

Point Blue Conservation Science STRAW Project February 2021 - September 2021 Report

We thank MCSTOPPP for supporting Point Blue Conservation Science's Students and Teachers Restoring A Watershed (STRAW) Program. During the pandemic, we pivoted to a virtual setting to respond to participants' needs during this challenging time. After surveying teachers, we created two strategies—growing plants at home, and prerecorded videos and curricula including virtual restoration field trips.

Task 1: Virtual Education

- *Pre-Recorded Videos*
 - We used the pandemic as an opportunity to re-envision STRAW/ With new virtual programming, lessons used an equity focus. We prioritized lessons for low-income students, videos in Spanish, and virtual field trips to sites that are open to the public, increasing accessibility to the outdoors after learning about a site. The tools that we created will be utilized in the future, moving place-based education online to reach additional schools throughout the Bay Area.
- *Live, Virtual Lessons*
 - We created and provided live virtual lessons with students focused on social and emotional learning and connections to place. Our lessons around nature journaling and backyard birds, specifically, demonstrated peoples' roles in our ecosystem and highlighted the importance of not polluting, and cleaning up trash in our communities.
 - STRAW delivered curriculum to students, and implemented the effectiveness assessment protocol, as part of STRAW's school year educational activities between December 2020 and May 2021. Examples of lessons we revised to incorporate MCSTOPPP Public outreach, education and participation objectives are attached to this report as appendix A.
- *Community College Conservation Internship*
 - We launched the new Community College Conservation Internship (CCCI) in summer 2020, shifting to a virtual platform and providing career education for 19 young adults of color and creating a pathway to careers in environmental fields. Four alumni are now employed at Point Blue as restoration technicians. Students in the 2021 cohort came from nine schools across the Bay Area. CCCI is offered part-time because interns are in school, and we do our best to accommodate their schedules.

We anticipate hiring a few graduates of the program later this year as part-time field assistants maintaining habitat restoration sites.

- *Teacher Support*
 - Our first ever virtual teacher training, Watershed Week, explored the intersection between social and emotional learning (SEL) and environmental education in 2020. We learned how social-emotional education can be used to foster our students' curiosity and resiliency with our relationship to our outside environments, community, and ourselves. We had a dynamic line up of speakers who are experts in the field, share, create discussion, and model lessons around mindfulness, brain development, how SEL can support us all in the time of COVID-19, ways to foster SEL outdoors, nature journaling, and more. As always, we aimed to celebrate and nourish our teachers with interesting and relevant information, conversation, and network opportunities free of charge. We heard from teachers that many of the lessons around SEL were utilized throughout the school year.
 - In August of 2021, we hosted Watershed Week on Getting Back Outside Together: Utilizing Outdoor Spaces for Learner Engagement and COVID safety. We hosted the event in a hybrid format-partially virtually, and partially in person. We hosted small in person gatherings for teachers, including one for Marin teachers at Falkirk Cultural Center in Marin. Teachers explored ways to teach just about any subject outdoors and in doing so lower student anxiety, connect students to their place, and foster a sense of love and care for their local environment.
- *Ongoing Teacher Support*
 - We frequently check in with teachers, especially for the Multi-Visit Program where most students are from low-income and immigrant families. We collaboratively developed the Zoom Bloom program. Teachers from Bahia Vista Elementary in San Rafael were unfortunately unable to work with us last school year due to the pandemic.
- *Growing Plants at Home*
 - The STRAW Multi-Visit Program provides an experience with an equity focus, building deeper relationships with students of color and empowering them to consider careers in the environmental field. We offer it for schools with minimal access to environmental education, including students of color and low-income students. Unable to bring students to restoration sites, we sent native plants to their homes in our "Zoom Bloom" project. This nature connection at home was powerful for students. Zoom Bloom provided learning about milkweed plants as the food source for the endangered monarch butterfly. Through Zoom Bloom with students growing plants at home, we realized how students are in need of activities using fine motor skills (i.e. cutting, gluing, building, etc.) as they get much less of this in this virtual world. Measuring their plants, making observations, drawing, and other hands-on activities proved to be engaging. Students mostly came from multi-family homes and low-income families. As part of the program, we offered basic supplies like rulers, notebooks, colored pencils, etc. that students had misplaced, and they needed these new materials for other school work as well. Zoom Bloom lessons

explicitly address pollution prevention in our watersheds and the curriculum is ready to use throughout Marin County.

