennifer Noble, Westwood Branch, LAPL
- Zachary Gilman, Westwood Branch, LAPL
- Denice Nossett, Wilmington Branch, LAPL
- Kathleen Larson, Wilmington Branch, LAPL
- Marc Horton, Wilmington Branch, LAPL
- Michael Pierce, Central, PPL
- Hsin-Yi Wang, Central, PPL
- William Porras, Central, PPL
- Catherine Hany, Central, PPL
- Mike Shea, Central, PPL
- Suzanne Mulhare, Central, PPL
- Nikki Takarabe, Central, PPL
- Jennifer Driscoll, Central, PPL
- Marie Plug, Central, PPL
- AnnMarie Kolakowski, Central, PPL
- Shauna Redmond, Central, PPL
- Stephanie Dolph, Hastings Branch, PPL
- Jesse Roth, Hill Avenue Branch, PPL
- Veronica Bernal, Hill Avenue Branch, PPL
- Melvin Racelis, La Pintoresca Branch, PPL
- Illyanna Logan, Lamanda Park Branch, PPL

Part 10 | Appendix

- Safety Rules
- Neighborhood Science Pilot Program 1.0 – Participant Feedback Form
- Neighborhood Science 2.0 – Participant Feedback Form
- Neighborhood Science 2.0 Program – Librarian Feedback Form
- Sample – Agreement Assuming Risk of Injury or Damage, Waiver, Indemnity and Release of Claims
- Sample Program Photo Release Blanket Signage
- Sample Personal Release

Safety Rules

- Always wear safety gear such as goggles and gloves during observations
- When possible, wear sunscreen, hat, insect repellent and long sleeves when conducting observations outdoors
- Do not look directly into the sun
- Handle observation equipment and tools carefully
- Watch your step and surroundings when photographing your observations outdoors
- Do not remove batteries from equipment unless replacement is needed. Place the drained batteries into the “Spare Batteries” pouch (if included) for recycling
- Do not leave your materials unattended
- Wash your hands with soap and water when you are finished
- Please follow the instructions to clean and dry all equipment and tools after use
- Discard the disposable gloves in the kit after use
- Put all equipment and unused supplies back into the kit and return it to the library
- RECYCLE any consumed materials or supplies after use