Thank you for advancing our shared vision of connecting youth to nature and empowering them as environmental stewards.

We were unable to provide in-person community restorations with students, thus we were not working with chaperones for this field work. Nonetheless, our staff accomplished the restoration site goals and are looking forward to continuing community restoration once we safely can. Table 1 & 2 list the schools, teachers, and students we were able to service.

Table 1, Marin County Classroom Totals for the 20202021 school year

In Marin County in the 20202021 school year, we were able to directly service 209 students and 11 teachers in 4 schools via live, virtual lessons as we all adhered to the COVID pandemic guidelines. However, all 63 Marin County teachers received links to pre-recorded videos they can use in their classrooms that explore the importance of caring for our watersheds.

<i>School</i>	Total Students	Total Teachers
Brookside Elementary	21	1
Glenwood Elementary	21	1
Edna Maguire	70	3
Loma Verde Elementary School	44	3
Park Elementary School	54	3
Marin County Totals	209 Students	11 Teachers

Table 2, Marin County Classroom Network 20202021 school year

This table lists the schools and teachers that continue to be part of our network. Although we did not facilitate these lessons, these teachers and students had access to our virtual lesson plans and our restoration site field trips videos created in response to the pandemic.

<i>School</i>	Total Teachers
Bolinas-Stinson Elementary	3
Brookside Elementary	1
Edna Maguire	1
Glenwood Elementary	3
Hamilton Elementary School	11
Hidden Valley Elementary School	7
Loma Verde Elementary School	6
Marin Academy	2
Marin Day School	1
Marin Horizon School	6
Miller Creek Middle School	6
Old Mill School	5
Olive Elementary School	2
Park Elementary School	4
Rancho Elementary School	2
Ross Elementary School	3
Marin County Totals	63 Teachers

Virtual Nature Journaling Lesson

Original Lesson Created by Students and Teachers Restoring A Watershed (STRAW), inspired from How to Teach Nature Journaling by John Muir Laws and Emilie Lygren

*Grade Level(s) K12 (adaptations listed in plan for grade bands, use your best discretion throughout and make additional adjustments as you would like)
March 2021*

Learning Design

Enduring Understanding Students will understand that the more you look, the more you see. Students will experience how observation can lead to inquiry, help ease our anxiety, and teach us many different lessons.

Assessment Plan: Students will reflect on their learning through sharing reflections aloud.

NGSS <https://www.nextgenscience.org/>

- Science and Engineering Practices:
 - Asking questions (for science) and defining problems (for engineering)
 - Planning and carrying out investigations
 - Analyzing and interpreting data
 - Constructing explanations (for science)
 - Obtaining, evaluating, and communicating information
- Disciplinary Core Ideas:
 - *Life Sciences*
 - LS1: From molecules to organisms: Structures and processes
 - LS4: Biological evolution: Unity and diversity
- Crosscutting Concepts
 - Patterns
 - Scale, proportion, and quantity
 - Structure and function

Essential Question(s):

- What can I learn through observation?

Students will know:

- The more you look, the more you see
- We can learn a lot from just observing!
- Often times, observations leads to inquiry and questions

Students will be able to:

- Make careful observations through written reflection and drawing
- Develop nature sketching skills through practice

- Practice psychomotor skills handling the leaf and drawing
- Reflect on how they feel when they are drawing

Learning Plan

Engage (__minutes): (10% of time)

- Introduce myself, briefly introduce STRAW and Point Blue
- Frame technology pieces
 - Appreciate all of you who are on video, if you are able to join this class by video, that would be wonderful if not, no worries I'm glad to be here with all of you and appreciate your resilience in learning online.
- I love to notice things and find just like we have human teachers in our lives, nature can be a teacher too.
- If time: have students introduce themselves and their favorite thing to do outside
- Today we are going to practice our observation skills.
- Invite students to write in chat or unmute:
 - K-5th:
 - How do you think this sentence should end?
 - The more you look the more you _____
 - SEE!
 - 6-12th grade:
 - Can you think of a recent observation you made outdoors/ looking outdoors that left you wondering about a phenomenon? (can give an example: How do plants grow out of the small cracks in concrete?) share aloud or in the chat then tell them "the more you look, the more you see"
 - (feel free to insert a pop culture/ movie analogy here if you'd like- i.e. Shuri in Black Panther creates suits they look like just cool suits at first, but when you look closer, you see all the features- i.e. Black Panther's suit absorbs kinetic energy to protect him!)

Explore (__minutes): (15% of time)

- To do our observation, I'll give you 2 minutes to go find a leaf or plant in your house that you can bring back to your computer. This leaf can be a piece of a vegetable from the fridge, a leaf outside you can humbly take from a plant or off the ground, attached to a house plant whatever you can find.
- Invite students to hold their leaf up on camera (or give a thumbs up emoji if they are off camera) to let you know when they are ready to move on.
- Ask students to study their leaf and complete the following sentence starters *can pause after each sentence starter and have -2 students share aloud for each if they are too young to write out their answers):*
 - I see...
 - I smell...

- I feel...
- I notice...
- I wonder...

Explain (__minutes): (450% of time)

- Ask students, What do you think we mean by “the more you look, the more you see?” Hear from a few students
- To see what we can learn through observation, we are going to sketch our leaves.
- Share with students some principles for how to do an Observational Drawing *(can share these on a slide if you want, edit however you see fit for the grade level. just focus on drawing with K3, add in written observations 4th and higher.)*
 - **Observation before Art** These sketches are going to be scientific sketches, so try drawing exactly what you see. We are starting with observation before art- while this observation sketch could turn into an artistic one, first start with drawing only what you observe. *(p. 162-163 in How to Teach Nature Journaling)*
 - **No pressure.** These sketches do not need to look pretty or be anything other than exactly what they are- you also do not need to spell correctly or use perfect grammar- when writing written reflections around your sketch.
 - **Sketch multiple views.** Turn your leaf in many different directions and sketch it over and over again. The more you look, the more you see.
 - **Micro and macro.** In addition to drawing the full leaf, you may consider zooming in on one specific piece of a leaf and drawing just that- how close of an observation can you draw?
 - **Ask questions** Add in writing, numbers, and use labels, arrows, titles, maps.
 - **Drawing is a skill, not a gift.** It just takes practice. No one was born knowing how to draw, just let yourself get lost in the drawing, stay focused on your leaf and your work, not how good your drawing looks.
- Time to Draw! *(decide with teacher ahead of time if the teacher wants these drawings to be turned in or not value in both, defer to teacher's guidance here)*
 - Invite students to draw for about 5-7 minutes, then come back together and invite them to add a little more detail for another 5-7 minutes. Ask, If someone entered a room full of leaves, how could you communicate via this piece of paper which leaf is yours?

Elaborate (__minutes): (125% of time)

- Come back together and share in the chat/ aloud any of the following questions:
 - What did you notice about your leaf?
 - What leaf structure are you curious about? (i.e. toothed edges, little hairs on the leaves)
 - What do you think the function of that structure might be?
 - Where do you think this plant originated?
 - How do you think this leaf grows?
 - What do you think eats this plant/ would eat the plant if it was in its natural habitat?

- What else do you notice?
- 6th-12th Social-emotional learning connection: What principles of drawing are principles you could see applying to life?
 - i.e. progress over perfection
 - i.e. you are just right just as you are
 - i.e. observing emotions as you observe your leaf- just notice, no need to make them pretty
 - i.e. How are you resilient like this leaf?

Evaluate (__ minutes): (10% of time)

- What do you all want to do with your leaves now? Do you feel a sense of connection to your leaf? If so, find somewhere safe to keep it, maybe you'll even want to draw it again later!
- Where does a leaf laying on the ground go when it rains? (into storm drains) discuss why it is important to keep only natural, organic material like our leaves going into storm drains, and avoid throwing trash or other pollutants onto the ground
- Share in the chat your responses to these sentences starters: (for really young students, invite them to choose one to share aloud, or just choose one to write in the chat)
 - I know...
 - I feel...
 - I wonder...

Extend

- *How to Teach Nature Journaling Book* John Muir Laws and Emilie Lygren

Materials Needed for this lesson:

- A leaf
- A phone and tripod to join Zoom separately from your camera to demonstrate your sketch (optional)