Library: _____ **Date:** _____ **Program:** _____

Are you a(n): _____ **Child** _____ **Teen** _____ **Adult**

Are you: _____ **Male** _____ **Female** _____ **Decline to State**

1. I learned something by participating in this library activity. Please circle one:

Strongly Disagree Disagree Neither Agree nor Disagree Agree Strongly Agree

2. I feel more confident about what I just learned. Please circle one:

Strongly Disagree Disagree Neither Agree nor Disagree Agree Strongly Agree

3. I intend to apply what I just learned. Please circle one:

Strongly Disagree Disagree Neither Agree nor Disagree Agree Strongly Agree

4. I am more aware of resources and services provided by the library. Please circle one:

Strongly Disagree Disagree Neither Agree nor Disagree Agree Strongly Agree

5. I am more likely to use other library resources and services. Please circle one:

Strongly Disagree Disagree Neither Agree nor Disagree Agree Strongly Agree

6. This is my first time taking part in a program at the library. Please circle one:

Yes No

7. I understand the purpose of Neighborhood Science. Please circle one:

Strongly Disagree Disagree Neither Agree nor Disagree Agree Strongly Agree

8. I learned how to use scientific research tools. Please circle one:

Strongly Disagree Disagree Neither Agree nor Disagree Agree Strongly Agree

9. I learned something about my community/neighborhood. Please circle one:

Strongly Disagree Disagree Neither Agree nor Disagree Agree Strongly Agree

Library: _____ **Date:** _____ **Program:** _____

Are you a(n): _____ **Child** _____ **Teen** _____ **Adult**

Are you: _____ **Male** _____ **Female** _____ **Decline to State**

1. I learned something by participating in this library activity. Please circle one:

Strongly Disagree Disagree Neither Agree nor Disagree Agree Strongly Agree

2. I feel more confident about what I just learned. Please circle one:

Strongly Disagree Disagree Neither Agree nor Disagree Agree Strongly Agree

3. I intend to apply what I just learned. Please circle one:

Strongly Disagree Disagree Neither Agree nor Disagree Agree Strongly Agree

4. I am more aware of resources and services provided by the library. Please circle one:

Strongly Disagree Disagree Neither Agree nor Disagree Agree Strongly Agree

5. I am more likely to use other library resources and services. Please circle one:

Strongly Disagree Disagree Neither Agree nor Disagree Agree Strongly Agree

6. This is my first time taking part in a program at the library. Please circle one:

Yes No

7. I understand the importance of Neighborhood Science. Please circle one:

Strongly Disagree Disagree Neither Agree nor Disagree Agree Strongly Agree

8. I used a Neighborhood Science mobile app while participating in this activity. Please circle one:

Strongly Disagree Disagree Neither Agree nor Disagree Agree Strongly Agree

9. I learned something about my community/neighborhood. Please circle one:

Strongly Disagree Disagree Neither Agree nor Disagree Agree Strongly Agree

Branch:	Librarian:
Name of program:	Date & Time of the program:

Target Audience (Check all applied):	Children	Teens	Adults	Families

Children Attendance:	# of Male:	# of Female:
Teen Attendance:	# of Male:	# of Female:
Adult Attendance:	# of Male:	# of Female:

Materials and Equipment Used:

Books/Apps Used:

Description of Program (Please be detailed):

Learning Objective(s) (examples: Teens will be inspired to learn that study of clouds provide important data to scientific/environmental/ climate change research):

Were the learning objectives achieved? **Yes** ☐ **No** ☐

How did you find out?

Please describe any neat interactions between participants you observed, comments on the program by participants, and so on:

Lastly, if you've taken photos during your program, please send them to _____ **Thank you!**

(department's email address here)

Sample Agreement Assuming Risk of Injury or Damage, Waiver, Indemnity and Release of Claims

Date:_____

In consideration of the_____ ("City") acting through its Library Department in granting permission for the following (time/date, location, brief description): (print City Dept/Agency name)

Applicant:
Program/Activity: _____

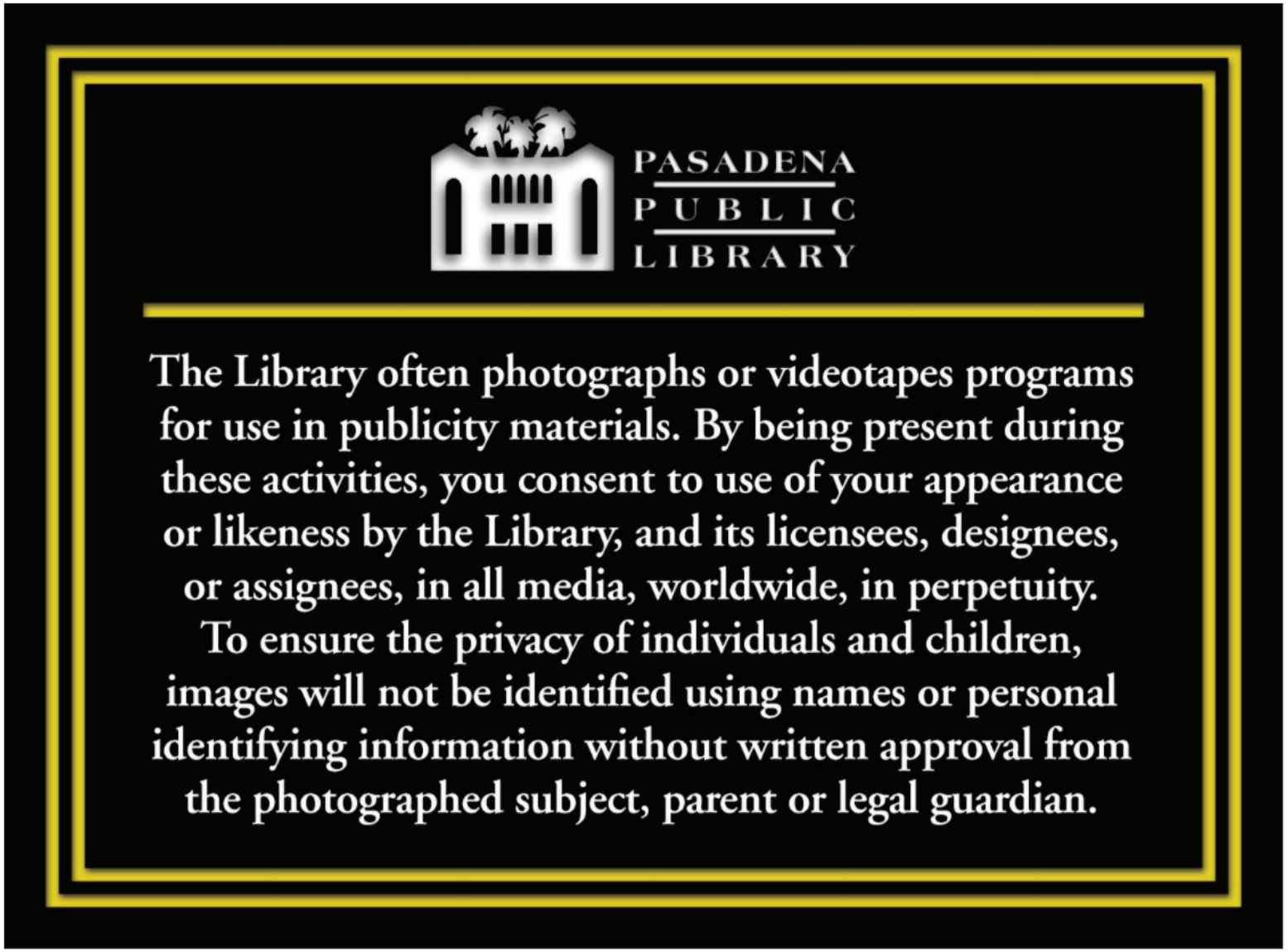
The undersigned does hereby agree:

That, except for the active negligence or willful misconduct of the City, or any of its Boards, Officers, Agents, Employees, Assigns and Successors in Interest, Applicant undertakes and agrees to defend, indemnify and hold harmless the City and any and all of its Boards, Officers, Agents, Employees, Assigns and Successors in Interest from and against all suits and causes of action, claims, losses, demands and expenses, including, but not limited to, attorney's fees and cost of litigation, damage or liability of any nature whatsoever, for death or injury to any person, including Applicant, or damage or destruction of any property of either party hereto or of third parties, arising in any manner by reason of the negligent acts, errors, omissions or willful misconduct incident to participation in this program/activity by the Applicant. The provisions of this paragraph shall survive termination of this Agreement.

Submitted by: APPLICANT

_____
(Signature)

_____
(Print Name)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To ensure the privacy of individuals and children, images will not be identified using names or personal identifying information without written approval from the photographed subject, parent or legal guardian.

_____ Public Library

Date: _____

Location: _____

To Whom It May Concern:

I, the undersigned, hereby grant permission to_____ to photograph me and/or my child (noted below If applicable) to record my/his/her voice, performances, poses, acts, plays and appearances, and use my or my child's picture, photograph, silhouette and other reproductions of my and/or my child's physical likeness and sound as part of the **Neighborhood Science** program (the "event") and the unlimited distribution, advertising, promotion, exhibition and exploitation of the Picture by any method or device now known or hereafter devised in which the same may be used, and/or incorporated and/or exhibited and/or exploited.

I agree that I will not assert or maintain against you, your successors, assigns and licensees, any claim, action, suit or demand of any kind or nature whatsoever, including but not limited to, those grounded upon invasion of privacy, rights of publicity or other civil rights, or for any other reason in connection with your authorized use of my and/or my child's physical likeness and sound in the Picture as herein provided. I hereby release you, your successors, assigns and licensees, and each of them, from and against any and all claims, liabilities, demands, actions, causes of action(s), costs and expenses whatsoever, at law or in equity, known or unknown, anticipated or unanticipated, which I ever had, now have, or may, shall or hereafter have by reason, matter, cause or thing arising out of your use as herein provided.

I affirm that neither I, nor anyone acting for me, gave or agreed to give anything of value to any of your employees or any representative of any television station, network or production entity for arranging my and/or my child's appearance on the Picture.

I have read the foregoing and fully understand the meaning and effect thereof and, intending to be legally bound, I have signed this release.

This release says that the _____ Public Library may use photos and videos of your child taking part in our program.

Examples may include, but are not limited to, posting the photos on our websites and using them in promotional materials.

Name of Child(ren):	Name of Parent	Signature of Parent	Phone #